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Fall Semester - 2019
Spring Semester - 2020
Summer Session - 2020
Fall Semester - 2020
Spring Semester - 2021
Summer Session - 2021

Fall Semester - 2019

August 22-23	Thursday-Friday Orientation
August 26	Monday Classes Begin
August 30	Friday End Restricted Drop
September 2	Monday End Add Without Override
September 2	Monday Holiday - University Offices Closed - No Classes
September 11	Wednesday Registration Closes - end of period for adding courses - last day for dropping courses without record entry, changes in grade option, and tuition and fee adjustment
October 21	Monday End Course Withdrawals ("W") Period, Repeat/Delete Deadline
November 23	Saturday Fall Recess Begins, No Classes Next Week
November 28-29	Thursday-Friday Holiday - University Offices Closed
December 2	Monday Classes Resume
December 13	Friday Last Day of Classes; University Withdrawal Deadline
December 16-20	Monday-Friday Final Examinations
December 20-21	Friday-Saturday Commencement
December 23	Monday Grades Due
December 25-27	Wednesday-Friday Holiday - University Offices Closed

Spring Semester 2020

January 1	Wednesday Holiday - University Offices Closed
January 16-17	Thursday-Friday Orientation, Advising and Registration for New Students
January 20	Monday Holiday - University Offices Closed
January 21	Tuesday Classes Begin
January 24	Friday End Restricted Drop
January 26	Sunday End Add Without Override
February 5	Wednesday Registration Closes - end of period for adding courses - last day for dropping courses without record entry, changes in grade option, and tuition and fee adjustment
February 11	Founder's Day - CSU's 150th birthday
March 14	Saturday Spring Break Begins - No Classes Next Week
March 23	Monday End Course Withdrawal ("W") Period, Repeat/Delete Deadline
March 23	Monday Classes Resume
May 8	Friday Last Day of Classes; University Withdrawal Deadline
May 11-15	Monday-Friday Final Examinations
May 15-17	Friday - Sunday Commencement
May 19	Tuesday Grades Due

Summer Session - 2020

May 18	Monday 1st 4 Week and 12 Week Terms Begin
May 25	Monday Holiday - University Offices Closed - No Classes
June 12	Friday 1st 4 Week Term Ends
June 15	Monday 2nd 4 Week Term and 8 Week Terms Begin
June 24	Wednesday Census
July 3	Friday Holiday - University Offices Closed - No Classes
July 10	Friday 2nd 4 Week Term Ends
July 13	Monday 3rd 4 Week Term Begins
July 27	Monday Repeat/Delete Deadline
August 7	Friday 8 Week, 12 Week, and 3rd 4 Week Terms End
August 11	Tuesday Grades Due

Fall Semester - 2020

August 20-21	Thursday-Friday Orientation
August 24	Monday Classes Begin
August 28	Friday End Restricted Drop
August 30	Sunday End Add Without Override
September 7	Monday Holiday - University Offices Closed - No Classes
September 9	Wednesday Registration Closes - end of period for adding courses - last day for dropping courses without record entry, changes in grade option, and tuition and fee adjustment
October 19	Monday End Course Withdrawals ("W") Period, Repeat/Delete Deadline
November 21	Saturday Fall Recess Begins, No Classes Next Week
November 26-27	Thursday-Friday Holiday - University Offices Closed
November 30	Monday Classes Resume
December 11	Friday Last Day of Classes; University Withdrawal Deadline
December 14-18	Monday-Friday Final Examinations
December 18-19	Friday-Saturday Commencement
December 22	Tuesday Grades Due
December 23-25	Wednesday-Friday Holiday - University Offices Closed

Spring Semester - 2021

January 1	Friday Holiday - University Offices Closed
January 14-15	Thursday-Friday Orientation, Advising and Registration for New Students
January 18	Monday Holiday - University Offices Closed
January 19	Tuesday Classes Begin
January 22	Friday End Restricted Drop
January 24	Sunday End Add Without Override
February 3	Wednesday Registration Closes - end of period for adding courses - last day for dropping courses without record entry, changes in grade option, and tuition and fee adjustment
February 11	Founder's Day - CSU's 151st birthday
March 13	Saturday Spring Break Begins - No Classes Next Week

March 22	Monday End Course Withdrawal ("W") Period, Repeat/ Delete Deadline
March 22	Monday Classes Resume
May 7	Friday Last Day of Classes; University Withdrawal Deadline
May 10-14	Monday-Friday Final Examinations
May 14-16	Friday - Sunday Commencement
May 18	Tuesday Grades Due

Summer Session - 2021

May 17	Monday 1st 4 Week and 12 Week Terms Begin
May 31	Monday Holiday - University Offices Closed - No Classes
June 11	Friday 1st 4 Week Term Ends
June 14	Monday 2nd 4 Week Term and 8 Week Terms Begin
June 23	Wednesday Census
July 5	Monday Holiday - University Offices Closed - No Classes
July 9	Friday 2nd 4 Week Term Ends
July 12	Monday 3rd 4 Week Term Begins
July 26	Monday Repeat/Delete Deadline
August 6	Friday 8 Week, 12 Week, and 3rd 4 Week Terms End
August 10	Tuesday Grades Due

WELCOME TO CSU

A Message from President Joyce E. McConnell

Welcome to Colorado State University! You have joined a campus that is proudly inclusive, and a community where you will discover mentors and life-long friends. Alongside those new friends and guided by those mentors, you will reach for extraordinary goals: To become **scholars**. To become **researchers**. To become **leaders**. To become engaged contributors to our world.

At CSU, our goal is to help you achieve all these goals. **This General Catalog will help you navigate the many timelines and deadlines you must keep track of and the many decisions and choices you must make as you pursue your CSU degree.** The General Catalog is also the best place to find the answers to questions you may have about University operations and protocols.

Of course, there are questions you won't find answered here, or questions that may not have just one right answer. *What's one class I should absolutely sign up for this semester? What academic major will most excite and energize me? What do I want to do with my life once I leave campus? How can I begin to make an impact on the world while I am still on campus?* For these questions, I urge you to engage with the tremendously talented, passionate faculty and staff around you. Go to office hours. Make—and keep—regular appointments with your advisor. Ask for help whenever you need it, over email or after class, in tutoring centers and the library. Then come back to this General Catalog to ensure you're on track.

We are so excited to welcome you to CSU. We are here to support you in your pursuit of your most ambitious goals, and we know you will achieve them, becoming the scholars, researchers, leaders and engaged citizens whom we need in our world, today and tomorrow. **Go Rams!**

Joyce E. McConnell
President

University Mission, Values, and Guiding Principles
Campus Map
University Welcome Center

University Mission, Values, and Guiding Principles

Mission
Values
Guiding Principles

By statute, Colorado State University is a comprehensive graduate research university with selective admission standards. Charged with offering a comprehensive array of baccalaureate, master's, and doctoral programs, it holds exclusive statewide authority for programs in agriculture, forestry, natural resources, and veterinary medicine.

In May 2010, the Board of Governors adopted the following mission statement for Colorado State University:

Mission

Inspired by its land-grant heritage, Colorado State University is committed to excellence, setting the standard for public research universities in teaching, research, service and extension for the benefit of the citizens of Colorado, the United States and the world.

CSU has further adopted the following values:

Values

- Be accountable
- Promote civic responsibility
- Employ a customer focus
- Promote freedom of expression
- Demonstrate inclusiveness and diversity
- Encourage and reward innovation
- Act with integrity and mutual respect
- Provide opportunity and access
- Support excellence in teaching and research

Guiding Principles

CSU is a community dedicated to higher learning in which all members share in pursuit of knowledge, development of students, and protection of essential conditions conducive for learning. These protections are presented in the form of university policies, applicable federal and state laws, and statements of fundamental rights and responsibilities, which govern both the academic setting and the university community as a whole. Some of the policies and expectations described in this Catalog are among those most relevant to students, faculty, and staff; others are focused specifically on the student population but are not intended to serve as an exhaustive list of all policies that pertain to students or life on campus. A complete guide to CSU policies is available online through the Office of Policy and Compliance (http://opc.prep.colostate.edu).

CSU expects students to maintain standards of personal integrity that are in harmony with the educational goals of the institution; to observe national, state, and local laws, and University regulations; and to respect the rights, privileges, and property of other people. Principles of academic honesty, respect for diversity, and pursuit of lifestyles free of alcohol and drug abuse are examples of these standards. Students are not only members of the academic community; they are, additionally, members of the larger society and thus retain the rights, protection guarantees, and responsibilities which are held by all citizens.

Commitment to Diversity

CSU has a unique mission in the State of Colorado. As a land grant university we are committed to a foundational principle of inclusive excellence recognizing that our institutional success depends on how well we welcome, value, and affirm all members of the CSU community. Only through the inclusion of the rich diversity of students, staff, faculty, administrators, and alumni can we truly be excellent in our pursuits.

Our inclusive excellence efforts hinge on four key ideas:

Broad and inclusive definition of diversity.

We recognize that to truly be inclusive we must draw attention to the depth and breadth of the diversity represented at CSU. Our definition includes age, culture, different ideas and perspectives, disability, ethnicity, first generation status, familial status, gender identity and expression, geographic background, marital status, national origin, race, religious and spiritual beliefs, sex, sexual orientation, socioeconomic status, and veteran status. We also recognize that the historical exclusion and marginalization of specific social groups must be addressed to promote equity.

Inclusiveness and excellence are interdependent.

We recognize that to continue to stay current in the global marketplace and stay relevant in an increasingly diverse world, we must embody inclusion. To practice inclusiveness is excellence.

Everyone is responsible for inclusive excellence.

All members of the campus community (administrators, faculty, staff, students, and alumni) must recognize and assume responsibility for the climate of the university. A unit or person can drive the process, but every individual at CSU assumes responsibility for positive change.

Inclusive excellence goes beyond numbers.

Historically, diversity has been gauged by demographics or numbers; we must move beyond solely numbers toward an inclusive community that embeds diversity throughout the institution in multiple areas including demographics, policies, and communications; curriculum, pedagogy, and student learning; recruitment, hiring and retention, evaluation and supervision.

Achieving inclusive excellence is a long-term commitment and must have a comprehensive broad approach, embedding appreciation of all members and inclusion best practices into the very fabric of CSU's organizational culture.

Equal Opportunity and Nondiscrimination

Colorado State University does not discriminate on the basis of race, age, creed, color, religion, national origin or ancestry, sex, gender, disability, veteran status, genetic information, sexual orientation, gender identity or expression, or pregnancy and will not discharge or in any other manner discriminate against employees or applicants because they have inquired about, discussed, or disclosed their own pay or the pay of another employee or applicant. The University complies with Titles VI and VII of the Civil Rights Act of 1964, as amended, related Executive Orders 11246 and 11375, Title IX of the Education Amendments Act of 1972, Sections 503 and 504 of the Rehabilitation Act of 1973, Section 402 of the Vietnam Era Veterans' Readjustment Assistance Act of 1974, as amended, the Age Discrimination in Employment Act of 1967, as amended, the Pregnancy Discrimination Act of 1978, the Americans with Disabilities Act of 1990, the Civil Rights Act of 1991, the ADA Amendments Act of 2008, the Genetic Information Nondiscrimination Act of 2008, and all civil rights laws of the State of Colorado. Accordingly, equal access and opportunity in treatment, employment, admissions, programs and activities shall be extended to all persons. The University shall promote equal opportunity and treatment in employment through a positive and continuing affirmative action program for ethnic minorities, women, persons with disabilities, and veterans. The Office of Equal Opportunity (http://oeo.colostate.edu) is located in 101 Student Services Building.

The Title IX Coordinator is the Executive Director of the Office of Support and Safety Assessment, 123 Student Services Building, Fort Collins, CO 80523 -2026, (970) 491-7407.

The Section 504 and ADA Coordinator is the Associate Vice President for Human Capital, Office of Equal Opportunity, 101 Student Services Building, Fort Collins, CO 80523-0160, (970) 491-5836.

Admission of students, employment, and availability and access to CSU's programs and activities are made in accordance with these policies of nondiscrimination. Off campus householders who desire to list student accommodations with CSU must certify that they will comply with CSU's policy on nondiscrimination in student housing.

Any student or University employee who encounters acts of discrimination, either on or off campus, is urged to report such incidents to the Office of Equal Opportunity (http://oeo.colostate.edu) of CSU, located in 101 Student Services. Any person who wishes to discuss a possible discriminatory act without filing a complaint is welcome to do so.

Any of the above discriminatory acts can also be the subject of complaints to the Department of Education, Office for Civil Rights, as well as to the Office of Federal Contract Compliance Programs, Equal Employment Opportunity Commission, and the Colorado Civil Rights Division; information on filing complaints with any of these agencies is available in the Office of Equal Opportunity (http://oeo.colostate.edu).

Freedom from Personal Abuse

CSU acknowledges the right of all people to freedom from personal abuse. Abusive treatment of individuals on a personal or stereotyped basis prevents the attainment of CSU's objective to create and maintain an environment that supports, nurtures, and encourages people to excel in teaching, learning, and creativity. Therefore, CSU deplores, condemns, and will act energetically to prevent all forms of personal abuse, including sexual harassment. For statements of university policy concerning discrimination, harassment, sexual harassment, and other misconduct, see the University Policies section of this Catalog.

Principles of Community

The Principles of Community support the Colorado State University mission and vision of access, research, teaching, service and engagement. A collaborative and vibrant community is a foundation for learning, critical inquiry, and discovery. Therefore, each member of the CSU community has a responsibility to uphold these principles when engaging with one another and acting on behalf of the University.

Inclusion: We create and nurture inclusive environments and welcome, value and affirm all members of our community, including their various identities, skills, ideas, talents and contributions.

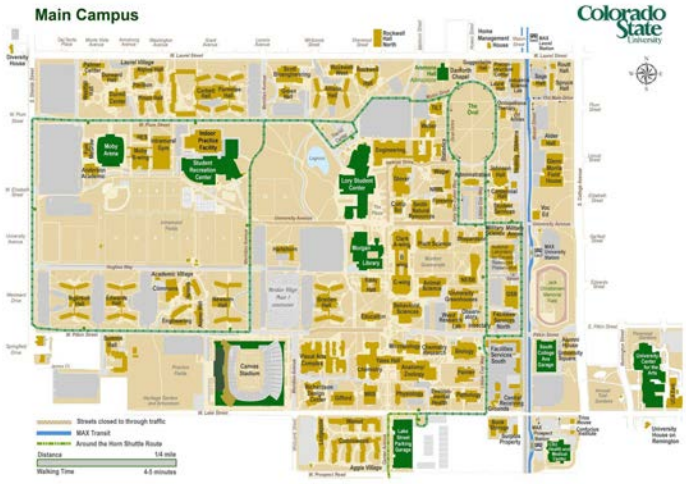
Integrity: We are accountable for our actions and will act ethically and honestly in all our interactions.

Respect: We honor the inherent dignity of all people within an environment where we are committed to freedom of expression, critical discourse, and the advancement of knowledge.

Service: We are responsible, individually and collectively, to give of our time, talents, and resources to promote the well-being of each other and the development of our local, regional, and global communities.

Social Justice: We have the right to be treated and the responsibility to treat others with fairness and equity, the duty to challenge prejudice, and to uphold the laws, policies and procedures that promote justice in all respects.

Campus Map



Interactive Campus Maps (http://maps.colostate.edu)

University Welcome Center

Ammons Hall

The University Welcome Center in Ammons Hall serves as CSU's official front door for our visitors and friends. Located on the historic Oval, the Welcome Center offers general information about campus and the Fort Collins community.

Admissions Tours for Prospective Students

Ammons Hall is also home to the Office of Admissions. Daily information sessions and tours (https://admissions.colostate.edu/visit-campus/information-sessions-tours) of campus are offered every weekday and select Saturdays and evenings year-round with the exception of most federal holidays. Tours are guided by current CSU students and highlight the University's rich traditions, collaborative academic environment and thriving campus life. In addition, prospective students can choose from a range of specialized visit experiences (https://admissions.colostate.edu/visit-campus) and College/Department programs to learn more about CSU.

The Office of Admissions - Transfer is in the TILT Building, conveniently located adjacent to Ammons Hall on the Oval.

Hours, Parking, and Directions

Ammons Hall
(970) 491-6909
Weekdays: 8 a.m. to 5 p.m. (MT)
Select Saturdays: 9 a.m. to 12 p.m. (MT)

Office of Admissions - Transfer
(970) 491-1858
Weekdays: 8 a.m. to 5 p.m. (MT)
Select evenings: 5:30 p.m. to 7:30 p.m. (MT)

The best address to use in your GPS is 711 Oval Drive, Fort Collins, CO 80521.

- Welcome Center / Ammons Hall directions and parking (https://admissions.colostate.edu/directionstocampus)
- Directions and parking for other popular campus destinations (http://ramtrax.colostate.edu/directions-and-parking)

RamTrax Tours for Community Members and Other Groups

RamTrax is CSU's premier visitor experience developed to showcase the University's outstanding academic programs, highlight our prestigious research and expand outreach to the community.

- More information, including CSU events and resources that are open to the public (http://ramtrax.colostate.edu)

UNIVERSITY POLICIES

The following is a listing of university policies that are of particular interest to students and their families. A complete guide to University Policies is available in the online CSU Policy Library (http://policylibrary.colostate.edu).

Campus Safety and Clery Act
Consensual Relationships
FERPA (Student Privacy)
Freedom of Expression and Inquiry
Free Speech and Right to Peaceful Assembly
Hazing
Discrimination, Harassment, Sexual Assault, and Violence
Alcohol and Sexual Assault Education
Students' Rights
Students' Responsibilities

Campus Safety and The Clery Act

The Jeanne Clery Disclosure of Campus Security and Campus Crime Statistics Act is the landmark federal law that requires colleges and universities to timely disclose important security policies, annual information about crime on and around campus, and CSU's policies on drugs and alcohol. Information must also be published concerning interpersonal violence policies and resources.

Crime Statistics—Annual Update

The Colorado State University Police Department (http://police.colostate.edu) is responsible for releasing campus crime statistics to the CSU community. The Annual Fire and Safety Report (https://safetyreport.colostate.edu) (http://police.colostate.edu/clery-act)informs the CSU community about important policies, crime prevention programs, and crime statistics for the previous three years concerning reported crimes that occurred on-campus, in certain off-campus buildings or property owned or controlled by CSU, and on public property adjoining campus. It also contains fire safety information and the past three years' fire statistics for the residence halls.

The Annual Fire and Safety Report is sent by email to all students and employees when the report is released in the fall. It can be found online on the safety website (http://safety.colostate.edu), or a printed copy may be obtained at the CSU Police Department in Green Hall.

Emergency Notifications and Timely Warnings

The Clery Act requires the university to notify the campus community about serious threats to safety on or near campus. When there is an immediate threat to health and safety on or approaching the physical grounds of campus, the university will issue an emergency notification to students, faculty and staff. When appropriate, the University may choose to limit the recipients of the notification to those directly affected by the threat, and in these instances it is not released campus-wide. Notifications may be made through any or all of the following methods:

- CSU emergency e-mail system
- Emergency text alert system
- Posting to the safety website (http://safety.colostate.edu) (safety.colostate.edu)
- Social media (CSUPD/Public Safety Team Facebook and Twitter, and also the main university social media platforms)
- Mass notification (via recorded emergency telephone calls from CSUPD)
- Emergency alert cable television system
- In-person notifications by police officers to specific audiences
- Flyers with safety information distributed to key buildings
- Outdoor digital signs located on campus
- CSU's online newsletter, SOURCE (https://source.colostate.edu)
- Parent and Family online newsletter (https://parentsandfamily.colostate.edu/) and social media accounts (called Colorado State Parents & Families on Facebook)
- CSU status recorded line 970-491-7669

When a crime covered under the Clery Act has been committed on campus property, but the facts do not indicate that the issuance of an emergency notification is appropriate, then the university may determine that a timely warning notification should be issued. The purpose of a timely warning is to keep the campus community informed about safety and security issues on an ongoing basis and to aid in the prevention of similar crimes. To warrant a timely warning, the crime committed must be determined by university safety officials to constitute a serious and continuing threat to students and/or employees. Such a warning puts the community on alert, helps to educate students and employees about dangers on campus, and in some cases, may even lead to the apprehension of a suspect or reduction of the threat. A timely warning may also be shared if a crime occurs off-campus if it occurs on property covered by the Clery Act. Timely warnings may be issued through any of the methods listed above for emergency notifications.

Emergency email and text notification systems will be tested periodically (usually three times per year after student census), using test messages.

For more information about emergency notifications and timely warning procedures, see the Annual Fire and Safety Report (https://safetyreport.colostate.edu).

Missing Student Notification

When a student who resides in university housing is reported missing, the University will initiate an investigation to determine whether the student is indeed missing. If there is good cause to believe the student is missing, the University may, among other measures, attempt to contact the individual or individuals designated by the student as confidential emergency contacts. Where the reportedly missing student

is an unemancipated minor under the age of 18, the student's parents or guardian may be contacted. CSU Police will also be contacted, if they have not already been notified of the concern.

If you believe a CSU student is missing, you should immediately contact the CSU Police Department by calling (970) 491-6425. See the missing student notification procedures in the Annual Fire and Safety Report (https://safetyreport.colostate.edu) for more information.

Registered Sex Offenders

The CSU Police Department is required to notify the CSU community about where public information regarding registered sex offenders can be obtained. A current listing of sex offenders is available at the Colorado Bureau of Investigation Convicted Sex Offender Site (https://www.colorado.gov/apps/cdps/sor).

CSU Police Department Services

The CSU Police Department offers additional services to the CSU community.

Consensual Relationships

CSU is committed to the principle that its personnel shall carry out their duties in an objective and ethical fashion and in an atmosphere in which conflicts of interest are identified and managed. CSU does not interfere with private choices regarding personal relationships when these relationships do not interfere with the goals and policies of CSU. However, consensual romantic or sexual relationships in which one party retains a direct supervisory or evaluative role over the other party have the potential to interfere with these goals and policies. Therefore, consistent with its commitment to objectivity and ethical behavior, CSU is required to intervene in such circumstances.

A romantic, intimate, or sexual relationship in which one individual is in a position to exercise authority over the other creates conflicts of interest and perceptions of undue advantage or disadvantage. When both parties have consented at the outset to a romantic, intimate, or sexual relationship, this consent does not remove grounds for a charge of conflict of interest, sexual harassment, or violation of applicable parts of CSU's Code of Ethical Behavior, based upon subsequent unwelcome conduct. Pursuant to this policy, faculty members are prohibited from entering into consensual, intimate relationships with students over whom they exercise authority. Refer to the full CSU Policy on Consensual Relationships (https://oeo.colostate.edu/consensual-relationships) for scope, definitions, applicability, and requirements, along with procedures for reporting any violation of such policy.

Retaliation against persons who report concerns about consensual relationships is also prohibited and constitutes a violation of this policy.

FERPA (Student Privacy)

Family Educational Rights and Privacy Act

Students have certain rights concerning their "education records" under the Family Educational Rights and Privacy Act (FERPA), as amended, 20 U.S.C. §1232g, et seq. These include:

1. The right to inspect and review the student's education records within 45 days of the day CSU receives the request for access.

   All enrolled and former students may access their education records maintained by CSU. Written requests identifying the record(s) to be inspected should be submitted to the Registrar's Office, or, in the case of graduate students, to the Graduate School. The CSU official will make arrangements for access and notify the student of the time and place where the records may be inspected. If the records are not maintained by the CSU official to whom the request was submitted, that official will advise the student of the correct official to whom the request should be addressed. A student may receive one copy of each item of information contained in the education record at a cost of $.25 per page (charge subject to change).

2. The right to request the amendment of the student's education records that the student believes are inaccurate or misleading.

   Students may ask CSU to amend a record that they believe is inaccurate or misleading as recorded or reported in that record. They should write the CSU official responsible for the record, clearly identify the part of the record they want changed, and specify why it is inaccurate or misleading.

   If CSU decides not to amend the record as requested by the student, CSU will notify the student of the decision and advise the student of their right to a hearing regarding the request for amendment. Additional information regarding the hearing procedures will be provided to the student when notified of the right to a hearing.

3. The right to consent to disclosure of personally identifiable information (defined below) contained in the student's education records, except to the extent that FERPA authorizes disclosure without consent.

   Individuals and agencies having access to a student's records without the student's consent include "school officials," defined below, with legitimate educational interests; parents claiming a student as a dependent on their federal income tax; scholarship and other financial aid organizations supporting the student; organizations conducting studies for, or on behalf of, educational agencies or institutions for the purpose of developing, validating, or administering predictive tests, student aid programs, or to improve instruction; organizations carrying out accrediting functions of programs offered by CSU; appropriate person(s) in an emergency; and any party designated by judicial order or subpoena, provided that, except for subpoenas and orders issued for law enforcement purposes, CSU first notifies the student of the order or subpoena. Any other individual or organization must have a student's written consent to view or have access to the education record.

   For purposes of disclosure of information about the student to school officials with legitimate educational interests, a "school official" is a person employed by CSU in an administrative, supervisory, academic or research, or support staff position (including law enforcement unit personnel in an educational role and health staff); a person or company with whom CSU has contracted (such as an attorney, auditor, or collection agent); a person serving on the governing board of CSU; or a student serving on an official committee, or in a volunteer capacity, such as a peer mentor or member of a disciplinary or grievance committee, or assisting another school official in performing his or her tasks. Such officials have legitimate educational interests when they need to review a student's education records to fulfill their responsibilities to CSU. As an example of a company with whom CSU has contracted, CSU works with the National Student Clearinghouse which provides an Enrollment Verification Certificate and/or degree verification to students and

vendors indicating whether the students are enrolled for part-time or full-time status at CSU, or have received a degree.

4. Furthermore, CSU discloses students' education records without consent, upon request, to officials of other schools in which a student seeks to or intends to enroll.

   Students can authorize the release of their private information through FAMweb (http://parentsandfamily.colostate.edu/famweb), a secure online portal that provides limited access to a student's education records to families and trusted individuals designated by the student. In RAMweb (https://ramweb.colostate.edu/registrar/Public/Login.aspx), the secure online student portal, the student sets permissions to allow others to use FAMweb to access certain categories of education records that are frequently requested for release. The following types of student information can be viewed in FAMweb:

   • eBilling information
   • Grades for the last completed term
   • Unofficial transcript
   • Class schedule for the semester in session
   • Tax information

   An exception to the requirement for prior authorization for release of records exists for public release of "directory information" which is published in university directories and may be released to third parties. FERPA allows a student to limit the release of directory information; see the Office of the Registrar (http://registrar.colostate.edu/student-resources/ferpa-student-privacy) for procedures to apply restrictions on directory information.

   CSU defines "directory information" as the following:

   • Student name
   • E-Mail address
   • Telephone number
   • Major field of study
   • Classification level (freshman, sophomore, junior, senior, graduate)
   • Dates of attendance
   • Current or previous enrollment status (full-time, half-time, three-quarters, and/or less than half-time)
   • Anticipated date/term of graduation and expected degree(s)
   • Honors and degrees awarded
   • Participation in officially recognized activities and sports
   • Height and weight of athletic team members
   • Video and photographic images of students, with the exception of the official CSU identification photograph

5. The right to file a complaint with the U.S. Department of Education concerning alleged failures by CSU to comply with the requirements of FERPA. The name and address of the office that administers FERPA is: Family Policy Compliance Office, U.S. Department of Education, 400 Maryland Ave. SW, Washington, DC 20202-4605.

Personally Identifiable (Private) Information

CSU defines Personally Identifiable (Private Information) as information, excluding Directory information, that if disclosed alone or in combination with other available information, would make it possible to identify an individual to whom the information pertains. This includes items such as a social security number; a personal identification number; a password; a pass code; an official state or government-issued driver's license or identification card number; a government passport number; biometric data, such as defined in C.R.S. § 24-73-103(1)(a); an employer, student, or military identification number; a financial transaction device as defined in C.R.S. § 18-5-701(3); grades, financial/account information; CSU ID photo; class and work schedules; residency status; class rank; age; birth date and place of birth.None of these items may be released without the student's permission, except as otherwise allowed by FERPA.

Deceased Student Information Disclosure

Due to the sensitivity and privacy issues involved in student deaths, a Confidential Information alert will be placed on the deceased student's accounts and records to block public access to all personal and academic information once verification of the death is confirmed.

Further information about CSU's FERPA policy (http://policylibrary.colostate.edu/policy.aspx?id=591) and related guidance and resources are available from the Office of the Registrar (http://registrar.colostate.edu).

Freedom of Expression and Inquiry

The faculty of CSU considers freedom of discussion, inquiry, and expression to be in keeping with the history and traditions of our country and to be a cornerstone of education in a democracy. CSU is committed to valuing and respecting diversity, including respect for diverse viewpoints. If any members of our campus community (students, faculty, or staff) feel that they have been treated unfairly because of their views, they should contact the Student Resolution Center (https://resolutioncenter.colostate.edu). The policy of CSU is to encourage members of the CSU community to engage in discussion, to exchange ideas and opinions, and to speak, write, and publish freely in accordance with the guarantees and limitations of our state and national constitutions.

Faculty and students have not only a right, but also a responsibility, to examine critically the insights, understandings, values, issues, and concerns which have evolved in the various areas of human activity. Consequently, it is the policy of the University that CSU-registered student organizations may extend invitations for guest lecturers, exhibitors, performers, and exhibitions of works of art with no restrictions of form or content other than those imposed by law. It is understood that inviting a speaker, performer, or exhibit does not imply concurrence of the CSU or of the sponsoring organization with the opinions, beliefs, or values expressed.

In exercising their rights, members of the CSU community should understand that the public may judge the institution by their actions. Hence, they should at all times strive to be honest and accurate, exercise appropriate restraint, and show appropriate respect for the opinions of others.

Free Speech and Right to Peaceful Assembly

CSU acknowledges the rights of students and others to engage in free speech and to assemble in groups for peaceful purposes. At such gatherings, CSU expects the rights and privileges of all persons to be respected and that there will be no endangerment to health or safety. Such gatherings must in no way disrupt the normal conduct of University affairs or endanger University property.

CSU may, consistent with the constitution, establish reasonable regulations regarding the time, place, and manner in which persons exercise their free speech rights to the extent necessary to prevent

disruption of the normal conduct of University affairs or endangerment of health and safety of persons or damage to property. Accordingly, persons planning such assemblies on the CSU campus must coordinate their activities and plans in advance through the Lory Student Center Event Planning Services (http://lsc.colostate.edu/services/event-planning-services) or Facilities Management (http://www.fm.colostate.edu/events). The sponsoring individual or group must assume responsibility for compliance with all state and municipal laws and CSU policies. Assistance from staff is available to help plan such events, and the assistance of University police may be requested to help with traffic or crowds.

Any act by demonstrators or groups which interferes with the rights of others, disrupts the normal functioning of CSU, damages property, or endangers health or safety is grounds for suspension or dismissal from the University and/or removal from University property. In addition, such actions may also be the basis for criminal charges by law enforcement authorities. Demonstrations are prohibited in any special-use facility, classroom, and in any place or manner that interferes with educational and other normal functions and operations of the institution. Demonstrators refusing to vacate premises upon request are subject to immediate temporary suspension and arrest under applicable municipal and state laws.

Commercial speech may be regulated by the University to a greater extent than noncommercial speech and expressive activities. Commercial speech is any form of expression or activity that is primarily intended to advertise, market, sell, or promote goods and services on behalf of any person or entity that is not a CSU department or affiliated organization. Soliciting for contributions or donations is included in the definition of commercial speech. The University is under no obligation to make any campus areas or facilities available for commercial activities. When permitted, commercial speech should promote an educational, rather than commercial atmosphere on campus, prevent exploitation of students, and preserve the tranquility of the campus. In order to promote these objectives, the Campus Activities Director acts as, or may designate, a coordinator for commercial events held on campus, including (but not limited to) events at the Lory Student Center Plaza. The coordinator is responsible for working with student organizations, other sponsors, and vendors to assure that events are in accordance with University regulations.

To learn more about the University's policy on the rights to free speech and peaceful assembly, visit the CSU Policy Library website (http://policylibrary.colostate.edu/policy.aspx?id=696).

Hazing

Hazing is against the law in Colorado and is a violation of the **Student Conduct Code** that may result in discipline of individuals and student organizations who engage in such conduct. Hazing means any act that endangers the mental, physical, or emotional health or safety of a student, or that destroys or removes public or private property for the purpose of initiation, admission into, affiliation with, or as a condition for continued membership in a group or student organization. It includes participating in, condoning, encouraging, requiring, or allowing an opportunity for hazing. A hazing violation may occur even when the victim expressed or implied consent. For more information regarding hazing, resources available to students who may encounter it, and how to report instances of hazing, see the **CSU End Hazing website**.

Discrimination, Harassment, Sexual Assault, and Violence

Discrimination, Harassment, Sexual Harassment, Sexual Misconduct, Domestic Violence, Dating Violence, Stalking, and Retaliation

CSU is committed to providing an environment that respects the dignity and worth of every member of its community. CSU strives to create and maintain a work and study environment that is fair, inclusive, and responsible so that each member of the CSU community is treated with dignity and respect and is rewarded for relevant considerations such as ability and performance. CSU has adopted a comprehensive policy (http://oeo.colostate.edu/discrimination-harassment-sexual-harassment-sexual-misconduct-domestic-violence-dating-violence-stalking-and-retaliation-policy) to define the types of conduct that are prohibited and to prevent harm arising from discrimination, harassment, sexual harassment, sexual misconduct, domestic violence, dating violence, stalking, and retaliation. Conduct that is discriminatory or harmful under the policy inhibits the achievement of the stated goals. All students, faculty, staff, and other persons having business with CSU are expected to know and follow this policy.

Details regarding what is involved in bringing a complaint and the procedures for informal and formal resolution are available from the Office of Support and Safety Assessment (http://www.supportandsafety.colostate.edu) for student-to-student behavior and the Office of Equal Opportunity (http://oeo.colostate.edu) for matters involving non-students such as faculty, staff, affiliates, or visitors and matters involving a student and non-student person.

Alcohol and Sexual Assault Education

CSU is committed to providing a safe campus for all students and promoting a culture of respect, dignity, and safety. As a result, CSU requires students to complete the Sexual Assault Prevention and AlcoholEdu online programs.

All enrolled students are required to complete the Sexual Assault Prevention online module, which educates students on issues associated with stalking, relationship violence, and sexual assault. Students learn about consent, how to help a friend, and how to intervene in a situation that might escalate to sexual assault. Built in collaboration with leading researchers and practitioners, Sexual Assault Prevention is an interactive module designed to engage and empower students to create safe and healthy campus environments. This course meets the educational mandate of the 2013 Federal Campus Sexual Violence Elimination Act (https://www.law.cornell.edu/uscode/text/20/1092).

AlcoholEdu for College is an interactive, online program designed to inform students about how alcohol affects the body, mind, perceptions, and behaviors. The research-based course offers accurate information in a non-judgmental tone, while providing personalized feedback that encourages students to consider their own drinking decisions and those of their peers. **Undergraduate students under age 23 must complete the AlcoholEdu Program**. Even if students don't drink, they may still be impacted by alcohol use in the college environment.

Incoming students who must meet these requirements can access the online programs through RAMweb thirty (30) days in advance of the first day of classes on their first enrolled semester at CSU.

More information about these important programs is available on the CSU Health Network (http://health.colostate.edu/new-student-checklist) New Student Checklist web page (https://health.colostate.edu/new-student-checklist/#alcoholedu).

Students' Rights

As members of the CSU community, students can reasonably expect the following:

1. Students have the right to freedom from discrimination and harassment on the basis of race, color, gender identity or expression, sexual orientation, genetic information, religion, creed, political beliefs, veteran status, pregnancy, national origin or ancestry, age, or disability.
2. The University shall not interfere with the rights of students to join associations.
3. Students should have accurate information relating to maintaining acceptable academic standing, graduation requirements, program student learning outcomes, and individual course objectives and requirements.
4. Student records will be maintained in keeping with the Family Educational Rights and Privacy Act of 1974 and subsequent amendments and the guidelines for implementation.
5. In all instances of general discipline, academic discipline, and academic evaluation, the student has the right to fair and impartial treatment.
6. CSU considers freedom of inquiry and discussion essential to a student's educational development. Thus, the University recognizes the right of all students to engage in discussion, to exchange thought and opinion, and to speak, write, or print freely on any subject in accordance with the guarantees of Federal and State constitutions. This broad principle is the cornerstone of education in a democracy.
7. Students have the right to be free from illegal searches and seizures.
8. Students have the right to freely exercise their full rights as citizens. In this light, the University affirms the right of students to exercise their freedoms without fear of University interference for such activity.

Student Bill of Rights
Students' Rights Regarding Their Education Records
Right to Discuss Concerns with Department Heads/Chairs
Right to File a Grade Appeal
Right to File a Complaint
Right to Seek Membership in Student Organizations
Victims' Rights
Resources

Student Bill of Rights

The Colorado Student Bill of Rights, Colo. Rev. Stat. § 23-1-125, guarantees certain rights and expectations for various aspects of student academic life including advising, transferability of credits, and degree completion.

One such right is that a student may enter into an agreement with the University to formalize a plan to obtain a degree in four years (§ 23-1-125(1)(b), C.R.S.). CSU supports this timeline for graduation by publishing advising guidelines under which a student may expect to graduate in four years, and also maintains Major Completion Maps. Major Completion Maps are designed to assist students and their advisors in building a semester-by-semester course schedule that will enable students to complete their baccalaureate degree within the minimum number of semesters established in the major's program of study. Major Completion Maps have been approved through the University's curriculum process. Review CSU Major Completion Maps on the "Major Completion Map" tab for each undergraduate program of study listed in this General Catalog.

There are some majors that a student may not be able to complete in four years because of additional degree requirements recognized by the Colorado Department of Higher Education.

The Bill of Rights also includes:

§ 23-1-125. Commission directive - student bill of rights - degree requirements - implementation of core courses - competency test - prior learning

1. Student bill of rights. The general assembly hereby finds that students enrolled in public institutions of higher education shall have the following rights:
   a. Students should be able to complete their associate of arts and associate of science degree programs in no more than sixty credit hours or their baccalaureate programs in no more than one hundred twenty credit hours unless there are additional degree requirements recognized by the commission;
   b. A student can sign a two-year or four-year graduation agreement that formalizes a plan for that student to obtain a degree in two or four years, unless there are additional degree requirements recognized by the commission;
   c. Students have a right to clear and concise information concerning which courses must be completed successfully to complete their degrees;
   d. Students have a right to know which courses are transferable among the state public two-year and four-year institutions of higher education;
   e. Students, upon completion of core general education courses, regardless of the delivery method, should have those courses satisfy the core course requirements of all Colorado public institutions of higher education;
   f. Students have a right to know if courses from one or more public higher education institutions satisfy the students' degree requirements;
   g. A student's credit for the completion of the core requirements and core courses shall not expire for ten years from the date of initial enrollment and shall be transferrable [sic].

Students' Rights Regarding Their Education Records

Students have certain rights concerning their "education records" under the Family Educational Rights and Privacy Act (FERPA), as amended, 20 U.S. 1232g et. seq. Please see the FERPA (Student Privacy) section of this catalog for more information on FERPA.

Right to Discuss Concerns with Department Heads/Chairs

Academic department heads are expected to incorporate student input into decisions affecting academic instruction, advising, and student learning assessment. This input usually takes form through departmental advisory committees and student evaluation of faculty members. Individual students, however, may make appointments with their department heads to discuss specific problems, plans, or suggestions.

Right to File a Grade Appeal

Instructors are responsible for stating clearly the instructional objectives of the course at the beginning of each term and for evaluating student achievement in a manner consistent with these objectives. Students are responsible for maintaining standards of academic performance established for each course in which they are enrolled. Instructors are responsible for determining and assigning final course grades. Graded examinations, papers, and other materials used as a basis for evaluating a student's achievement will be available to the student for inspection and discussion.

Students may appeal instructors' grading decisions. The burden of proof, however, rests with the student. More information is available in Grading.

Right to File a Complaint

CSU is committed to treating all students fairly and respectfully. CSU's policies that apply to students are published annually in the General Catalog, in addition to those found in other resources from individual departments and offices. In an instance of perceived violation of a CSU policy, a student may file a complaint in accordance with the Student Complaint Reporting (http://policylibrary.colostate.edu/policy.aspx?id=603) policy.

When a student encounters a problem on campus that they do not know how to resolve, they should always try to work the problem out by first discussing it with those involved. Dealing with concerns in the most direct and honest fashion should always be the first step toward resolution. Many problems are resolved when a student makes an appointment with a faculty or staff member and calmly and honestly communicates their concerns.

If, however, an issue or problem still exists, a student may initiate the formal complaint procedures at CSU. All formal complaints must be put in writing and must be signed by the student (including electronic or digital facsimile signatures clearly attributable to the student--for example, the student's name in an email message received from their CSU email account). A Student Complaint Form is provided as a tool for presenting a written complaint, but is not required.

Procedures for Filing a Written Complaint

1. Attempt an informal resolution of the matter as noted above.
2. Complete the Student Complaint Form and mail, email, or deliver it to the VPSA by mail, email, or campus delivery to:

   Vice President for Student Affairs
   Attn: Dean of Students
   201 Administration Building
   8004 Campus Delivery
   Fort Collins, CO 80523-8004

   email: VPSA@colostate.edu

   Tel: (970) 491-5312

   Fax: (970) 491-7025

The VPSA Office will notify you with an acknowledgement that the complaint was received.

NOTE: All Student Complaints must be submitted in writing. A complaint reported by telephone will not be considered as submitted for review.

Complaint Review and Resolution Process

The VPSA Office is not an advocate for any party to a dispute but is an advocate for a fair process. Acting as a neutral, third party, the Dean of Students or their designee will first attempt to resolve the complaint by working with the student and the appropriate CSU employees and officials to assure a fair process. The Dean of Students may refer the matter to the Student Resolution Center for assistance in attempting an informal resolution. This assures that the complaint is considered by the appropriate officials and receives an impartial review.

If the matter is not able to be resolved informally, the Dean of Students will forward the complaint to the appropriate CSU Vice President or other official for further review and attempt to resolve the matter. If the matter is still not resolved to the Student's satisfaction, the Dean of Students will help identify other resources that may be available to the Student including any appeals that may be available from agencies external to CSU, including the Colorado Department of Higher Education (CDHE) and Higher Learning Commission (HLC). Contact information for these agencies is provided in the full policy document (http://policylibrary.colostate.edu/policy.aspx?id=603).

The complete policy and procedures for filing a student complaint is available through the Policy Library (http://policylibrary.colostate.edu).

Right to Seek Membership in Student Organizations

CSU officially recognizes a great variety of student organizations. Policies established by the Board of Governors prohibit any recognized student organization from excluding students from membership on the basis of race, age, creed, color, religion, national origin, ancestry, sex, gender, disability, veteran status, genetic information, sexual orientation, gender identity or expression, or pregnancy.

All recognized student organizations must assure CSU that their membership policies and procedures are in compliance with this policy. Local chapters of regional, national, or international organizations must assure CSU that membership policies of the parent organization do not require the local chapter to exclude any student from membership on the basis of race, age, creed, color, religion, national origin, ancestry, sex, gender, disability, veteran status, genetic information, sexual orientation, gender identity or expression, or pregnancy.

Victims' Rights

The University is committed to providing appropriate support and referrals to persons who have been the victims of crimes or violations of University Policy or the Student Conduct Code. A victim of another person's unlawful or prohibited actions may seek personal support, explore options, and report the incident.

Confidential services are available through the Victim Assistance Team (http://www.wgac.colostate.edu/support), University Counseling Center (https://health.colostate.edu/about-counseling-services), CSU Health

Network (http://health.colostate.edu), and Student Legal Services (http://sls.colostate.edu). Other University agencies may be required by law and University policy to take appropriate action when notified. Victims may receive assistance from other appropriate University resources, such as relocation within or to campus housing; academic support services; notification of appropriate persons/agencies; and, at the victim's request, University cooperation in using University procedures to deter harassment or retribution.

Students are encouraged to report complaints of:

- Sexual harassment or discrimination to the Office of Equal Opportunity (http://oeo.colostate.edu); (http://oeo.colostate.edu)
- Crimes to the Colorado State University Police (http://police.colostate.edu);
- Violations of the Student Conduct Code to residential staff (http://reshallpolicies.colostate.edu) or Student Conduct Services at the Student Resolution Center (https://resolutioncenter.colostate.edu);
- Interpersonal and sexual violence to the Office of Support and Safety Assessment (http://www.supportandsafety.colostate.edu), Colorado State University Police (http://police.colostate.edu), and Victim Assistance Team (http://www.wgac.colostate.edu/support) (confidential resource);
- Violations of their right to free speech in the classroom directly to the instructor involved or the department chair or Student Conduct Services (https://resolutioncenter.colostate.edu) at the Student Resolution Center.

Sexual Misconduct Reporting Exemption: The University encourages reporting of sexual misconduct by the impacted party or others who are aware of sexual misconduct incidents. To encourage reporting, it is the practice of Student Conduct Services (https://resolutioncenter.colostate.edu) to not charge reporting parties for other, lesser violations of this Student Conduct Code that may be related to the sexual misconduct incident. For example, a student who may have been under the influence of drugs or alcohol at the time of experiencing or witnessing a sexual misconduct incident will not be charged with drug or alcohol violations in connection with the reported incident.

Resources

Students who have questions, concerns, or need assistance with application of rights listed above may contact the pertinent resource including: Student Resolution Center, Office of the Vice President for Student Affairs, Office of Equal Opportunity, Provost/Executive Vice President's Office, or academic department office. If unclear as to which office to approach, begin with the Student Resolution Center (https://resolutioncenter.colostate.edu).

Students' Responsibilities

CSU has twice been ranked among the nation's Top Character Building Institutions (http://www.news.colostate.edu/release.aspx?id=1943) by the Templeton Foundation. Through curricular and co-curricular programs, students at CSU develop knowledge and skills to engage as respectful citizens in a diverse society, recognize the implications of their many choices, and become ethically responsible individuals. The policies that follow reflect CSU's continuing commitment to uphold the highest standards of ethical responsibility and conduct.

Classroom Behavior
Student Health Insurance Requirement
First Year Residence Hall Requirement
Academic Integrity/Misconduct
CSU Student Conduct Code

Classroom Behavior

The classroom instructor is responsible for controlling the conduct of the class and the demeanor and behavior of the students in exercising classroom discipline, subject to accepted departmental, college, and University standards and practices. CSU policy permits only enrolled students, persons authorized by the instructor, and administrative personnel to be admitted to instructional areas during scheduled periods. CSU policy and Colorado state law also prohibit all forms of disruptive or obstructive behavior in academic areas during periods of scheduled use or any actions which would disrupt scheduled academic activity. Use of classrooms and other areas of academic buildings during nonscheduled periods is permitted only in accordance with departmental, college, or CSU practices.

Any person or persons in unauthorized attendance or causing a disturbance during scheduled academic activity shall be identified by the instructor and asked to leave. Persons refusing such a request may be removed by the CSU police and are liable to legal prosecution and/or disciplinary action.

Student Health Insurance Requirement

Domestic students taking six or more resident instruction credits, and all INTO and international students enrolled in any credit level, are required to have health insurance. Eligible students will be automatically enrolled in the CSU Student Health Insurance Plan (http://health.colostate.edu/student-health-insurance) unless they waive coverage by showing proof of private health insurance.

First Year Residence Hall Requirement

Experience and research has demonstrated that students who live on campus adjust to college life faster, have higher GPAs, and are more likely to graduate than students who live off campus. For this reason, all newly admitted first-year students without previous college experience, who are single, under 21 years of age, and not living with their parents in the Fort Collins area, are required to live their first two consecutive semesters in a residence hall (http://reshallpolicies.colostate.edu/residence-hall-contract-guidelines). Credits taken concurrent with high school and/or credits attained through Advanced Placement (AP) do not apply toward living experience.

Academic Integrity/Misconduct

The foundation of a university is truth and knowledge, each of which relies in a fundamental manner upon academic integrity and is diminished significantly by academic misconduct. Academic integrity is conceptualized as doing and taking credit for one's own work. A pervasive attitude promoting academic integrity enhances the sense of community and adds value to the educational process. All within the University are affected by the cooperative commitment to academic integrity.

Faculty/instructors shall work to enhance a culture of academic integrity at the University.

Each course faculty member/instructor shall clearly state in his or her course syllabus that the course will adhere to the Colorado State University General Catalog Academic Integrity Policy and Student Conduct Code. In addition, by the end of the second week of classes and/or in the syllabus, the faculty member/instructor shall address academic integrity as it applies to his or her course by providing guidelines about course elements for the students.

Each course faculty member/instructor shall provide the opportunity for students to sign an affirmative honor pledge on any course components of the faculty/instructor's choosing. The honor pledge shall include one of the following statements and may be expanded according to faculty/instructor's, department, or college practices and policies:

HONOR PLEDGE: I have not given, received, or used any unauthorized assistance.

HONOR PLEDGE: I will not give, receive, or use any unauthorized assistance.

A course faculty member/instructor may offer the student the opportunity to write out the pledge if deemed practicable. Students may be given the opportunity to include an honor pledge along with electronic submissions of their work. A student's decision to forego signing the honor pledge shall not be used as evidence of academic misconduct and shall not negatively impact a student's grade.

Academic misconduct (see examples below) undermines the educational experience at Colorado State University, lowers morale by engendering a skeptical attitude about the quality of education, and negatively affects the relationship between students and faculty/instructors.

Faculty/Instructors are expected to use reasonably practical means of preventing and detecting academic misconduct. Any student found responsible for having engaged in academic misconduct will be subject to academic penalty and/or University disciplinary action.

Students are encouraged to positively impact the academic integrity culture of CSU by reporting incidents of academic misconduct.

Examples of academic misconduct include (but are not limited to):

1. Cheating – Cheating includes using unauthorized sources of information and providing or receiving unauthorized assistance on any form of academic work or engaging in any behavior specifically prohibited by the instructor in the course syllabus or class presentation.
2. Plagiarism – Plagiarism includes the copying of language, structure, images, ideas, or thoughts of another, and representing them as one's own without proper acknowledgment, and is related only to work submitted for credit. Also included is the failure to cite sources properly; sources must always be appropriately referenced, whether the source is printed, electronic or spoken.
3. Unauthorized Possession or Disposition of Academic Materials – Unauthorized possession or disposition of academic materials includes the unauthorized selling or purchasing of examinations, term papers, or other academic work; stealing another student's work; and using information from or possessing exams that an instructor did not authorize for release to students.
4. Falsification – Falsification encompasses any untruth, either verbal or written, in one's academic work.
5. Facilitation of any act of Academic Misconduct – Facilitation of any act of academic misconduct includes knowingly assisting another to commit an act of misconduct.

(Academic Integrity policies appear in the Graduate and Professional Bulletin, the Faculty and Administrative Professional Manual, and the Honor Code of the Professional Veterinary School and the School of Public Health as applicable.)

Procedures for Dealing with Academic Misconduct

Faculty/Instructors are expected to use reasonably practicable means of preventing and detecting academic misconduct. If a faculty member/instructor has evidence that a student has engaged in an act of academic misconduct in his or her course, prior to assigning any academic penalty, the faculty member/instructor shall notify the student of the concern and make an appointment with the student to discuss the concern. The student shall be given the opportunity to give his or her position on the matter. After being given the opportunity, if the student admits to engaging in academic misconduct, or if the faculty member/instructor judges that the preponderance of evidence supports the allegation of academic misconduct, the faculty member/instructor may then assign an academic penalty. Examples of academic penalties include assigning a reduced grade for the work, a failing grade in the course, removing the Repeat/Delete option for that course, or other lesser penalty as the faculty member/instructor deems appropriate. The faculty member/instructor shall notify the student in writing of the infraction and the academic penalty to be imposed. A copy of this notification shall be sent to Student Resolution Center.

Faculty/instructors have a responsibility to report to Student Conduct Services (https://resolutioncenter.colostate.edu) at the Student Resolution Center (https://resolutioncenter.colostate.edu) all cases of academic misconduct in which a penalty is imposed. Incidents which the faculty member/instructor considers major infractions (such as those resulting in the reduction of a course grade or failure of a course) should be accompanied by a recommendation that a hearing be conducted to determine whether additional university disciplinary action should be taken.

If the student disputes the decision of the faculty member/instructor regarding alleged academic misconduct, he or she may request a hearing with Student Conduct Services (https://resolutioncenter.colostate.edu/conduct-services). The request must be submitted or postmarked, if mailed, no later than 30 calendar days after the first day of classes of the next regular semester following the date the grade for the course was recorded. If no appeal is filed within the time period, the decision of the faculty member/instructor will be final.

If, after making reasonable efforts, the faculty member/instructor is unable to contact the student or is unable to collect all relevant evidence before final course grades are assigned, he or she shall either:

1. Assign an interim grade of Incomplete and notify the student in writing of the reason for this action; or
2. Refer the case to Student Conduct Services (https://resolutioncenter.colostate.edu) for a hearing before deciding on a penalty.

A hearing will be conducted with Student Conduct Services (https://resolutioncenter.colostate.edu) to determine whether a preponderance of evidence exists in support of the allegations of academic misconduct. If the Hearing results in a finding of insufficient evidence to support the allegation or clears the student of the charges, the faculty/instructor

will determine a grade based on academic performance and without reflection of the academic misconduct charge and change any previously assigned grade accordingly. If the Hearing results in finding of academic misconduct, the Hearing Officer and faculty member/instructor will confer regarding appropriate sanctions. The faculty member/instructor will make the final determination regarding academic penalties, which may include, among other options, assigning a reduced grade for the course, assigning a failing grade in the course, removal of the Repeat/Delete option for that course, or other lesser penalty as the course faculty/instructor deems appropriate. The Hearing Officer will make the final determination regarding University disciplinary sanctions.

In a case of a serious incident or repeat offense of academic misconduct that is upheld through a hearing, the Hearing Officer and the faculty member/instructor shall decide whether the student's transcript will be marked with a notation of "AM," which will be explained on the student's transcript as a "finding of Academic Misconduct." A notation of "AM" will be made on the student's transcript only if the Hearing Officer and the faculty member/instructor agree that this penalty should be imposed.

Grades marked on the student's transcript with the designation "AM" will not be eligible for the Repeat/Delete Policy (http://registrar.colostate.edu/academic-resources/repeat-delete).

Information about incidents of academic misconduct is kept on file in the Student Resolution Center (https://resolutioncenter.colostate.edu) office. No further action is initiated unless the incident constitutes a major infraction, the student has a prior record of University infractions, or there are subsequent reports of misconduct.

CSU Student Conduct Code

The Student Conduct Code exists to notify students, faculty, and staff of the specific expectations Colorado State University holds related to student behavior and the rights and responsibilities that accompany being a student and participating in student organizations.

Colorado State University expects students to maintain standards of personal integrity in harmony with its educational goals; to be responsible for their actions; to observe national, state, local laws, and University regulations; and to respect the rights, privileges, and property of other people.

The student conduct process is intended to be a learning experience which can yield growth, behavioral changes, and personal understanding of one's responsibilities and the consequences and impacts of one's actions. This process balances the needs and rights of students with the needs and expectations of the University and larger community. It supports and values Colorado State University's Principles of Community and offers a continuum of responses, many of which are educational and restorative in nature. Students are treated with care and respect while being afforded the opportunity to receive a fair hearing. Sanctions and interventions are designed to promote the University's educational mission.

The Student Conduct Code defines University intervention, resolution options and possible disciplinary action related to the behavior of both individual students and student organizations.

The Student Conduct Code is available:

1. On the web at Student Resolution Center (https://resolutioncenter.colostate.edu/student-conduct-code)
2. In print copy at:
    - Student Resolution Center, 501 West Lake St., Suite A

ABOUT THE CATALOG

Colorado State University reserves the right at any time, without notice, to change, modify, or cancel any course, program, procedure, policy, financial requirement, or disciplinary arrangement set forth in this catalog whenever, in its sole discretion, it determines such action to be appropriate. Furthermore, Colorado State University will not be responsible for any failure to present or complete any course or program or to perform any other activity, function, or obligation mentioned in this catalog. Since changes may occur at any time, students must check the relevant website (as noted on various pages in this catalog).

Glossary
Catalog Updates

Glossary

This glossary defines terms to assist users to better understand content in the General Catalog.

Term	Definition
Bachelor's Degree	An award conferred by CSU signifying that the recipient has satisfactorily completed a minimum of 120 credit hours in an undergraduate course of study.
Catalog Updates	The General Catalog is published online once annually prior to the beginning of the fall term. Changes made to policy or curriculum after publication that are effective in the catalog year (spring or summer terms) will be noted in the Catalog Updates section of the General Catalog (left navigation bar under “About the Catalog”).
Certificate - Graduate	A Graduate Certificate is used to identify the successful completion of a focused area of study deemed important to a student's career objectives. A Graduate Certificate consists of a minimum of 9 specified credits, and not more than 15 credits at the 500 level or above.
Certificate - Undergraduate	An Undergraduate Certificate is used to identify the successful completion of a focused area of study deemed important to a student's career objectives. Certificates are an option and are offered by certain departments. An undergraduate certificate consists of a minimum of 9 specified credits, and not more than 15 credits. A minimum of 9 credits must be course work at the upper-division level (300-400).
CEU	Continuing Education Unit (CEU) or Continuing Education Credit (CEC) is a measure used in continuing education programs, often those required in a licensed profession, for the professional to maintain a license or certification.
Concentration	A concentration is a sequence of at least 12 semester credits of designated courses within a major designed to accommodate specific interests of undergraduate students.
Credit	Unit that gives weight to the value, level or time requirements of an academic course taken at CSU
Credit hour	A credit hour is defined as a minimum of 50 minutes of lecture or discussion/recitation per week for 16 weeks (800 minutes in a semester), 100 minutes of laboratory per week for 16 weeks (1600 minutes in a semester) when outside preparation is required, or 150 minutes of laboratory per week for 16 weeks (2400 minutes in a semester) when no outside preparation is required.
Credit load	For workload planning purposes (and to graduate with 120 credits in eight semesters), students should plan on an average of 15 credits per semester and should expect that each credit hour will require approximately two to three hours (for some students in some classes, more time and in a few classes less time) of effort per week to accomplish readings and out-of-class assignments in preparation for successful completion of the course requirements.
Degree	An academic degree is the recognized completion of studies at CSU. A diploma is issued in recognition of having satisfactorily completed the prescribed course of study.
Degree Completion Program	Selected undergraduate majors offered by CSU, student usually transfers in 60 credits from another institution(s) and completes the degree at CSU.
Diploma	An academic credential issued by CSU signifying the recipient has successfully completed a particular course of study, which confers the degree.
Faculty - Instructor	Typically a non-tenure track faculty member that focuses on the teaching mission of the university.
Faculty - Assistant Professor	A tenure track or non-tenure track faculty member early in their career. After 5 years of service they are reviewed for advancement to associate professor. All faculty members at every rank are reviewed annually for performance.
Faculty - Associate Professor	A tenured or non-tenure track faculty member whose performance in teaching, scholarly activities, and service has supported their promotion to associate professor. Tenured faculty typically have responsibility in all three areas whereas non-tenure track faculty generally focus on teaching or scholarship.
Faculty - Full Professor	A tenured or non-tenure track faculty member who has attained the rank of professor and is recognized for significant accomplishments at CSU and/or nationally and internationally in their field.
Grade mode - Instructor Option	Allows the instructor to choose and inform the class whether Traditional or (S/U) Satisfactory/Unsatisfactory grading will be used for a course.

Grade mode - Student Option	Either Traditional or Satisfactory/Unsatisfactory grading selected by the student at the time of registration.
Grade mode - Satisfactory/ Unsatisfactory	Performance equivalent to a grade of C or better is recorded as Satisfactory. Performance equivalent to D or F is recorded as Unsatisfactory. Neither S or U grades are used in calculating the CSU GPA.
Grade mode - Traditional	Uses letter grades A to F. Instructor has the option to use pluses (+) or minuses (-) as indicated in the catalog section on Grading. Effective Fall 2008, C-, D+, and D- grades are not assigned at CSU.
Graduate level	Degrees at the masters, doctorate, or professional level. Graduate level courses are those numbered 500 and above.
Incomplete (grade)	Used when circumstances prevent student from completing course work, agreement to be made with instructor for completion. An "I" grade converts to F if not completed within one year.
Independent Study	Individualized learning not available in courses, which allows a student to work independently with the approval and guidance of a supervising instructor for predetermined credits.
Interdisciplinary Studies Program	Graduate level program that is intra-college (within one college) or intra-university (across disciplines of more than one college). They are a series of courses focused on a particular problem or area of concern providing mulit-disciplinary perspectives.
Licensure--teacher/educator	A series of courses including student teaching preparing students to be PK-12 teachers/educators. CSU in cooperation with the state offers credentials in areas listed in the School of Education section. Undergraduate students major in a discipline (e.g., Music, Agriculture, Early Childhood, Chemistry).
Major	A sequence of courses in an academic discipline or area, which when accompanied by appropriate supporting courses, leads to an undergraduate degree.
Major Completion Map	A semester-by-semester course plan to complete their baccalaureate degree within the minimum number of semesters indicated in the major. An advising tool to guide the student through their program of study.
Minor	A sequence of related courses (minimum of 21 credits), which provide a student with unique opportunities to complement the major. Minors may be disciplinary (e.g., economics, range ecology) or interdisciplinary (e.g., film studies, gerontology) and are offered only at the undergraduate level.
Option	A sequence of courses within a major or concentration of either guided electives or electives selected from areas of interest as approved by the department (not identified on a transcript)
Prerequisite	A course(s) and or minimum grade requirement that must be completed to be prepared for the next course or sequence of courses.
Program of Study	Content and scope of knowledge, abilities, and skills a student is expected to master in a field of study, as well as the content and topics that are studied at each level.
Restriction	Conditions that apply to courses at the section level to limit registration in a course. Restrictions include department approval, field of study, college, student level, student class, campus location and/or student attribute.
Second Baccalaureate Degree	Enrollment classification for students who have earned one or more bachelor's degrees. An option when one is changing fields or careers.
Special Academic Unit–SAU	Multidisciplinary units (across departments) with courses and/or programs addressing complex problems and issues (e.g., sustainability, biomedical engineering). SAUs may grant degrees.
Specialization	A recognized area of specialty within a graduate program. Graduate degrees may or may not have specializations. Specializations are identified on the transcript.
Transcript - Official	Official copy of a student's permanent academic record at CSU, which includes all CSU courses taken, grades received, honors (Dean's List, graduation with distinction), and degrees conferred.
Undergraduate	A student at CSU pursuing a bachelor's degree program (usually 4 years).
Undergraduate - Freshman	0-29 credits earned at CSU and accepted in transfer.
Undergraduate - Sophomore	30-59 credits earned at CSU and accepted in transfer.
Undergraduate - Junior	60-89 credits earned at CSU and accepted in transfer.
Undergraduate - Senior	90+ credits earned at CSU and accepted in transfer.

Catalog Updates

For New Courses approved for Spring 2020 after August 1, 2019 please see the Spring 2020 Class Schedule. Experimental Courses for the 2019-20 Academic Year can also be found in the Class Schedule. The Class Schedule (http://registrar.colostate.edu/registration/class-schedule) may be accessed through RAMweb (https://ramweb.colostate.edu/registrar/Public/Login.aspx) or ARIESweb.

UNDERGRADUATE ADMISSIONS AND ENROLLMENT

Office of Admissions (https://admissions.colostate.edu)
University Welcome Center, Ammons Hall
1062 Campus Delivery
Fort Collins CO 80523-1062
(970) 491-6909, admissions@colostate.edu

All inquiries and correspondence about undergraduate admission can be addressed to the Office of Admissions.

Prospective graduate students should consult the Graduate School website (http://graduateschool.colostate.edu/for-prospective-students) and the key advisor(s) in the academic department(s) (http://graduateschool.colostate.edu/programs) being considered.

CSU Board of Governors and Undergraduate Admission Standards

The following undergraduate admission information reflects minimum requirements that may be subject to change after the General Catalog has been published. The Board of Governors of the Colorado State University System (http://csusystem.edu) reserves the right to deviate from published admission requirements. In such cases, changes in admission policy will be publicized.

CSU's Philosophy of Undergraduate Admission

CSU is committed to a comprehensive, individual review process that can take into consideration a wide range of factors, such as past academic course work and achievement, test scores, essay, leadership qualities, school and community service, recommendations, geographic residence, first generation status, and ability to contribute to a vibrant and diverse campus community. We strive to carefully craft our student body in order to meet our enrollment goals, embody our institutional Land Grant mission, and create a compelling learning environment.

CSU actively seeks academically qualified individuals with varied backgrounds, perspectives, and goals who demonstrate the potential to attain a degree from Colorado State University. Because CSU receives more applications than it can honor and because our commitment to diversity is an important educational objective, the admission evaluation process and our admission decisions reflect and rest upon the range of factors outlined above.

General Policies for Undergraduate Admission
Undergraduate Applicant Definitions
Undergraduate Profiles and Decision Factors
How to Apply
International Undergraduate Admission
Enrollment Deposit
Transfer and Test Credit

General Policies for Undergraduate Admissions

Final Transcript Required

Admission is provisional until we receive a final, official transcript reflecting completion of all course work and proof of graduation or degree completion (as applicable).

High School Graduation (or Equivalent) Required

Freshman/first-year applicants can be admitted with high school graduation pending (i.e., during their final year of high school) with the expectation that proof of graduation is provided before the start of their first semester. Financial Aid cannot be not released without proof of high school graduation or equivalent. A hold is placed on course registration prior to the start of the second semester for students who have not demonstrated high school graduation or equivalent.

Transfer applicants with fewer than 60 credits in transfer must demonstrate high school graduation before an admission decision can be rendered. Financial Aid cannot be not released without proof of high school graduation or equivalent.

Affirmation Statements and Conduct Requirements

Before submitting an application to CSU, students must acknowledge that all information in the application and any other supporting materials is their own work, factually true and honestly presented. Applicants also signify their understanding that they may be subject to a range of possible disciplinary actions, including admission revocation, expulsion or revocation of course credit, grades and degree should the information they have certified be false. If applicable, sponsoring agencies are informed of this decision.

CSU is committed to providing a safe and welcoming environment that fosters student success, and our pre-admission review of non-academic conduct is one component (authorized by C.R.S. 23-5-106.5). A limited range of past non-academic conduct incidents receive confidential consideration prior to the application review process and do not automatically disqualify an applicant from full consideration for non-degree enrollment, admission or scholarships. Applicants have the right to appeal an admission or enrollment decision made based on any information required to be disclosed at the point of application. Students may be subject to additional, broader conduct review after admission for campus housing and/or campus activities. As part of the Affirmation Statement requirement in an application, all applicants agree to update their application record in the event they experience a non-academic conduct incident after application submission.

Selective Service Registration

In compliance with C.R.S. 23-5-118, all males between the ages of 17 years and 9 months and 26 years must respond to a Selective Service Registration prompt within the application. While not all males are required to register with the Selective Service (visit https://www.sss.gov/ for a list of exceptions), those who are required to register must certify registration under oath before being allowed to register for courses.

Individuals providing false information are subject to penalty of law and disenrollment.

Immunization Requirement

CSU, in compliance with Colorado State laws and Health Department regulations, requires persons born January 1, 1957 or later to show proof of two vaccinations for measles and mumps, and one vaccination for rubella (MMR) or to show written evidence of laboratory tests showing immunity.

Colorado law, Colo. Rev. Stat. § 23-5-128, also requires every student residing in student housing to fulfill two requirements for Meningococcal Vaccine:

1. Access the CSU Health Network Portal (http://www.health.colostate.edu) to sign a statement that the student has reviewed the Meningococcal Disease Information Document, which describes meningococcal disease and the vaccine that can prevent the disease.
2. Indicate whether student a) received the Meningococcal Vaccine, b) plans to have the vaccine administered, or c) is "waiving" the requirement and declining to receive the vaccine.

Submit immunization records or laboratory results to the CSU Health Network prior to arrival at school. Additional information concerning immunization should be directed to:

Immunizations Office
CSU Health Network
Immunizations Clinic
8031 Campus Delivery
Colorado State University
Fort Collins, CO 80523-8031 CSUHN_immunize@mail.colostate.edu
Phone: (970) 491-6548, Fax: (970) 491-0268

Undergraduate Applicant Definitions

The following definitions apply to all U.S. citizens, permanent residents, and international applicants. The International Admissions section includes additional details specific to international applicants and U.S. citizens/permanent residents educated outside the U.S.

Freshman/First-Year Students
Transfer Students
Second Bachelor's/Post-Bachelor Candidates
Returning Students

Freshman/First-Year

You are a freshman/first-year applicant if you've never attended college OR all of your college credits were earned prior to high school graduation (or equivalent).

- Refer to instructions for dual/concurrent enrollment if you've taken college course work during or as your high school curriculum.
- Details for students who did not graduate from high school, homeschooled, graduated early, or completed an online high school diploma are below.
- Freshman decision factors also apply to transfer applicants with fewer than 30 post-high school credits at the point of application.

Refer to the freshman/first-year application guide (https://admissions.colostate.edu/apply/freshmen) on the Admissions website for details.

Specialized Freshman/First-Year Populations

This information applies to freshman/first-year applicants **and** transfer applicants with fewer than 30 post-high school credits at the point of application.

Dual/Concurrent Enrollment Applicants

See the Admissions website for dual/concurrent enrollment applicants (https://admissions.colostate.edu/dual-enrollment).

Applicants whose *only* college course work has been completed during high school or as their high school curriculum are considered freshman/first-year applicants with dual/concurrent enrollment.

While high school credentials still are the primary basis for the admission decision for dual/concurrent enrollment students, college performance can be considered in the admission decision and is considered a demonstration of academic rigor comparable to completion of Advanced Placement (AP) and/or International Baccalaureate (IB) work. Courses will be evaluated for advanced-standing credit after an applicant is otherwise deemed admissible.

Dual/concurrent enrollment students are eligible for freshman/first-year scholarships and are required to live in the residence halls.

Non-High School Graduates

See the Admissions website for Non-High School Graduates (https://admissions.colostate.edu/non-high-school-graduates).

We're committed to making an exceptional college education accessible to students from a wide range of backgrounds. Differences in educational background are a welcome part of the mix. Students who did not graduate from high school are welcome to apply with evidence of high school equivalency earned through GED, HiSet or TASC. To be eligible for admission, non-high school graduates must present qualifying high school equivalency test results in addition to demonstrating other evidence of academic readiness through transcript(s), ACT/SAT results (if applicable), and support documents.

Applicants who have completed a state-approved completion exam other than the GED, HiSet or TASC are evaluated on a case-by-case basis.

Note: For transfer applicants with more than 30 but fewer than 60 college-credits completed since earning high school equivalency, GED/HiSet/TASC is used for verification of completion only; scores are not considered in the admission decision.

Homeschooled Applicants

See the Admissions website for homeschooled applicants (https://admissions.colostate.edu/homeschool).

Homeschooled applicants are welcome at CSU and are evaluated for admission according to general admission criteria; there are no special requirements for applicants who have homeschooled.

We recognize that homeschooling can allow for customized teaching methods, curricula, and learning environments that may differ from "traditional" education models. Our comprehensive, individual review process is designed to accommodate unique backgrounds as long as we can assess core academic factors in our review of credentials.

Your homeschool transcript can take any form as long as we can determine 1) how you completed the recommended high school course work (https://admissions.colostate.edu/18units) and 2) how you were graded, assessed, or considered to have "mastered" content to move on in your chosen curriculum. If you did not follow a traditional academic calendar or age-based instruction, if you were not assessed using traditional letter or percentile grades, or if you have otherwise customized your homeschool experience so that something other than a traditional transcript with courses and grades is necessary to understand your college preparation, we encourage you to include with your application a description of the learning environment, a list of courses and brief statement about course content, and an explanation of how your content-mastery was assessed.

Be sure to reference information for dual/concurrent enrollment applicants if you are using college enrollment as your homeschool curriculum (i.e., completing community college work as your junior/senior year equivalent).

Early Graduates

See the Admissions website for early high school graduates (https://admissions.colostate.edu/early-graduates).

Freshman/first-year applicants who complete high school in fewer than four years are evaluated for admission according to general admission criteria. Admission preference is given to students who maximize their high school experience by taking accelerated and/or academically rigorous course work such as Advanced Placement (AP), International Baccalaureate (IB) and/or dual enrollment college courses in order to satisfy the recommended high school course work (https://admissions.colostate.edu/18units).

Whether you are graduating high school one semester or one year early, fall entrance is strongly recommended. Students who leave high school one semester early are not eligible for spring semester entry if the date of graduation that will appear on the final high school transcript is May/June (end of spring semester).

Online High School Students

See the Admissions website for online high school students (https://admissions.colostate.edu/online-high-school).

Applicants who complete all or part of their high school curriculum online are evaluated for admission according to general admission criteria. Admission preference is given to students who maximize their high school experience by taking accelerated and/or academically rigorous course work such as Advanced Placement (AP), International Baccalaureate (IB) and/or dual enrollment college courses in order to satisfy the recommended high school course work (https://admissions.colostate.edu/18units), so online high school completion programs that include strong college-prep rigor are encouraged.

While we are flexible in our recognition of online high school completion programs and do not require a specific type of accreditation, regional accreditation typically is a good indication of alignment with our admission criteria.

Transfer Students

You are a transfer applicant if you have enrolled in any amount of college-level course work at a regionally-accredited college/university after high school graduation or equivalent. If you will have completed 30 or fewer post-high school college credits at the point of application, the admission decision also will include consideration of your high school credentials. Learn more about Transfer and Test Credit here.

Refer to the transfer application guide (https://admissions.colostate.edu/apply/transfer) on the Admissions website for details.

Second Bachelor's/Post-Bachelor Candidates

You are a second bachelor's/post-bachelor applicant if you will have completed an undergraduate degree, you wish to begin a new undergraduate degree and/or complete additional undergraduate course work, and you have never attended CSU as a degree-seeking undergraduate student.

Refer to the second bachelor's application guide (https://admissions.colostate.edu/apply/second-bachelor) on the Admissions website for details.

Follow the returning student application guide (https://admissions.colostate.edu/apply/returning) if you've ever attended CSU as a degree-seeking undergraduate student.

Returning Students

You are a returning student if you were previously enrolled at CSU as an admitted, degree-seeking undergraduate student, you left for at least one fall or spring semester while your degree was in progress or you completed your CSU degree, and you wish to return as an admitted, degree-seeking undergraduate student to finish a degree in progress or to begin a new CSU degree program.

Refer to the returning student application guide (https://admissions.colostate.edu/apply/returning) on the Admissions website for details.

Undergraduate Profiles and Decision Factors

Freshman/First-Year Profile and Decision Factors
Transfer Profile and Decision Factors
Second Bachelor/Post-Bachelor Decision Factors
Returning (Former) CSU Student Decision Factors
English Proficiency Requirement
Students with Disabilities

How we review each application and render an admission decision is informed by CSU's undergraduate admission philosophy. Every incoming class looks different as we emphasize high academic standards and access to higher education, part of our land-grant mission.

Freshman/First-Year Profile and Decision Factors

Fall 2018 freshman/first-year class profile

The class profile reflects the middle 50 percent of freshmen/first-year students admitted for Fall 2018. This means 75% of the students we admitted presented credentials at or above the ranges displayed here, and 25% were admitted with credentials slightly below these ranges. While this will help you understand where the center of a class lies, it does not reflect minimum requirements to be admitted. Scores are shown

for the redesigned SAT (https://admissions.colostate.edu/apply/2016-sat-redesign).

Middle 50% GPA: 3.4-4.0 (4.0 scale)

Middle 50% ACT Composite: 23-29

Middle 50% SAT Combined: 1100-1300

Higher Education Admission Recommendations (HEAR) and CSU's Recommended High School Course Work Minimums

To be competitive for admission, freshman/first-year applicants and transfers with fewer than 30 post-high school credits are advised to complete at least 18 high school units (https://admissions.colostate.edu/18units) that meet the Colorado Department of Higher Education Higher Education Admission Recommendations (HEAR) and CSU course work recommendations.

The minimum passing grade is D; however, grades of D may not be competitive in a selective admission environment, and grades of C or better are preferred.

Competitive Majors

A few undergraduate majors have more competitive entrance requirements (https://admissions.colostate.edu/competitive-majors) and/or enrollment caps; entrance to these programs is limited to students presenting the strongest academic credentials, and early application is highly recommended.

Details about factors considered in the admission decision are in the freshman/first-year application guide (https://admissions.colostate.edu/apply/freshmen).

Transfer Admission Profile and Decision Factors

Fall 2018 Transfer Profile

The class profile reflects the middle 50 percent of transfers admitted for Fall 2018. That means 75% of the students we admitted had credentials at or above the ranges displayed here, and 25% were admitted with credentials slightly below these ranges. While this will help you understand where the center of a class lies, it does not reflect minimum requirements to be admitted.

Middle 50% Transfer GPA: 2.8-3.5 (4.0 scale)

Middle 50% Transfer Credits: 30-72

To be considered for admission, transfer applicants must present a minimum cumulative GPA of 2.00 (4.000 scale) from all institutions attended and must have completed the admission requirement in mathematics (https://admissions.colostate.edu/requirementinmathematics). Completion of college composition is preferred but not required. Until a transfer applicant has more than 30 post-high school college credits complete, the admission decision also includes review of high school credentials according to our freshman/first-year admission guidelines.

According to federal financial aid requirements, ALL transfer applicants with fewer than 60 credits in transfer must demonstrate high school graduation (or equivalent). Because the transfer evaluation is not completed until after an applicant has been admitted, all transfer applicants are required to submit proof of graduation (or equivalent).

Competitive Majors

A few undergraduate majors have more competitive entrance requirements (https://admissions.colostate.edu/competitive-majors) and/or enrollment caps; entrance to these programs is limited to students presenting the strongest academic credentials, and early application is highly recommended.

Transfer Admission Guarantee

Students who have completed an Associate of Arts or an Associate of Science degree from an accredited Colorado community or junior college after high school graduation (or equivalent) will be guaranteed admission to the University providing that it is the last institution attended and that a cumulative 2.00 GPA (on a 4.000 scale) has been achieved from ALL institutions attended. Entry into a specific major may depend on completion of appropriate prerequisite courses and enrollment limitations of the major.

Details about factors considered in the admission decision are in the transfer application guide (https://admissions.colostate.edu/apply/transfer).

Second Bachelor/Post-Bachelor Decision Factors

To be considered for admission, second bachelor/post-bachelor candidates must present a minimum cumulative GPA of 2.00 (4.00 scale) from all institutions attended and must be seeking a degree program that does not duplicate their first degree. Details about factors considered in the admission decision are in the second bachelor's application guide (https://admissions.colostate.edu/apply/second-bachelor).

Competitive Majors

A few undergraduate majors have more competitive entrance requirements (https://admissions.colostate.edu/competitive-majors) and/or enrollment caps; entrance to these programs is limited to students presenting the strongest academic credentials, and early application is highly recommended.

Returning (Former) CSU Students

Comprehensive details for returning students are available in the returning student application guide (https://admissions.colostate.edu/apply/returning).

The admission decision for students returning to complete a degree in progress is based primarily on their previous CSU performance and their academic standing upon leaving CSU. Students who left the University in good academic standing generally are cleared to return without restrictions. Students who left the University in a probationary or dismissed status should refer to the Scholastic Standards Policy for additional information about qualifying to return to CSU.

Students wishing to return to complete a new undergraduate degree must be seeking a degree program that does not duplicate their first degree.

Competitive Majors

A few undergraduate majors have more competitive entrance requirements and/or enrollment caps; entrance to these programs is limited to students presenting the strongest academic credentials, and

early application is highly recommended. Returning students must have satisfied particular CSU course work and earned specific grades/GPA to be admitted to a major with competitive entrance requirements (http://www.undeclared.casa.colostate.edu/majors-with-entrance-requirements.aspx).

English Proficiency Requirement

Strong English language skills are important to academic success at CSU. To support student success, we require all students whose first language is not English to demonstrate a high level of English proficiency regardless of their citizenship. Applicants from Australia, Canada, Ireland, New Zealand, and the United Kingdom whose first language is English are exempt from this requirement.

TOEFL, PTE Academic or IELTS Academic results are the preferred indicators of English proficiency. For applicants seeking direct admission to CSU, the requirements are as follows:

English Proficiency Exam	Clear Admission
TOEFL IBT (Test of English as a Foreign Language Internet Based Test)	79
IELTS Academic (International English Language Testing Services)	6.5
PTE Academic (Pearson Test of English)	53

Consideration of paper-based TOEFL (PBT) results requires an interview with a member of the international admissions team (https://admissions.colostate.edu/connect-with-csu/find-your-counselor/international-team).

Conditional admission will be offered to students who are academically competitive but have not achieved the necessary score for direct admission or have not submitted a TOEFL, PTE, or IELTS score. Conditionally admitted students are enrolled in the INTO CSU Academic English Program (http://www.intostudy.com/en-gb/universities/colorado-state-university/programs/academic-english). Until the Academic English Program is completed or the required TOEFL, PTE Academic or IELTS score is achieved, enrollment in regular University academic courses is at the discretion of INTO CSU.

Alternative measures of English Proficiency:

- Successful completion of the INTO CSU Academic English Program (conditional admission may be offered to AEP students studying at the advanced level)
- SAT Evidence-Based Reading and Writing score of 550 or higher
- ACT English/Reading score of 21 or higher
- International Baccalaureate (IB) HL English course grade of 5 or higher
- An IGCSE or A-level result of C or better on the English/First Language exam. Test results must be official and not predicted to be considered for direct admission.
- Completion of a U.S. diploma and/or two or more years of secondary transcripts reflecting progress towards a U.S. diploma from a regionally-accredited organization as defined by the U.S. Department of Education
- Completion of at least two semesters of U.S. post-secondary/university course work in English, including college composition and speech with grades of C or better. Courses must have been taken at a regionally-accredited college/university to be considered for direct admission.
- Gaokao/NCEE English score of 105 or higher AND an online interview with an international admissions counselor.
- WAEC/WASSCE English language grade of B3 or better
- Advanced Placement (AP) Language and Composition or Literature and Composition exam result of 4 or higher

Alternative measures of proficiency not listed above may be considered on a case-by-case basis.

Refer to the English proficiency (https://admissions.colostate.edu/internationalstudentshome/englishproficiency) information on the Admissions website for more information.

Students with Disabilities

All applicants are evaluated according to the same University admission standards. We recognize, however, that not every student's personal or educational background is the same.

Disclosure of the presence of a disability is voluntary. Applicants may use components of the application such as the academic explanation, personal statement, or recommendation(s) to identify their disability and to discuss the impact of the disability on their academic record (if any). While this information can be considered if disclosed, it will not be the sole basis for the admission decision.

CSU's Student Disability Center (https://disabilitycenter.colostate.edu) offers admitted students the full range of support services to help students achieve academic success.

How to Apply

Undergraduate Applicants: How to Apply

The information below applies both to domestic and international undergraduate applicants.

Application Materials

All applicants for admission must submit an online application, $50 application fee or fee waiver request, and academic transcripts. Most freshman/first-year applicants also are required to submit test scores, a personal statement, and recommendation(s). Additional information may be requested for the full review of an applicant's application file.

Refer to the appropriate application guides (https://admissions.colostate.edu/applying-to-csu) for details.

Application Fee or Fee Waiver

An application fee is required as part of a complete application; a decision cannot be rendered without it. If payment of the application fee presents a financial hardship (https://admissions.colostate.edu/2017/02/27/qualify-fee-waiver-enrollment-deposit-deferral), applicants can request a fee waiver.

Refer to the Office of Admissions website for the application fee refund policy (https://admissions.colostate.edu/refund-waiver-policies).

High School Transcript and proof of graduation (or equivalent)

High school transcripts are an essential component of the admission decision for all freshman/first-year applicants and for transfer applicants with fewer than 30 post-high school credits.

High school transcripts for transfer applicants with more than 30 post-high school credits are considered only when needed to satisfy the admission requirement in mathematics (https://admissions.colostate.edu/requirementinmathematics).

All freshman/first year applicants and all transfers with fewer than 60 post-high school college credits must submit proof of graduation or equivalent at the point of admission or as soon as the credential is conferred if after admission.

ACT/SAT results

ACT or SAT results are required for freshman/first-year applicants who are under age 23 or who have been out of high school for fewer than five years. Applicants educated outside the U.S. are encouraged but not required to submit ACT or SAT results.

Transfer applicants are encouraged but not required to submit ACT or SAT results for placement purposes if they have not yet taken a transferable college composition course.

We accept SAT results for exams administered prior to March 2016 as well as SAT results from the redesigned test. Refer to the 2016 SAT Redesign (http://admissions.colostate.edu/apply/2016-sat-redesign) for more information.

College Transcript(s)

Freshman/first-year applicants typically are required to submit an official college transcript at the point of application only if college enrollment is being used as their full-time high school curriculum. Refer to College-Level Courses Completed by High School Students for additional information.

Transfer applicants must submit an original, official college transcript from each college attended, regardless of the type of institution, amount or type of credit earned, and age of the credential, even if the work will be reflected in transfer on another transcript. No part of the previous collegiate record may be disregarded. *Failure to include all institutions previously attended is a serious offense that may result in the rescinding of admission, loss of credit, or disenrollment*. Transcripts reflecting courses taken at vocational-technical institutes or colleges that are not regionally accredited can be helpful documentation and may be required, though they do not qualify an applicant for transfer applicant status or advanced-standing credit.

Second Bachelor applicants are only required to submit an official transcript from the college/university from which they earned their first (or most recent) bachelor's degree. Official transcripts from other colleges/universities attended (if applicable) are encouraged if an applicant is seeking a competitive major (https://admissions.colostate.edu/competitive-majors) or to demonstrate explicit pre-requisites for their new degree program.

Advanced standing credit (transfer credit) is only awarded from an original, official transcript.

International Applicants: Additional Requirements

In addition to the documents outlined above, applicants who have completed part or all of their education outside of the US also may be prompted to submit the following:

- A certified English translation of any academic credentials not in English
- Evidence of English Proficiency to be considered for direct admission
- An Immigration Information Form, financial support documentation and a copy of the passport identification page for immigration documentation

Application Timelines

Students can begin their enrollment during fall semester (August start), spring semester (January start) or summer term (May/June start; not recommended for freshman/first-year students).

Applications typically open 10-12 months prior to the first day of classes for the term. Freshman/first-year applicants must have completed at least 75% of their high school curriculum (through junior year equivalent) before a decision can be rendered; transfer applicants must have no more than one academic term in progress when a decision is rendered. Second bachelor's/post-bachelor candidates must be finished with their first degree or in their final term of enrollment with degree pending for a decision to be rendered.

Timelines specific to each applicant type and term are reflected in the application guides (https://admissions.colostate.edu/applying-to-csu).

International Undergraduate Admissions

Non-U.S. citizens educated outside of the U.S. who require a student visa
Non-U.S. citizens educated outside of the U.S. who will NOT require a student visa
Non-U.S. citizens/Non-permanent residents educated inside the U.S.
U.S. citizens/permanent residents educated outside of the U.S.
English Proficiency

Non-U.S. citizens educated outside of the U.S. who require a student visa

- Refer to the International Undergraduate application guide (https://admissions.colostate.edu/international) appropriate to your applicant type (e.g., freshman/first-year, transfer).
- You may be required to demonstrate English proficiency to be considered for direct admission.
- Applicants are required to submit an immigration information form, financial support documentation and a copy of their passport as part of the application for admission in order to expedite the issuance of immigration documents upon admission. Immigration documents are not considered in the admission decision, and submission of immigration information does not bind the student to enroll at CSU if admitted.
- Contact International Student and Scholar Services (ISSS) (http://isss.colostate.edu) for information about international student orientation and check-in.

Non-U.S. citizens educated outside of the U.S. who will NOT require a student visa

- Refer to the International Undergraduate application guide (https://admissions.colostate.edu/international) appropriate to your applicant type (e.g., freshman/first-year, transfer).
- You may be required to demonstrate English proficiency to be considered for direct admission.

- Contact International Student and Scholar Services (ISSS) (http://isss.colostate.edu) for information about international student orientation and check-in.

Non-U.S. citizens/Non-permanent residents educated inside the U.S.

- Refer to the domestic application guide (https://admissions.colostate.edu/applying-to-csu) appropriate to your applicant type (e.g., freshman/first-year, transfer).
- Include a copy of your visa with your application for admission (if applicable).
- You may be required to demonstrate English proficiency depending upon your academic credentials and length of time in the U.S.
- Students who are undocumented and educated in Colorado (https://admissions.colostate.edu/2017/01/05/im-undocumented-live-colorado-can-apply-csu) may be eligible for in-state tuition under Colorado ASSET legislation (https://financialaid.colostate.edu/asset-1).
- No extra or unique requirements are in place for students without documentation since admission is an academic decision.

U.S. citizens/permanent residents educated outside of the U.S.

CSU recognizes that the pool of U.S. citizens/permanent residents educated abroad covers a wide spectrum, including students with dual citizenship who have never been to the U.S., U.S.-born students who have lived in multiple countries or who have only recently moved overseas as the result of family military or employment assignments, and U.S. permanent residents with varied amounts of U.S.-based education.

Our comprehensive, individual review process is designed to recognize and incorporate these kinds of unique experiences into our evaluation. Refer to the application guide (https://admissions.colostate.edu/applying-to-csu) appropriate to your applicant type (e.g., freshman/first-year, transfer), and we will adapt our review process to your circumstances.

As we review your credentials, we'll notify you if any additional support information is required to assess your potential for academic success at CSU. For example, we may ask you to provide English proficiency documentation and a translation of academic records if your primary language and/or language of instruction is not English.

U.S. citizens or U.S. permanent residents who have been educated abroad may be eligible for financial aid. Refer to Financial Assistance in the Financial Information section for more information.

English Proficiency

Undergraduate applicants seeking direct admission must demonstrate a high level of English proficiency.

Enrollment Deposit

Enrollment Deposit and Admission Confirmation

Newly-admitted on-campus freshmen and transfers must submit an enrollment deposit (https://admissions.colostate.edu/2016/11/29/what-you-need-to-know-about-the-enrollment-deposit) to secure their place in the entering class. The enrollment deposit covers new student charges and a portion of tuition. Paying the deposit opens access to other critical steps in the enrollment process, including on-campus housing, Ram Orientation and course registration.

If payment of the enrollment deposit presents a financial hardship (https://admissions.colostate.edu/2017/02/27/qualify-fee-waiver-enrollment-deposit-deferral) or the full cost of attendance will be covered by a third party (e.g. international sponsor, 100% GI Bill entitlement, athletic scholarship), students can request an enrollment deposit deferral. Students who received a need-based application fee waiver are granted an enrollment deposit deferral when they confirm their intent to enroll. When a deferral is granted, the student secures a place in the entering class and opens access to other steps to enroll, and the deferred amount appears as a charge on the student's first billing statement.

Refer to the appropriate admitted student guide (https://admissions.colostate.edu/admitted) for deadlines and instructions.

Please visit the CSU Office of Admissions website for more information about the enrollment deposit refund policy (https://admissions.colostate.edu/refund-waiver-policies).

Transfer and Test Credit

College-Level Courses Completed by High School Students
Advanced Placement (AP)
College-Level Examination Program (CLEP)
International Baccalaureate (IB)
Cambridge Pre-U Examination
Evaluation of Transfer Credit

College-Level Courses Completed by High School Students

CSU credit may be allowed for college-level courses completed at a college or university while a student is still in high school if the following conditions are met:

1. The college or university must be fully accredited by one of the seven regional associations of schools and colleges.
2. Credit will be granted only for academic courses with grades of C- or better.
3. An official transcript must be provided by the college or university listing the courses completed.
4. The course is not remedial or vocational/technical in content.

The College Board Advanced Placement Program (AP)

The Advanced Placement tests administered by The College Board are used by CSU to award credit and advanced placement in any of several fields in which a student may have participated in high school. Lower division credit (100-200) awarded is treated as transfer credit without a grade but is counted toward graduation and may be used in fulfilling specific lower division curriculum requirements.

The academic department responsible for the course in which test credit is granted will have determined what lower division equivalency will be awarded. Department decisions are considered the final determination of equivalency for the specific examination. Therefore, a request for

re-evaluation or an appeal of the decision will not be considered or accepted.

The exception to the re-evaluation process is limited to the Capstone Seminar and the Capstone Research components of the Advanced Placement offerings. The re-evaluation must be approved by the teaching department in which the Seminar and Capstone most closely align for consideration of a direct equivalency within the academic structure at CSU.

Lower division (100-200) credit may be granted for scores of three (3), four (4) or five (5) on individual Advanced Placement Tests. Scores of one (1) and two (2) are not granted credit.

Generic credit (no discipline identified) will be granted for the AP Capstone Seminar and/or the AP Capstone Research Project when a minimum score of four (4) is earned. The AP Capstone Seminar and the AP Capstone Research components may be re-evaluated by the teaching department in which the Seminar and Capstone most closely align for consideration of a direct equivalency of lower division credit. The department's evaluation will be the final determination.

Please see the Office of the Registrar (https://registrar.colostate.edu/transfer-credit/transfer-other-credit) and select "Advanced Placement (AP)" for a complete table indicating the courses for which credit is awarded.

College-Level Examination Program (CLEP)

The College-Level Examination Program (CLEP) was designed by The College Board to enable both traditional and nontraditional students to receive college-level credit by examination. There are two types of examinations offered—the General Examinations and the Subject Examinations.

For general examinations, a minimum of three credits will be awarded for a score of 50 or higher. For subject examinations, credit will be awarded in the amount equivalent to the CSU course(s), for scores of 50 or higher. Go to the Office of the Registrar (https://registrar.colostate.edu/transfer-credit/transfer-other-credit) and select the tab "College-Level Examinations Program (CLEP)" for a complete table indicating those courses for which credit is awarded.

To obtain information or to make arrangements for taking the tests, contact the University Testing Center (http://testing.colostate.edu), General Services Building, Room 203, at (970) 491-6498, or visit the CollegeBoard website (https://clep.collegeboard.org/test-takers/feedback). Credit awarded for these examinations cannot be used in meeting the CSU residency requirement for the baccalaureate degree.

The academic department responsible for the course in which test credit is granted determines what equivalency will be awarded. Department decisions are considered the final determination of equivalency for the specific examination. Therefore, a request for re-evaluation or an appeal of the decision will not be considered.

International Baccalaureate (IB)

Students who graduate from high school with an International Baccalaureate diploma or have completed International Baccalaureate examinations may receive CSU credit for scores of four or higher.

The number of credits awarded for successful completion of an International Baccalaureate diploma program will be a minimum of 24 semester credits. If a score of less than four is received on an exam, the number of credits granted will be reduced accordingly if the student meets the necessary requirements.

The academic department responsible for the course in which test credit is granted determines what equivalency will be awarded. Department decisions are considered the final determination of equivalency for the specific examination. Therefore, a request for re-evaluation or an appeal of the decision will not be considered or accepted.

See the Office of the Registrar (https://registrar.colostate.edu/transfer-credit/transfer-other-credit) and select the tab "International Baccalaureate" for a list of courses for which credit will be granted.

Cambridge Pre-U Exam

The Cambridge Pre-U examination is a United Kingdom qualification from the University of Cambridge International Examinations and is an alternative to the current A Level qualification. This exam consists of "Principal Subjects" of which students have a free choice of three of 27 subject options. Additional subjects may be taken and possibly considered for credit but are not incorporated into the Cambridge Pre-U Diploma. Those students who complete an "Independent Research Project" and a "Global Perspectives" portfolio along with the 3 "Principal Subjects" options are eligible for the award of the Cambridge Pre-U Diploma.

There are additional "short course" options consisting of one year's study, available in Modern Foreign Languages and Mathematics. The 'Global Perspectives and Research Report' (GPR) may also be considered for credit on a case by case basis.

Credits may be used toward the 120 credit minimum requirement for graduation and may be used toward general education (All-University Core Curriculum) requirements. Scores of D1-D3, M1-M3 and P1-P3 will be considered for credit as they are equivalent to a "C" or better grade. A maximum of 36.0 semester hours may be awarded for Cambridge Pre-U exams.

The academic department responsible for the course in which test credit is granted will determine what equivalency will be awarded. Department decisions are considered the final determination of equivalency for the specific examination. Therefore, a request for re-evaluation or an appeal of the decision will not be considered or accepted.

Evaluation of Transfer Credit

The Office of the Registrar is responsible for determining course equivalencies for all courses that are presented for transfer to CSU. Students should be aware that credits may transfer to CSU, but not count toward department graduation requirements. Evaluation of credits is made only from official transcripts after a student has been granted admission.

If a student attends one or more regionally accredited 2-year institutions a total of 64 transfer credits may be accepted. There is no limit for the amount of credit that can be transferred from regionally accredited 4-year institutions.

Regular academic courses from institutions accredited by one of the seven regional associations of schools and colleges completed with a grade of C- or better are generally accepted in transfer. Course work from institutions that are not regionally accredited will not be transferred.

Coursework that is remedial or vocational/technical in nature will not be transferred. Transfer grades and credits are not computed within the cumulative GPA earned at CSU.

If coursework presented for transfer is over 10 years old, the academic department will need to review it for applicability towards degree requirements.

International institutions must be recognized by the country's governmental agency for possible transfer of credits (i.e., Ministry of Education).

International Credit toward a Baccalaureate Degree

Transfer credit is generally only considered from international tertiary institutions that are recognized by the ministry of education, or a similar accrediting body, in the home country. In order to qualify for transfer credit, courses completed at recognized international tertiary institutions must be applicable to the student's degree and comparable to the nature and quality of CSU courses.

International courses with the same or similar course titles as CSU courses may satisfy course requirements. An official or certified copy of the transcript must be presented to the Office of the Registrar for work to be officially evaluated for transfer credit. A certified translation must accompany transcripts not issued in English. The translation should be literal and not interpretive. If course content is not evident from course titles on the transcript, students should be prepared to provide official catalog course descriptions or syllabi (in English) from their schools or faculties.

Rarely is international secondary level work considered for transfer credit. The completion of rigorous secondary school subjects is expected of all admission candidates-international and domestic alike. Transfer credit is not awarded for secondary school subjects, unless an additional 13th year of secondary school was completed and/or a standardized examination was administered. Examples might include the British Advanced Level (A-Level) examinations, German Abitur examinations, or Italian Maturita examinations.

In many cases, international credits will have to be converted into the U.S. semester system unless there is an official CSU Memorandum of Understanding (MOU) that allows for an alternate credit evaluation option. In those cases where there is not an official MOU indicating an alternate, a conversion factor will be used to determine the U.S. Credit equivalency for each course. No more than 15-18 semester hours per term or 30-36 semester hours may transfer in any academic year. All courses considered for transfer must be completed with a "C-" or better grade. The Registrar's Office will determine the international grade equivalencies.

Transferology™

Students who have completed courses in higher education want to know which colleges and universities will accept those courses and apply them to a degree. Transferology (https://www.transferology.com/login.htm)™ will provide quick answers from hundreds of institutions in a streamlined and dynamic interface.

Transferology™ enables students, advisors, faculty, and administrators from colleges and universities to obtain consistent and accurate information about how courses will transfer from one institution to another, and how courses will apply to meet academic program requirements at the other institutions. A potential student can have direct access to course acceptability, equivalency, and applicability among all participating institutions by using each institution's existing course equivalency tables. Course descriptions, details about academic programs, and course equivalencies can all be obtained from this one website.

For CSU, Transferology™ is a database of selected accredited institutions in the U.S. and some recognized international institutions, their courses, and how those courses will transfer to CSU. All public institutions in Colorado and Wyoming are part of this database and, in addition, many frequently transferred courses from selected institutions in other states are also listed. Access this database by going to the Transferology (https://www.transferology.com/login.htm)™ website. If a particular institution is not listed, contact the Degree and Transfer Evaluation unit of the O (http://registrar.colostate.edu/transfer-credit/transfer-coursework)ffice of the Registrar (https://registrar.colostate.edu) for evaluation of specific courses.

Statewide Guaranteed Transfer Program (gtPathways)

The state of Colorado has developed a statewide guaranteed transfer program, which applies to all Colorado public institutions of higher education, including CSU. Statewide there are approximately 1,000 lower-division general education courses in 20 subject areas approved for guaranteed transfer from one public institution of higher education in Colorado to another.

After starting on a higher education pathway at any public college or university in Colorado, and upon acceptance to another, a student may transfer up to 31 credits of successfully (C- or better) completed guaranteed transfer general education coursework in a set of defined categories. These courses will apply toward the general education (All-University Core Curriculum) graduation requirements at CSU. Extended detail may be found on the Colorado Department of Higher Education (CDHE) website (http://highered.colorado.gov/Academics/Transfers/Students.html). The Office of the Registrar (https://registrar.colostate.edu/transfer-credit/transfer-coursework) may also be referenced using the "GTPathways" tab.

Transfer Appeals Process

Students may appeal a decision regarding the transferability of a specific course and/or the decision regarding how it is used to fulfill degree requirements. Any request for re-evaluation of credit should first be directed to the Degree and Transfer Evaluation unit of the Office of the Registrar.

The student is responsible for supplying any supporting documentation from the student's transferring college, such as a syllabus or more detailed course description. The Degree and Transfer Evaluation unit will either satisfy the student's request or refer the student to an academic department for additional consideration. If the academic department cannot fulfill the request for any item related to an AUCC requirement or an overall university graduation requirement, a formal written appeal may be presented to the Degree and Transfer Evaluation unit for presentation to the Vice Provost for Undergraduate Affairs for a final decision. For information on the appeal process refer to the O (http://registrar.colostate.edu/transfer-credit/transfer-coursework)ffice of the Registrar (https://registrar.colostate.edu) in the "Appeals" section at the bottom of the home page.

Credit from Two-Year Colleges

If a student attends one or more regionally accredited two-year institutions, a total of 64 transfer credits may be accepted.

Credit earned at a two-year college may not be used to meet the upper-division (300- to 400-level) graduation requirement. Academic departments may allow substitution of course work from two-year colleges towards specific major upper-division requirements.

Transfer guides for specific majors are available for students who want to complete a four-year degree at CSU by first completing an AA or AS degree at a Colorado community college, and then completing the 60 designated CSU credits listed on the guide. Students in programs requiring more than 120 credits should expect to take more than 60 additional credits at CSU to meet degree requirements. Please see the Office of the Registrar's website (http://registrar.colostate.edu/transfer-credit/agreements-guarantees) and then select the "Agreements & Guarantees" under the Transfer Credit section.

Service Schools and Courses of the Armed Services

Credit may be allowed for transfer from those service schools carrying a baccalaureate credit recommendation in the latest *Guide to the Evaluation of Educational Experiences in the Armed Services* prepared by the American Council on Education (ACE). Students must submit SMARTS (Sailor/Marine American Council on Education Registry Transcript), AARTS (Army/American Council on Education Registry Transcript), JST—Joint Service Transcript, or Coast Guard Institute Registered Transcript to the Office of the Registrar to have the information evaluated for eligibility and to receive credit. Individual academic departments determine whether those courses clear specific major curriculum requirements or may be used as elective credit within the program of study. Visit the O (http://registrar.colostate.edu/transfer-credit/transfer-coursework)ffice of the Registrar (https://registrar.colostate.edu) for further information.

Transfer Credit from Non-Collegiate Institutions

CSU will award transfer credit for academic work done under the sponsorship of non-collegiate institutions, if the courses proposed for transfer:

1. Have been approved by the American Council on Education,
2. Are listed in *The National Guide to Educational Credit for Training Programs*, and
3. Are approved by the academic department and college in which the subject matter is taught at CSU.

Please visit the Office of the Registrar (https://registrar.colostate.edu/transfer-credit/transfer-coursework) and select the "Non-Collegiate Transfer Coursework" tab for more information.

FINANCIAL INFORMATION

Tuition and Fees
Tuition and Fee Adjustments
CSU Online
Additional Expenses
Enrollment Status
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Financial Assistance

Tuition and Fees

Authority to set tuition rates is vested in the governing boards of Colorado's state institutions of higher education. The tuition rates which apply to any succeeding fiscal year will not be known until June of each year. The Board of Governors of the CSU System, therefore, reserves the right to change tuition and fee schedules and related policies, including the time, date, and method for payment, at any time.

By registering for a course, a student acknowledges legal and financial responsibility for any and all tuition and fees assessed as a result of registration. Students must follow, and are financially responsible for, formal add/drop and withdrawal procedures at CSU. **Non-attendance does not relieve a student of financial responsibility.** A student whose account becomes delinquent will be held responsible for paying any late payment charges, collection agency fees up to 40% of the debt, and all costs and expenses including reasonable attorney fees that CSU incurs in its collection efforts. CSU will not register a student, release a diploma or proof of degree, or provide official transcripts to any current or former student who has past due financial obligations to CSU.

Undergraduate Tuition
Graduate Tuition
International
Special Fees
Fees

Undergraduate Tuition

Schedule of Tuition and Fees

The most current listing of tuition and fees, as well as a tuition calculator, can be found at the Office of Financial Aid's (https://financialaid.colostate.edu/base-tuition) website.

In addition to the charges listed under each category, students may be required to pay differential tuition, program charges, charges for technology, and/or special course fees. Tuition and fees for a student registering for a combination of regular on-campus courses and Division of Continuing Education (CSU Online) courses will be assessed individually according to the schedule established for each.

Students who are off campus for full time internships, practica, and professional affiliations, and are not concurrently enrolled in other on-campus experiences or courses, may be assessed a reduced general fee amount.

College Opportunity Fund (COF)

Undergraduate Colorado resident students are eligible to receive a College Opportunity Fund (https://cof.college-assist.org) (COF) stipend from the State of Colorado to apply toward tuition costs. To receive the COF stipend, students must apply for the stipend (https://cof.college-assist.org) AND authorize CSU to receive the funds EACH semester via RAMweb.

Differential Tuition

To ensure students have an opportunity to fully explore their academic options and the range of programs offered at CSU, the University does not charge the full cost of tuition until students have acquired 60 credit hours (30 credits if in the College of Business). After that point, at which most students have settled on a major, students begin to pay differential tuition in addition to the base tuition paid up to that point. Differential tuition is assessed to undergraduate resident, non-resident, and WUE students. Credits that students bring upon entering the University may cause them to reach the 60 credit hours earlier than their peers. Almost all of the differential tuition students pay returns directly to the academic colleges and departments to enhance the quality of a CSU education. Each CSU college's rates are based on three factors:

- High cost—i.e., how expensive the program is to provide
- High demand—i.e., whether the program is in high demand by large numbers of students
- High return—i.e., how much students generally earn when they graduate from that specific program

Differential tuition is assessed by the course subject code at a rate of $55/$72/$95 per credit hour, depending on the course. Differential tuition is not assessed by a student's major. For more detail on differential tuition cost per credit, go to the Office of Financial Aid's website and select Undergraduate Differential Tuition (https://financialaid.colostate.edu/media/sites/38/2018/05/Undergraduate_Differential_Tuition.pdf).

Students are assessed differential tuition upon reaching 30 transcripted credits (sophomore level) for College of Business courses. Students are assessed differential tuition upon reaching 60 transcripted credits (junior level) for all other courses offered at CSU.

Differential tuition is also assessed for specific academic programs (https://financialaid.colostate.edu/media/sites/38/2018/05/Graduate-Program-Charges.pdf) that cost more to offer.

Graduate Tuition

Graduate tuition and fees (https://financialaid.colostate.edu/base-tuition) are updated annually. Information about financial support for graduate students is available in the Graduate and Professional Bulletin.

International

The International Student and Scholar Services (http://isss.colostate.edu) administrative charge is $125 per semester. Fees are subject to change. Sponsors of international students, such as foreign

governments, are assessed a charge of $375 per term, but it could be as much as $386 if the sponsor requests an official transcript to be sent by the university.

Personal and Living Expenses

International students should anticipate expenses considerably higher than those quoted for domestic students. Additional considerations include costs of deposits for off-campus housing, transportation, international travel, clothing (particularly winter clothing for those coming from warmer climates), living expenses during vacation periods and during the summer months for those who choose to remain on campus, the cost of keeping an automobile and insuring it, child care, shipping books and other belongings home, taxes owed on U.S. source income, and items of personal use which cannot be brought in a suitcase and which must be purchased in the United States after arrival. An annual inflation rate of 3% should be anticipated in all calculations. Refer to the Office of International Programs (http://isss.colostate.edu) for an up-to-date list of estimated expenses.

Health Insurance

Colorado State University requires all full-time domestic students and all international students to carry health insurance as a way of protecting the student's educational investment. Students must meet this requirement their first semester at CSU and every fall semester thereafter. Students can meet the health insurance requirement by electing coverage through an individual health insurance plan through a family member, employer, or by enrolling in the University-sponsored Student Health Insurance Plan (SHIP). Visit Health Insurance Requirement (https://health.colostate.edu/health-insurance-requirement) for deadlines and additional information on how to meet the requirement. Note that all CSU students have full access to the wide range of medical, counseling, and health education and prevention services within the CSU Health Network, regardless of their insurance plan.

Housing

CSU requires that all newly admitted first-year students (Admissions Type "New") and transfer students with fewer than 15 post-high school credits, who are single, under 21 years of age, and not living with their parents in the Fort Collins area, live in the University residence halls for the first two consecutive terms of their attendance. Credits taken concurrent with high school and/or credits attained through Advanced Placement (AP) or International Baccalaureate (IB) do not apply toward living experience. First year students are guaranteed a room in a residence hall on campus (http://www.housing.colostate.edu/residence-halls). The residence halls house approzimately 20% non-first year students including transfer students and upper-division students. Graduate students, upper-division undergraduate students and students with families can find information on university apartments (http://www.housing.colostate.edu/university-apartments). Off-campus housing information can be found at Off-Campus Life (http://ocl.colostate.edu).

Third-Party Billing

CSU's Sponsor Billing office provides a service that allows a third party sponsor to pay the university for authorized student charges. A sponsor is any government agency, business, embassy, foreign government, third-party trust fund or other entity that agrees to pay for all or part of a student's expenses while at CSU. A sponsor billing service charge of $50 is assessed each term to all sponsors that have requested direct billing through the Sponsor Billing office. If the sponsor does not authorize the sponsor billing charge, the $50 charge will be billed to the student account. All agencies and other entities sponsoring international students, which utilize third party billing privileges, will be assessed a $375 base service fee per student per academic term by the Office of International Programs. This fee applies to all international students who receive services regardless of whether the student is registered for credit-bearing classes. For a copy of the Service Schedule and/or a detailed list of estimated expenses, send a request to: ISSS Assistant Director for Student Services, Sponsored Degree Programs, Office of International Programs, 1024 Campus Delivery, Colorado State University, Fort Collins, CO 80523-1024.

Special Fees

In addition to the regular charges which all students are assessed, other fees may be applicable at certain times or for certain groups of students pursuing particular activities.

Admission application fee	$50.00
Late registration fee	$50.00
Transcript fee per copy	Refer to http://registrar.colostate.edu/transcript-orders.
Course fees	Certain courses carry a special fee which is assessed at the time of registration. The costs vary and are determined annually. The current fees for each course can be found at https://financialaid.colostate.edu/base-tuition/. The fees are for the use of materials or other specific expenditures necessary for the conduct of instruction.
International and Scholar Services	The International Student and Scholar Services administrative charge is $125 each semester. Charges are subject to change.
Education Abroad Program Fees	The program fees will vary based on the actual costs of tuition and program expenses. More information can be found on the CSU Education Abroad website: https://educationabroad.colostate.edu/

Fees

Nonrefundable Fees*

Admission application fee	
New and transfer students	$50.00
Guest students	$25.00
Application fee for admission to the Doctor of Veterinary Medicine program	$80.00
Enrollment Deposit and Admission Confirmation (new and transfer students)	$300.00
New Student Enrollment Charge	
New Students	$268.50
Transfer Students	$220.50
Composition Directed Self-Placement Survey	$12.00
Mathematics Placement Examination	$15.00
Credit Established by Challenge Examination per credit attempted	$20.00
Language Placement Examination (one-time charge per language; no charge for retakes)	$10.00
Charge for technology, per term (college-wide)[1]	
College of Agricultural Sciences	$86.15
College of Business[2]	$103.00

College of Health and Human Sciences[2]	$74.50
College of Liberal Arts	$57.30
College of Natural Sciences	$94.50
College of Veterinary Medicine and Biomedical Sciences	$90.00
Intra-University	$40.00
Walter Scott, Jr. College of Engineering	$170.00
Warner College of Natural Resources	$94.50
Transcript fee per copy (Refer to http://registrar.colostate.edu/transcript-orders)	
University Alternative Transportation Fee[3]	$33.65
University Facility Fee (per credit hour)	$20.75
University Technology Fee	$25.00

* Fees are subject to change.

1 Undergraduate students enrolled in twelve (12) or more credits and graduate students enrolled in nine (9) or more credits are considered full time and required to pay the full amount according to their college affiliation. Part-time undergraduate and graduate students pay a prorated amount. Graduate students in the College of Natural Sciences, College of Veterinary Medicine and Biomedical Sciences, and the Intra-University option are not assessed a charge.

2 The Colleges of Business and Health and Human Sciences are the only colleges that apply their charge during the summer session.

3 Undergraduate and graduate students enrolled in fewer than six (6) credits are assessed $14.13.

Special Course Fees

Certain courses require enrolled students to pay fees for special services and/or materials. Courses with fees are indicated by a Yes in the Special Course Fee line in Courses A-Z. Special course fees are updated in June for the upcoming academic year. For the most current listing of special course fees, visit the Provost and Executive Vice President's web page (http://provost.colostate.edu/students) and select Complete List of Special Course Fees.

There are four types of special course fees:

1. For some courses, enrolled students are assessed a uniform fee during registration to cover costs such as the rental of external facilities, the expenses of field placements, the provision of special equipment and materials that the University would not otherwise maintain, and/or the costs of off-campus travel of students with supervising faculty members.
2. For some courses, enrolled students are assessed a fixed or variable fee by the department based upon actual use of expended materials supplied by the department and used by the student in the creation, construction, and/or fabrication of an object of value, such as a class project that becomes the student's property. These fees are designed for situations in which it is more efficient for the departments to supply the expendable materials because of the inability to make individual purchases economically.
3. For some courses, enrolled students are assessed variable fees by the department based upon actual damage or non-return of equipment used in the courses.
4. For some courses, enrolled students are assessed a fixed fee to provide funds for replacement or upgrade of equipment that was purchased originally through department funds and cannot be maintained appropriately without this type of student fee support.

All special course fees will be assessed and collected through normal student accounts receivable procedures. No fees should be paid directly to academic departments or individuals.

Tuition and Fee Adjustments

Registration Cancellation
Registration Changes
Course Withdrawal
University Withdrawal
Student General Fee Appeal Process

Registration Cancellation

Before classes begin for a particular term, all courses can be canceled via RAMweb (https://ramweb.colostate.edu) with no assessment charges. Students not planning to attend must cancel their registration before the fall or spring semester begins or they will be assessed a portion of tuition and fees.

Registration Changes

Tuition and fees will be adjusted (not cancelled) for undergraduate students if credits are added or dropped during the schedule change period at the beginning of the semester. Specific dates are listed in the online class schedule. After this deadline, there is no adjustment in tuition and fees if a student drops part of his or her schedule.

Course Withdrawal

Students may withdraw from a course through the end of the Withdraw period for the individual class. The specific date is listed on the online Class Schedule (http://ramweb.colostate.edu/registrar/public.class_schedule_quick_search.aspx) or in the My Weekly Class Schedule on RAMweb (http://ramweb.colostate.edu). When a student withdraws from a course, a W will appear in place of the grade. This does not affect the GPA. There is no refund of charges associated with the course in the case of a withdrawal for an on-campus course. For charges associated with withdrawing from a Continuing Education online course, please go to CSU Online (http://www.online.colostate.edu).

University Withdrawal

Once the semester begins in fall or spring, students dropping all courses and leaving CSU (completing a University Withdrawal) must do so through RAMweb (https://ramweb.colostate.edu/registrar/Public/Login.aspx).

The schedule for tuition and fee adjustments for students withdrawing from CSU may be found on the Office of the Registrar website (http://registrar.colostate.edu/registration/registration-changes).

Exceptions to the prorated tuition and fees adjustments may be made in the following situations:

1. CSU will prorate tuition and fees according to institutional policies; withdrawing students who receive federal, state, or institutional financial aid may be required to return certain funds based on the date of withdrawal or documented last date of attendance, as prescribed by federal regulations.
2. CSU room and board charges will be assessed through the vacate date from CSU housing.

3. In the case of the death of a currently enrolled student, request for a refund of tuition and fees may be made any time during the semester. For guidance on this process contact the Office of the Provost/ Executive Vice President, Administration Building, Room 108, or 970-491-5932.
4. Withdrawal as a result of serious illness, disabling accident, military draft, or activation of reserves or National Guard units, appeals will be initiated and reviewed at the Office of the Provost/Executive Vice President, Administration Building, Room 108.
5. Please note: No financial adjustment will be made for a student who is suspended, dismissed, or expelled for breach of discipline.

Additional information related to University Withdrawals, being called to active military duty, registration cancellation, and other registration changes is available in the Registration section of Academic Standards and Policies.

Student General Fee Appeal Process

Billing for the Student General Fee may be contested, in writing, within the first two weeks after the add/drop date of the term for which the fee is imposed. The request should outline the particular circumstances for contesting the applicability of the mandatory full-time Student General Fee. Send the request to: Student General Fee Appeal Committee, Office of the Vice President for Student Affairs, CSU, 8004 Campus Delivery, Fort Collins, CO 80523-8004. The following information should be included in the request: full name, CSUID, current address, telephone number, and e-mail address. Decisions of the committee are final.

CSU Online

Tuition for CSU Online Courses

Tuition and fees assessed for courses offered through CSU Online (Division of Continuing Education) vary by program, level of instruction, and delivery method. Colorado residency status is not a factor in determining online, distance, or off-campus tuition rates; however, residency status is a factor in determining tuition rates for some on-campus credit courses offered through CSU Online. Tuition assessed through CSU Online is in addition to any other tuition assessed by the University. Refer to the **CSU Online website** for specific tuition rates and more information.

CSU Online courses and programs qualify for **financial aid** (http://www.online.colostate.edu/faqs/financial-aid.dot), including federal financial aid, scholarships, military discounts, and veterans' benefits.

Additional Expenses

Personal and Living Expenses
Student Health Insurance
Housing Deposit

Personal and Living Expenses

The amount of money spent by a student in an academic year (two semesters—August to May) for personal and living expenses varies with current prices and the habits and needs of the student; therefore, it is important that each student estimate the amount of money needed for such items as laundry, clothing, transportation, health care, etc. Expenses not directly related to educational costs are not included in the estimates.

Example of Estimated Direct Expenses for 2019-2020 (based on 15 credits per semester for 2019-2020)

	Resident	Non-Resident
Total base tuition and fees	$14,722	$30,622[1]
College Opportunity Fund stipend credit (Colorado residents)[2]	- $2,820	
Student share of base tuition and fees[3]	$11,902	$30,622
Charge for technology (average)	$180	$180
Living allowance[4]	$13,586	$13,586
Books and supplies	$1,200	$1,200
Total direct costs for the year[5]	$26,868	$45,588

1 A significant percentage of non-residents with competitive academic records are offered scholarships to help offset the cost of tuition.

2 If you are a Colorado resident, be sure to apply for the College Opportunity Fund (COF) (https://cof.college-assist.org).

3 There may be additional costs for undergraduate students enrolled in courses with differential tuition. For more information about tuition and fee charges, visit the Office of Financial Aid (https://financialaid.colostate.edu/base-tuition) website.

4 For students residing in CSU housing, an average amount, assuming double-occupancy suite-style room with an "Any 14" meal plan; Actual expenses may vary. For details visit the Housing & Dining Services website (http://housing.colostate.edu).

5 This figure does not include personal expenses for such items as, laundry, clothing, transportation, health care, etc., which vary from student to student.

Office of Financial Aid (http://sfs.colostate.edu)provides additional information about annual costs, including estimates of personal expenses.

Student Health Insurance

To protect students' good health and financial stability, students are required to carry adequate health insurance coverage (http://health.colostate.edu/student-health-insurance).

Housing Deposit

Residence Halls

The $350 housing deposit for residence hall students serves as both a reservation fee and a contractual guarantee. A refund of this deposit is available if the applicant cancels their request prior to the published deadline for each semester. For specific information about the refund policy, refer to the "Housing Deposit & Refund Information" outlined in the Housing Guide or on the Housing & Dining Services website (http://housing.colostate.edu).

University Apartments

A $350 application deposit is required for students applying for university apartments. This deposit will convert to a damage/cleaning deposit at the time of assignment. The deposit will be refunded any time prior to confirming an apartment assignment, upon request. The refund procedure for current apartment residents is outlined in the University

Apartment lease. For further information, refer to the Housing Guide or the Housing & Dining Services website (http://housing.colostate.edu).

Enrollment Status

Enrollment status (full-time, three-quarter time, half-time, less than half-time) is determined by the number of credits which the student has completed or is pursuing for the term in which the verification is requested. Courses from which the student has withdrawn or is auditing are not included. (The following schedule for enrollment status differs from the full-time/part-time schedule for tuition and fees. (https://financialaid.colostate.edu/base-tuition))

Credit requirements are as follows:

Fall/Spring/Summer Semesters:

Undergraduate Students

Full-time	12 or more credits
Three-quarter time	9-11 credits
Half-time	6-8 credits
Less than half-time	5 credits or less

Graduate Students

Full-time	9 or more credits
Three-quarter time	7-8 credits
Half-time	5-6 credits
Less than half-time	4 credits or less

For verification of enrollment status go to RAMweb (https://ramweb.colostate.edu) and click on *Records* and then on *Enrollment Verification*. For more information visit the Office of the Registrar (http://registrar.colostate.edu/student-resources/enrollment-degree-verification) website.

Groups such as co-op programs may have a different definition of enrollment status and should be verified with the program.

Residency for Tuition Classification

Office of Financial Aid (http://financialaid.colostate.edu), Centennial Hall
(970) 491-6321
FAX: (970) 491-5010

Refer to the residency section (http://financialaid.colostate.edu/residency) of our website for more information.

Classification of students for tuition purposes is governed by state statute ("tuition law") which sets forth conditions for a student being considered as "in-state" for purposes of tuition classification. The tuition law is contained in sections 23-7-101 to 111 of the Colorado Revised Statutes and in published policies of the Colorado Commission on Higher Education (CCHE). Although individuals may be considered state residents for voting or other legal purposes after being in the state for a short period of time, the tuition law specifies additional requirements for classification as "in-state" for tuition purposes. The tuition law, which applies to all public institutions of higher education in Colorado, is subject to judicial interpretation and can be changed from year to year by the Colorado Legislature. CSU must apply the rules set forth in the Colorado Revised Statutes, and is not free to make exceptions except as specifically permitted under the statutes and CCHE policies.

Note: This information is considered to be general guidance and is not legal advice. Refer to state statute to review the current law.

Definition of "In-State Residency"

Under the Colorado tuition law, the term "in-state" student means: "A student who has been domiciled in Colorado for one year or more immediately preceding the first day of classes for the term for which such status is claimed." Further the tuition law states: "Attendance at an institution of higher education, public or private, within the state of Colorado shall not alone be sufficient to qualify for domicile in Colorado."

In-state classification requires domicile in Colorado for 12 months on or prior to the first day of classes of each semester. "Domicile" is the term used to describe the place where a person has chosen to make a permanent and fixed home. Domicile is made up of two components: physical presence and evidence of intent. Both physical presence and evidence of intent must be established to begin the domicile year. A student can only establish domicile in Colorado for tuition purposes if he or she intends to reside permanently in the state, and meets the definition of a "Qualified Person." A qualified person is one who is (a) 22 years of age or older, (b) a post-baccalaureate graduate student, or (c) an emancipated minor. (A minor who is married for 12 months is presumed to be emancipated.) A person must be qualified under one of these categories in order to begin the 12-month period of domicile for purposes of in-state tuition. Unemancipated minors qualify for in-state tuition if the parents have been domiciled in Colorado for one year. Exceptions to One Year Domicile (https://financialaid.colostate.edu/exceptions-to-1-year-domicile-requirements) are in this section and also online.

Initial residency determination for tuition purposes of any student enrolling at CSU is determined by the Office of Admissions (http://admissions.colostate.edu). To be initially considered for in-state classification you must answer all residency questions completely and accurately on the application and submit requested evidence substantiating their claim. Failure to do so will result in classification as out-of-state for tuition purposes. The initial determination may be changed if additional evidence regarding the student's eligibility for in-state classification is received.

Petition for Reclassification

A petition may be filed if a student wishes to contest out-of-state classification or if he or she has subsequently become eligible for in-state status. Petition materials may be obtained from the Office of Financial Aid (http://financialaid.colostate.edu). Petitions will be processed only for students who have been admitted to CSU and are currently enrolled for the semester for which they are requesting a change in classification.

A student's current tuition classification will remain until they have received notification from the Office of Financial Aid (http://sfs.colostate.edu) Tuition Classification Officer indicating a residency change has been approved. Students who are petitioning for in-state classification remain responsible for paying their tuition based upon current tuition classification. Students are strongly urged to petition by the "Priority Deadline to Submit Petition" provided on the Office of Financial Aid website (https://financialaid.colostate.edu/petition-process-and-deadlines) in order to receive a response of their tuition classification prior to the beginning of the semester and tuition and fee deadlines.

Petition Process/Deadline

The Office of Financial Aid (http://financialaid.colostate.edu) must receive completed petitions no later than the published deadline date

for the semester for which the student is petitioning. Deadlines (https://financialaid.colostate.edu/petition-process-and-deadlines) are provided on the Office of Financial Aid (http://financialaid.colostate.edu) website. Petitions will not be accepted after the published deadline date and incomplete petitions will not be accepted and/or reviewed for that semester, and the tuition classification and tuition assessment will remain nonresident for that term.

Students will be notified of the results of their petition by mail or CSU email. Please allow up to six weeks for notification. If additional information is required, the additional information must be submitted within the requested time frame unless special arrangements are made with the Tuition Classification Officer.

Decisions made by the Tuition Classification Officer may be appealed to the University's Residency Appeals Committee. A student wanting to appeal the decision to the Residency Appeals Committee must contact the Office of Financial Aid (http://financialaid.colostate.edu) no later than the appeal date listed in the letter in which the decision was conveyed to the student. The decision of the Residency Appeals Committee is the final CSU determination for that specific semester. In addition, there are no provisions in the Tuition Classification Statutes for retroactive petitioning.

The fact that a student does not qualify for in-state status in any other state does not guarantee in-state status in Colorado; in-state classification is governed solely by Colorado statute. The tuition classification statute places the burden of proof on the petitioner to provide clear and convincing evidence of a change in eligibility for in-state tuition once the student has registered.

Any student who provides false information to avoid paying out-of-state tuition may be subject to legal and/or disciplinary actions.

In-State Status: Other Circumstance

Exceptions to the one-year residence requirement exist for the following:

- Colorado National Guard members
- Active-duty military stationed in Colorado on permanent orders in the last 12 years
- Honorably-discharged members of the U.S. armed forces
- Active-duty military members domiciled in Colorado prior to enlistment
- Canadian military stationed in Colorado
- Employees of companies moving to Colorado receiving government economic incentives
- Children of new faculty members at Colorado state colleges and universities
- Western Regional Graduate program enrollees
- 4 year rule and complete junior year of high school in Colorado
- A student, other than a nonimmigrant alien who attended a Colorado high school for three years who is admitted into a Colorado Institution of Higher Education within twelve months after graduation or completing a GED in Colorado.

For detailed explanation of the requirements for these exceptions, including spouse and child eligibility, go to the Office of Financial Aid (http://financialaid.colostate.edu/residency) website or review the Colorado Higher Education Residency Guide (http://highered.colorado.gov/Finance/Residency/default.html).

Paying Your Bill

Cashier's Office
Howes Street Business Center, First Floor
555 South Howes Street
(970) 491-2767
http://bursar.colostate.edu/Depts/Cash_Office.aspx

A student may make a payment on their student account by using CSU's preferred online payment options. Online payments are the fastest, most secure way to make a payment. Payment by electronic check is a free, easy to use service for students and other authorized individuals.

Online payments may be accessed through RAMweb (https://ramweb.colostate.edu) and/or FAMweb (https://famweb-prod.is.colostate.edu/auth/login). The routing number and bank account number (from the bottom of a personal check or a bank statement) is required.

For details on other payment options, please visit the Cashier (http://busfin.colostate.edu/Depts/Cash_Office.aspx)'s website (http://bursar.colostate.edu/Depts/Cash_Office.aspx).

Student Billing

Office of Financial Aid
Office in Centennial Hall, First Floor
(970) 491-6321
financialaid.colostate.edu (https://financialaid.colostate.edu)

In support of CSU's Green Initiatives, CSU implemented eBilling effective in Fall 2010. Billing notifications are emailed to the student's official CSU email address. Students can then log into RAMweb to view their University Billing Statement(s). Additional eBilling notifications may be sent to alternate email addresses maintained by the student on RAMweb.

Due Dates:

Fall	September 10
Spring	February 10
Summer	June 10

University charges are due by the date specified on the bill. Due dates are the 10th of each month unless the 10th falls on a weekend or holiday, then the due date is the following business day. All payments should be in U.S. currency. Mailed payments must reach the University Cashier's Office, 6015 Campus Delivery, by 4:00 p.m. (MT) on the due date. Payments by check are processed when received – postmarks do not apply and future dates are not honored. Online payments must be made by 4:00 p.m. (MT) on the due date for the payment to be considered timely. Penalties for late payment include holds on University services and a monthly 1.5% payment deferral charge of the past due balance. Penalties are initiated for the purpose of encouraging prompt payment.

CSU now offers a Prepayment Plan! Students and trusted individuals can elect to make monthly installments with no-hassle; withdrawals are automatically deducted each month from a designated domestic checking or savings account. For more information, please visit the CSU Prepayment Plan (https://financialaid.colostate.edu/payment-plan) web page. To enroll, login to RAMweb (https://ramweb.colostate.edu/registrar/Public/Login.aspx) or FAMweb (https://famweb-prod.is.colostate.edu/auth/login) and from the main menu, click

on Billing and Tax Information and follow the prepayment plan links and instructions.

Student Account Notes

Students are responsible for all charges on their account and arrangement of payments due. Payments should only be made when a balance due exists on an account, unless the CSU Prepayment Plan is being utilized. In general, overpayments will not be applied to the student's account and will be returned within two weeks if no additional charges are posted to the account.

Students who are sponsored by a third party may request direct billing to the sponsor for tuition, fees, and other related educational expenses. Detailed information on sponsor billing is available upon request from the Accounts Receivable/Sponsor Billing Office (http://www.bursar.colostate.edu/Depts/ALR_Sponsor_Billing.aspx). Arrangements for sponsor billing, and acceptance of the Sponsored Student Billing Agreement and FERPA, must be made prior to the student account due dates to prevent payment deferral charges from being assessed.

The "Billing and Tax Information" section in RAMweb (https://ramweb.colostate.edu) provides more information on billing statements, paying your bill, accepted payment methods, CSU Prepayment Plan, direct deposit refund sign up and Tuition Statement tax information (Form 1098-T).

Once a student is no longer considered to be enrolled, billing will switch from eBilling to paper statements unless otherwise requested by the student with the Accounts Receivable Office (http://busfin.colostate.edu/Depts/ALR_Student_accts.aspx). While the past due account is still being held at the university, monthly billing statements regarding any past due balances owed to the university will be mailed to the primary address on file for the student. It is the student's responsibility to maintain correct addresses (mailing and email) with CSU at all times (refer to Address Updates).

Unpaid past due balances may cause a hold on registration, transcripts and diplomas. CSU will not register a student, release a diploma, or provide official transcripts or proof of degree conferral to any student or former student who has past due financial obligations to CSU, until the hold is removed. The release of the hold may be expedited by paying the past due balance in full.

Failure to pay amounts due may result in the referral of the outstanding balance to a third party collection agency, at which time a collection fee will be assessed and due in full at the time of the referral. The collection fee will be calculated at the maximum amount permitted by applicable law, but not to exceed 40% of the amount outstanding. The student is responsible for all late payment charges, collection agency fees, and all costs and expenses including reasonable attorney fees that CSU incurs in its collection efforts. The account will also be reported to one or more of the national credit bureaus as well as the State of Colorado Department of Revenue for possible interception of state income tax refunds, lottery winnings and wage garnishment. Further, CSU reserves the right to impose a penalty fee and financial hold for all returned payments (refer to Returned Payments policy).

Returned Payments

As provided by state law, a penalty will be assessed to the account for each payment not accepted by the bank because of insufficient funds, stopped payment, non-existent account, closed account, invalid account information or any other reason for which the person is responsible.

CSU will attempt to contact the originator of the payment by mail and/or by telephone or email. In the case of students, a notice will be mailed to the primary address on file for the student. (All students are required to maintain a current address, telephone number and email address with CSU at all times.) These reparative payments are considered due in full immediately. The payment must be equal to the full amount of the original payment plus penalty and fee. Failure to follow through will result in further collection actions (as described above). If CSU receives a returned payment, all payments from that time forward will require guaranteed funds. Please note: If the presentation of the original payment permits a student to register for an academic term and if full payment of the returned payment plus penalty and fee is not made by the specified deadline, CSU reserves the right to cancel a student's class enrollment.

Address Updates

It is the student's responsibility to maintain correct addresses (mailing and email) with CSU. To create or update an existing address, go to RAMweb (https://ramweb.colostate.edu). In order to communicate quickly and effectively with students, CSU requires that each enrolled student provide an email address. CSU has designated email as an official form of communication to students. Information about University email accounts can be found on the ACNS Website (https://www.acns.colostate.edu/email-accounts).

Being able to communicate electronically with the student population provides several benefits:

- It allows CSU to communicate promptly with students regarding their billing statements, financial aid and amounts due
- Students can be quickly notified by professors and CSU offices of events that affect them personally or may be of interest to them generally (e.g., classroom changes, class meeting time changes, department activities, billing, etc.).
- It's faster and less costly than printing and mailing letters.
- It advances CSU's commitment to environmental consciousness by reducing paper use and eliminating physical refuse.

It is also essential that students maintain a current mailing address with CSU. If the student leaves the University for any reason and still has a balance due to the University, it is the student's responsibility to keep their address up-to-date in order for CSU to reach the student regarding their balance. If CSU is unable to reach the student because contact information is not kept up-to-date, the account may be referred to a third party collection agency for further collection action. Addresses can be updated in RAMweb (https://ramweb.colostate.edu).

Deadlines for registration and payments of tuition, fees, and other charges must be met to allow registration to occur. Therefore, students must respond to correspondence from CSU in a timely manner.

Financial Assistance

Office of Financial Aid
Applying for and Retaining Financial Aid
Student Employment Services
Veteran's Benefits
Financial Support for Graduate Students

Office of Financial Aid

Centennial Hall
(970) 491-6321

The Office of Financial Aid (http://sfs.colostate.edu) administers a variety of institutional, state, federal, and private financial assistance programs for qualified students. Financial assistance programs include scholarships, grants, loans, and employment. Employment opportunities available include the Work Study Program, on-campus departmental positions, and community part-time employment.

Financial Aid Programs

CSU offers a variety of financial assistance programs for students based on merit and income. Awards recognize scholastic achievement, assist low income students, and provide funding so students can reach their goal of graduation.

Detailed information on all financial aid programs is available on request from the Office of Financial Aid (http://sfs.colostate.edu). Financial aid policies and procedures may change without notice.

Scholarships

CSU administers state, federal, institutional, private agency, foundation, service club, and individual scholarships. The CSU Scholarship Application (CSUSA) is available on RAMweb (https://ramweb.colostate.edu) October 1 to March 1 of each year. Students use the CSUSA to apply for most CSU scholarships. Scholarship information, including specific criteria, application requirements, and deadline dates is available on the website.

Nationally Competitive Scholarship Opportunities

Assistance is available to qualified undergraduate students who wish to apply for nationally competitive scholarships and fellowships sponsored by federal and private organizations. These include but are not limited to the Truman, Marshall, Udall, Rhodes, Gates-Cambridge, Goldwater, and Fulbright scholarships. These scholarships and fellowships are highly competitive and require high grade point averages (GPAs), a commitment to service both on and off campus, and specific career and professional goals. In many instances, these organizations support undergraduate and/or graduate work within the United States as well as abroad. The Office (http://tilt.colostate.edu/osfa) for Scholarship and Fellowship Advising (http://tilt.colostate.edu/osfa) provides students with information on eligibility, campus deadlines, and assistance in applying for these nationally competitive scholarships and fellowships.

Grants

CSU administers a number of grant programs available to undergraduate students. Several are restricted to Colorado residents.

- Colorado Student Grant (Colorado's College Responsibility Program)
- CSU Tuition Assistance Grant
- CSU Ram Grant
- Federal Pell Grant
- Federal Supplemental Educational Opportunity Grant

CSU administers the Federal Pell Grant program for qualified undergraduates. The federal government establishes the dollar limit for the Federal Pell Grant program each year. All grants may be re-awarded in subsequent years, providing the student reapplies for financial aid, continues to document financial need, and maintains satisfactory academic progress.

Loans

CSU participates in the following loan programs:

- Federal Perkins Loan Program (program set to expire September 30, 2017)
- Federal Direct Loan Programs, both subsidized and unsubsidized
- Federal Direct Parent PLUS Loan Program
- Federal Direct Graduate PLUS Loan Program
- Health Professions Loan Program – veterinary medical degree program only

Loan amounts vary depending on degree program, need, eligibility, availability of funds, and maximum limits established by federal regulations.

Work-Study

Work-study programs are administered by Student Employment Services and provide part-time employment opportunities to qualified, degree-seeking students. Types of work-study awarded include federal and state need-based work-study, as well as state and institutional no-need work-study. Work-study awards are based on the evaluation of a student's financial need (or no-need) and availability of funds.

If not initially awarded work-study, students can apply via the Request Work-Study Application on RAMweb (https://ramweb.colostate.edu/registrar/Public/Login.aspx). Students who have work-study earnings in the current year should have it renewed for the next year, and would not need to complete the application. All work-study is limited in funding and is awarded on a first-come, first-serve basis. The Request Work-Study Application is available May 1 (on RAMweb (https://ramweb.colostate.edu/registrar/Public/Login.aspx)) for the following academic year. Undergraduate and graduate, new and continuing, resident and non-resident students are eligible to apply.

Applying for and Retaining Financial Aid

Application Procedures for Need-Based Financial Aid

Students use the Free Application for Federal Student Aid (https://fafsa.ed.gov) (FAFSA) to apply for financial aid. Application and procedures for any of the above programs may be obtained from the Office of Financial Aid (http://sfs.colostate.edu/applying-for-aid) and is available on the website.

Satisfactory Academic Progress Standards

Students applying for and/or receiving financial aid are expected to maintain satisfactory academic progress. Failure to perform at established levels may result in students becoming ineligible for financial aid. Copies of the complete policy are available at the Office of Financial Aid (http://sfs.colostate.edu/satisfactory-progress), in "Your Financial Aid Guide," or on the website.

Unofficial Withdrawals

Students who leave CSU and do not formally withdraw will be assigned grades of "U" (unsatisfactory) or "F" (failure). Additionally, recipients of federal aid who never began attendance or who unofficially withdrew from CSU will have federal aid adjusted based on the date of the latest academic event in which the student participated.

If no academic event can be documented, 100% of federal, state, and institutional aid will be cancelled because the student never began attendance. An academically-related activity includes, but is not limited to, verifiable class attendance, an exam, a tutorial, computer-assisted

instruction, turning in a class assignment, or attending an assigned study group session.

Fraudulent Receipt of Funds

Students who receive student aid funds through a misrepresentation, falsification, or omission of information may have their names referred to appropriate law enforcement authorities for possible prosecution under the law. Any person who purposely gives false or misleading information may be fined $20,000, sent to prison, or both.

Reporting Changes

All students must immediately notify the Office of Financial Aid (http://sfs.colostate.edu) of any additional resources, such as scholarships, veteran's non-educational benefits, etc., any changes in their financial situation, residency, class standing, or any other factors which can reasonably be construed to impact their eligibility for financial aid.

Student Employment Services

Office in Centennial Hall
(970) 491-5714

Student Employment Services (http://ses.colostate.edu) is responsible for CSU's Student Employment Program. This office lists work-study positions, on-campus student hourly positions, and is a central listing source for outside employers to post community jobs. Students may view job notices on RAMweb (https://ramweb.colostate.edu).

All individuals who are currently degree-seeking, and enrolled in a minimum of one credit, may use this service.

Student employees, both work-study and student hourly, are compensated on an hourly basis and are paid every other week (based on the payroll schedule) through direct deposit to their personal checking or savings account. All student employees enrolled at least half-time as degree-seeking students are exempt from retirement withholdings. Enrollment is verified every pay period.

Several thousand students work on campus each year through the work-study and student hourly programs, and a large number of students find employment off-campus.

CSU is an Equal Opportunity Employer, and adheres to the state's fiscal rules and the regulations set forth by the Department of Education and the Colorado Department of Higher Education, which govern the work-study and student employment programs.

Student Employment Services staff encourages any student seeking a job, or with employment concerns, to contact them.

Veterans' Benefits

The Registrar's Office assists the Department of Veterans' Affairs (VA) in providing certification for the following education benefits:

Under Title 38, U.S. Code

- Chapter 30 (Montgomery G.I. Bill)
- Chapter 31 (Vocational Rehabilitation)
- Chapter 32 (Post-Viet Nam Era)
- Chapter 33 (Post-9/11 G.I. Bill)
- Chapter 35 (Dependents Educational Assistance)

Under Title 10, U.S. Code

- Chapter 1606 (Selected Reserve/National Guard Members)

In addition, the Veteran's Education Benefits Office will advise and assist students in:

- Meeting residency requirements under the Veterans Choice Act of 2014, Colorado's GI Promise or the Yellow Ribbon Program
- Requesting and obtaining Joint Service Transcripts
- Obtaining additional campus services

Students eligible for any of these benefits must contact the Veteran's Education Benefits Office (http://registrar.colostate.edu/military-veterans-benefits/benefits-contact-information) in the Registrar's Office prior to the expected date of enrollment. Applicants should apply to CSU in a degree-seeking major or for teacher licensure before applying for veterans' education benefits.

A description of the services (http://veteransresources.colostate.edu) CSU provides may be found online. Regulations governing receipt of veterans' education benefits, Standards of Progress, and other policies (http://registrar.colostate.edu/military-veterans-benefits) are also available online.

Financial Support for Graduate Students

Graduate Assistants

Full-time graduate assistants receive a minimum monthly stipend during the academic year, as set by CSU. Such assistants must register for and complete at least one on-campus credit during each fall and spring semester during which the assistantship is in effect; and such credits as the appointing department may require each summer term during which the appointment is in effect. Assistants may have tuition payments made in their behalf.

Additional information about financial assistance for graduate students is available in the **Graduate and Professional Bulletin**.

ACADEMIC STANDARDS AND POLICIES

Academic Advising
Grading
Scholastic Standards
Academic Policies
Academic Credit
Registration
Degree Requirements
Graduation Procedures and Information

Academic Advising

Undergraduate Students
Advisee (Student) Roles and Responsibilities
Advisor Roles and Responsibilities
Where Do I Find My Advisor?
Advising Resources
Undeclared Advising
Graduate Students

Academic Advising

CSU is committed to providing high quality advising services to all students.

Undergraduate Students

Academic advising is a relationship with mutual responsibilities between an advisor and student advisee for consultation, sharing of accurate and complete information, careful listening, critical evaluation, and respectful interchange. Academic advising can be facilitated by either professional staff or faculty. Here-after the term “advisor” will mean any faculty, staff, or academic success coordinator (ASC).

Advisee (Student) Roles and Responsibilities

Students carry important responsibilities in the advising process. In the interest of successfully completing a degree program, a student must be proactive in finding the necessary resources needed for attaining a degree. In order to contribute to an effective advising relationship, students are expected to:

- Schedule and attend advising sessions each semester prior to course registration;
- Understand and use degree resources such as the Degree Progress Audit (DARS), the degree requirements listed in the General Catalog (http://catalog.colostate.edu/general-catalog), and the Major Completion map provided in the General Catalog (http://catalog.colostate.edu/general-catalog);
- Clearly articulate, to the best of one’s ability, personal values, abilities, interests, goals, and areas of challenge;
- Become knowledgeable of all graduation requirements and adhere to institutional policies, procedures, and deadlines;
- Prepare for each advising session;
- Follow through on actions identified during each advising session;
- Act professionally when moving through the advising process;
- Responsibly evaluate advisor in order to strengthen the quality of advising;
- Become familiar with the Career Center (https://career.colostate.edu) and other campus resources and use those resources to explore and prepare for careers.

Students should meet with their advisor within the first 6 weeks of arriving on campus, to prepare for registration, and anytime they have questions or problems they cannot resolve on their own. It is important for students to utilize advisors for assistance with course selection, major information or exploration, career planning, graduation requirements, and campus resource information.

Advisor Roles and Responsibilities

The advisor’s responsibilities include the following:

- Help students define and develop realistic educational goals;
- Assist students in creating an academic plan consistent with their abilities, interests, and goals;
- Assist students in monitoring and evaluating their educational progress;
- Assist students in identifying the appropriate Career Education Manager;
- Interpret and provide rationale for institutional policies, procedures, and requirements;
- Monitor designated educational transactions, e.g. course selection, changes of major, graduation requirements, etc.;
- Refer student to appropriate campus resources
- Maintain a confidential advising record for each student;
- Designate and communicate hours available for advising;
- Inform students of the nature of the advisor/student advisee relationship.

Where Do I Find My Advisor?

- Each undergraduate student is assigned an advisor corresponding to their academic major(s). Undergraduate students may locate their assigned advisor in RAMweb (https://ramweb.colostate.edu). If the advisor assignment is unclear, the student should contact the department that offers their primary or secondary major. For minor advising please use the search function in the General Catalog (http://catalog.colostate.edu/general-catalog). Undeclared students (students exploring majors and/or working toward entry into a competitive major) should contact the Collaborative for Student Achievement (http://www.casa.colostate.edu).
- In addition to the assigned advisor, students may work with an additional advisor if interested in a professional program such as medicine, law, veterinary medicine, or teacher licensure. Students will also have more than one advisor if completing a double major, minor, or are involved in study abroad, athletics, the Honors Program, or the

Community for Excellence. To locate contact information please use the A-Z or the search function on the CSU homepage.

Advising Resources

In order to get the best from the academic advising experience, students are encouraged to utilize the many advising tools that are available.

- The Degree Progress Audit (DARS) is an undergraduate degree audit that shows what graduation requirements a student has completed and what requirements still need to be completed. This audit can be found on RAMweb (https://ramweb.colostate.edu) under Academic Planning and Progress and viewed at any time.
- Major Completion Maps are available for undergraduate majors, concentrations, and options. These Maps show a sample semester-by-semester coursework plan, and identify critical courses and requirements that are essential for timely graduation. Major Completion Maps can be found under each academic major in the General Catalog (http://catalog.colostate.edu/general-catalog).
- The All-University Core Curriculum (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum) (AUCC) outlines the general education requirements for graduation.
- Advising@CSU (http://advising.colostate.edu) has a compilation of resources, policies, and procedures for students.
- Undeclared students are encouraged to visit the Collaborative for Student Achievement (http://www.casa.colostate.edu) office for additional resources for exploring majors
- The CSU Career Center (https://career.colostate.edu) empowers students to pursue satisfying careers through the development of individualized careers plans.

Many resources are available to assist with academic success at CSU. The primary contact for locating these resources is the student's advisor.

The following includes some additional items for which students may need to meet with their advisor.

- Advising code: Some majors require an advising code to register for classes. This is placed on a student's account in order ensure students connect with their advisor about their academic progress.
- Registration access times: Registration access times are provided for each student on their RAMweb (https://ramweb.colostate.edu) account based on the number of credits the student has received or whether the student is part of a particular population, such as the Honors Program.
- Any discussion about University Withdrawal, Planned Leave or other university policies.

Undeclared Advising

"Undeclared" is a special designation for students who have a rich and diverse set of interests that span the CSU curriculum and want to explore all their options. Through the Undeclared advising process students are able to learn about various academic opportunities while keeping their options open as they begin their college experience. Professional academic success coordinators in the Collaborative for Student Achievement (http://www.casa.colostate.edu) are knowledgeable about the full breadth of academic requirements so as to better assist students in the process of selecting a major. These advisors help students explore their values, interests, and skills, plan their class schedules strategically, provide information on academic and career options, and refer students to other resources. The vast majority of Undeclared students declare an academic major by 45 credits. Timely major declaration promotes graduation within four years and allows students to remain eligible for financial funding without reaching the maximum allowed credits.

Graduate Students

Advising information for graduate students is available in the Graduate and Professional Bulletin (http://catalog.colostate.edu/general-catalog/graduate-bulletin/graduate-study/procedures-requirements-all-degrees/#advisory-system).

Grading

Faculty and instructors submit grades once coursework has been completed. The approved grade mode(s) are included in the information with each course in this General Catalog (in the course bubble). Grade modes are Traditional (A through F letter grades), Student Option Satisfactory/Unsatisfactory, Instructor Option, Satisfactory/Unsatisfactory, and Audit. See below for more information.

Grading Scale
Grade Mode Descriptions
Discontinuing a Class (Student Non-Attendance)
Semester Grades
Transcripts
Grade Appeals
Repeat/Delete Policy

Grading Scale

Grade points

Grade		Grade points per credit
A+		4.000
A	Excellent	4.000
A-		3.667
B+		3.334
B	Good	3.000
B-		2.667
C+		2.334
C	Satisfactory	2.000
D	Poor, but passing	1.000
F	Failure	0.000
S	Satisfactory [2]	
U	Unsatisfactory [1]	
I	Incomplete [1]	
W	Withdrawal [1]	
H	Honors [2]	
AU	Audit [1]	
NG	No Grade Reported [1]	
NGC	Non Graded Component [2]	

[1] Credits not used to compute grade point average (GPA) and not counted toward graduation.

[2] Not used to compute GPA. Non-graded components are attached to a graded component carrying credits.

Credits for courses graded F are used to compute GPA, but they do not count toward graduation.

Effective Fall 2008, C-, D+, and D- grades are not assigned at CSU.

When an X is placed before a grade, e.g., XA, XB, etc., the student has been granted an Academic Fresh Start. These grades are not calculated into the grade point average.

When an R is placed before the grade, the student has elected to repeat the course under the terms of CSU's Repeat/Delete policy. The original course grade is not calculated into the grade point average.

When an AM is placed before the grade, it indicates a finding of academic misconduct by the student in the particular course. For more information, see Procedures for Dealing with Academic Misconduct in the Students' Responsibilities section of University Policies.

Students may contest whether or not an assigned grade was recorded accurately in the educational record by following the procedures described under the Grade Appeal section.

Grade Mode Descriptions

Traditional

Term grades are reported using the Grading Scale above.

Faculty use of +/- grading is optional. Course instructors should indicate on the course syllabus and/or policy statement the grading system used in the course.

Student Option Satisfactory/Unsatisfactory

Undergraduate students may elect satisfactory/unsatisfactory grading in one course per term in courses offered for Student Option Satisfactory/Unsatisfactory grading under the following conditions:

Undergraduate students, except first-term freshmen and transfers, with a cumulative CSU grade point average of 2.000 or better and with the advisor's consent, may register for approved courses on a Student Option Satisfactory/Unsatisfactory basis. This work may not be in areas of study required in the student's major, minor, teacher licensure, or for All-University Core Curriculum requirements (i.e., it must consist of free electives not specified as to general area of study). For example, a three-credit social science requirement would not be considered a free elective. Students must register for the course first, then complete the Student Option Satisfactory/Unsatisfactory and Audit Grading form to elect this option. The form can be found on the Office of the Registrar's website (http://registrar.colostate.edu/forms/auditsatisfactory-unsatisfactory-grading-form). Changes to Satisfactory/Unsatisfactory grading can only be made during the add/drop period.

A grade for a course taken as Satisfactory/Unsatisfactory may not be converted to a traditional grade for purposes of improving the GPA to meet graduation or scholastic requirements. In situations where students change their major or minor to include required courses taken previously for Satisfactory/Unsatisfactory grades, the major department will determine if such courses may be considered as fulfilling degree requirements. When it is determined that an ineligible student is or has been registered for a Satisfactory/Unsatisfactory course, a traditional grade will be assigned. A correct Satisfactory/Unsatisfactory registration including advisor approval is the express responsibility of each student.

Satisfactory/Unsatisfactory registration policies for graduate students are described in the Graduate and Professional Bulletin.

Instructor Option

Instructor option grading allows the instructor to determine whether Traditional or Satisfactory/Unsatisfactory grading is to be used for a course. In courses approved for instructor option grading, the type of grading (Traditional or Satisfactory/Unsatisfactory) to be used for all students in the course during the term is to be indicated on the course syllabus.

Satisfactory/Unsatisfactory

Performance equivalent to a grade of C or better is recorded as Satisfactory. Performance equivalent to D or F is recorded as Unsatisfactory. Neither the S nor U grades are used in calculating the CSU grade point average; however, courses graded S may apply to graduation requirements.

Audit

A student wanting to attend a class without earning credits may register as an auditor. Auditing a course requires prior approval of the instructor of the course. If an instructor determines an auditor's attendance or participation is unsatisfactory, the course will not be recorded on the student's academic record. Changes to or from audit status must be made during the registration or add/drop period. Tuition and fees are assessed for audited credits. Audits do not count for full-time status for loan deferments, financial aid, etc., and are not eligible for the College Opportunity Fund (COF). Students must register for the course first, then complete the Student Option Satisfactory/Unsatisfactory and Audit Grading form. The form can be found at the Office of the Registrar's website (http://registrar.colostate.edu/forms/auditsatisfactory-unsatisfactory-grading-form).

Incomplete Grades

At the discretion of the instructor, a temporary grade of "I" may be given to a student who demonstrates it is not possible to complete the requirements of a course due to circumstances beyond the student's control and not reasonably foreseeable. A student must be passing a course at the time an incomplete is requested unless the instructor determines there are extenuating circumstances to assign an incomplete to a student who is not passing the course. When an instructor assigns an "I", the instructor shall specify in writing the requirements the student shall fulfill to complete the course as well as the reasons for granting an "I" when the student is not passing the course. The instructor shall retain a copy of this statement in the grade records and provide copies to the student and the department head or designee. Students will be notified to take action on Incomplete grades at the beginning of their anticipated graduation term. The student should not register for the course again to complete the coursework. After successful completion of the makeup requirements, incomplete grades will be changed by the instructor of record or the department head, in absence of the instructor of record. After one year, or at the end of the semester in which the student graduates (whichever comes first), an Incomplete will be automatically changed to an "F" (failure) or a "U" (unsatisfactory) unless the course has been previously completed and a grade change submitted by the instructor or the head of the department. If the class for which the student has been given and Incomplete is S/U only, the grade shall revert to a "U"; if it is a traditionally graded class, it shall revert to and "F". If a course is instructor option and S/U grades exist, the Incomplete will roll to a "U". If only traditional grades ("A" thru "F") exist, the Incomplete will roll to an "F". The temporary grade of "I" **must** be changed to a grade (e.g., A, B, C, D, F, S, U) prior to the student being awarded a diploma from CSU. *(Faculty Council approved minutes March 6, 2018)*

Discontinuing a Class (Student Non-Attendance)

If a student discontinues attending a class and has not officially dropped or withdrawn through RAMweb (https://ramweb.colostate.edu) or the Office of the Registrar, the grade of F (failure) is recorded.

Semester Grades

Students may access their semester grades through RAMweb (https://ramweb.colostate.edu) three business days after the week of final exams each term.

Transcripts

Transcripts of students' official academic records are maintained by the Office of the Registrar. Official and unofficial copies of a student's transcript may be obtained by the student through RAMweb (https://ramweb.colostate.edu).

Grade Appeals

Instructors are responsible for stating clearly the instructional objectives of the course at the beginning of each term and for evaluating student achievement in a manner consistent with these objectives. Students are responsible for maintaining standards of academic performance established for each course in which they are enrolled. Instructors are responsible for determining and assigning final course grades. Graded examinations, papers, and other materials used as a basis for evaluating a student's achievement will be available to the student for inspection and discussion.

Students may appeal instructor's grading decisions. The burden of proof, however, rests with the student to demonstrate that the grading decision was made on the basis of any of the following conditions. *(Faculty Council approved minutes May 4, 2010)*

1. A grading decision was made on some basis other than performance and other than as a penalty for academic misconduct.
2. The grading decision was based upon standards unreasonably different from those which were applied to other students in the same course and section.
3. A grading decision was based on a substantial, unreasonable, or unannounced departure from previously articulated standards.

Before making an appeal, the student should discuss the situation with the instructor(s) involved in the decision. To appeal a grading decision, the student shall submit a written request to the department head. The request must set forth the basis for the appeal, identifying one or more of the three criteria set forth above.

The request must be submitted (or postmarked, if mailed) no later than thirty (30) calendar days after the first day of classes of the following spring semester for appeal of grades recorded for the fall, and no later than thirty (30) calendar days after the first day of classes of the following fall semester for grades received in the spring or summer semester. If no appeal is filed within this time period, the grade shall be considered final.

Within 30 days of receipt of an appeal, the department head shall forward the appeal to the course instructor(s) who assigned the grade and an appeal committee shall be formed. If the request is received during or shortly before the summer session, when the course instructor(s) who assigned the grade or member(s) of the appeal committee may not be available, the appeal committee will be formed no later than 30 calendar days after the beginning of the following fall semester. The appeal committee shall be composed of two (2) faculty members and two (2) students from within the department and one (1) faculty member from outside the department who shall serve as a the chair. All five (5) members of the committee shall be voting members. The procedure for the selection of the members of the appeal committee shall be specified in the department code.

The appeal committee will review the written appeal and response of the instructor(s). They may elect to separately interview both the student and the instructor(s) before rendering a decision. The decision of the appeal committee will be based upon whether one of the conditions for an appeal set forth above has been met. At the conclusion of the deliberations, the committee shall render one of the following decisions:

1. the original grading decision is upheld, or
2. the department chair or designee(s) will reevaluate the student's achievement of the instructional objectives of the course and assign a grade accordingly.

Written notice of the committee's decision and the reasons for the decision normally will be sent to the student and the instructor(s) within 30 calendar days of the appointment of the committee. The appeal committee's decision is the final decision of the University. Written summaries of the hearing and decision, together with a rationale for that decision, shall be provided to the student and the instructor who assigned the grade and shall be retained in the department office for a period of one year.

Repeat/Delete Policy

Repeat/Delete is a one-time per course grading option that may be used by undergraduate students who repeat a course. Once a student has graduated from CSU, a student may not repeat/delete any CSU course taken prior to the date of graduation. The following rules apply when the Repeat/Delete option is applied:

1. The grade received in the repeated course will be used in calculating the student's GPA, regardless of whether the repeated grade is higher, the same as, or lower than the initial grade received. The initial grade will remain on the transcript, but will not be used in calculating the GPA when the Repeat/Delete option is applied.
2. It is the student's responsibility to request the Repeat/Delete option from the Registrar's Office, before the expiration of the course withdrawal period in the semester in which the course is first repeated.
3. The Repeat/Delete option may be used for a maximum of twelve (12) credit hours and no more than three courses.The Repeat/Delete option may not be applied to a course for which the final grade was given as a penalty for academic dishonesty in accordance with the academic integrity policy under section I.5.1 of the Academic Faculty and Administrative Professional Manual (http://facultycouncil.colostate.edu/faculty-manual-section-i/#I5).
4. If the course is repeated at any time subsequent to the use of the Repeat/Delete option, all grades in that course, except the initial grade, are used in computing the student's GPA.
5. Although a course may be repeated as often as a student chooses, the Repeat/Delete option can be used only the first time a course is repeated.
6. The Repeat/Delete option will not retroactively affect academic standing for previous terms. For example, use of the Repeat/Delete

option may change a student's cumulative grade point average, but will not change the notation of probation previously recorded on the student's record.

Note: Although CSU does not use the original course grade for GPA calculation once the Repeat/Delete option has been used, other educational institutions and potential employers may use this grade in their GPA calculation. Medical schools, many law schools, and other graduate programs, for example, may recalculate cumulative GPA using ALL grades on a transcript. Students may request Repeat/Delete through RAMweb (https://ramweb.colostate.edu).

Scholastic Standards

Scholastic standards are mandated by the faculty through the Faculty Council Committee on Scholastic Standards.

Policies regarding probation, dismissal, and appeal are determined by the faculty and CSU in their absolute discretion subject to acceptance by the governing board of CSU.

Undergraduate
Graduate

Undergraduate

Procedures relative to undergraduate scholastic standards are administered through the Collaborative for Student Achievement (http://www.casa.colostate.edu). Those students whose scholastic achievement is less than that required for graduation are placed on probation or dismissed from CSU.

Good Standing - Minimum Cumulative GPA

In order to graduate, a minimum cumulative grade point average (CUM GPA) of 2.000 on a 4.000 scale must be earned at CSU. A student is expected to maintain a CUM GPA of 2.000 or higher at all times. All grades earned in regular credit courses, including those taken through the Division of Continuing Education (https://www.online.colostate.edu) or the CSU Summer Session (https://summer.colostate.edu), will count toward the CUM GPA. For students who have been granted a Fresh Start, all grades earned prior to the Fresh Start will not count toward the student's CUM GPA.

Failure to maintain a CUM GPA of 2.000 or higher will result in academic probation or academic dismissal.

Academic Probation

Failure to maintain a CUM GPA earned at CSU of 2.000 or higher will result in academic probation for a period of two regular semesters (fall and spring). Grades earned in regular credit courses through the Division of Continuing Education or the CSU summer session will count toward the CUM GPA regardless of when those classes are taken. At any time that the CUM GPA is raised to a 2.000 or higher, the student will return to regular academic standing.

Students who withdraw from CSU while on probation will remain on probation if they return to the University. Students on academic probation who return to CSU after attending another institution will continue their probation, since transfer credits are not computed within the CUM GPA earned at CSU.

Academic Dismissal

Students on academic probation who do not raise their CUM GPA to a 2.000 or higher after two regular semesters (fall and spring) will be dismissed from CSU. **Exceptions to this policy for first-term, undergraduate, non-transfer students are outlined below, under Update to the Scholastic Standards Policy June, 2016.** Students who have been academically dismissed from CSU have three options to seek readmission. First, they may take classes through the GUEST program, through the CSU Summer Session, or through the Division of Continuing Education, but they are not eligible to apply for readmission until the CUM GPA is raised to 2.000 or higher.

The second option available to students who have been academically dismissed is to enroll at another regionally accredited institution and meet the requirements to be admitted as a transfer student to CSU. Upon transferring back to CSU, students will have two semesters following re-enrollment to raise their CUM GPA earned at CSU to 2.000 or higher or face academic dismissal again. Transfer credits are not computed within the CUM GPA earned at CSU.

Students who have raised the CUM GPA to 2.000 or higher or who apply as students transferring from another institution may apply for readmission to the University subject to any enrollment limitation as set by the Colorado Department of Higher Education or the governing board.

Appeal of Academic Dismissal

As a third option, students may appeal academic dismissal. An online appeal may be submitted to the Collaborative for Student Achievement (http://www.casa.colostate.edu) for consideration by the Faculty Council Committee on Scholastic Standards. All appeals must be submitted in accordance with written instructions.

All appeals of academic dismissal will be acted upon by the Faculty Council Committee on Scholastic Standards no later than seven business days prior to the first day of classes for the next regular academic semester (either fall or spring).

A dismissal appeal that is granted allows the student to return immediately for the next regular semester (fall or spring). Dismissal appeals granted cannot carry forward to a future semester unless the student was approved (prior to dismissal) for a planned leave for the next regular semester. If a student withdraws during the dismissal appeal granted semester due to extenuating circumstances, the student must submit another appeal to dismissal that includes documentation of the extenuating circumstances or the student will be dismissed at the end of the dismissal appeal granted semester.

Update to the Scholastic Standards Policy, June 2016

Undergraduate (non-transfer) students who earn a GPA of less than 1.000 in their first semester at CSU will not have 3 semesters in which to earn a cumulative 2.000 GPA, and must make a choice:

- Take 1 – 3 semesters off, reapply and return with a Freshman Accelerated Fresh Start (see below)
- Continue attending the following semester and earn at least a term 2.000 GPA on 12 or more credits, and receive a third semester on probation; or earn less than a 2.0 term GPA and be academically dismissed.

Freshman Accelerated Fresh Start (*Faculty Council approved minutes April 5, 2016)*

The Freshman Accelerated Fresh Start opportunity is available for first-time first-year students who finish their first semester at CSU with a GPA below 1.000.

1. Students who meet these criteria will have the following option:

- Leave the University for 1 – 3 semesters (the summer session is not included in this count)
- Reapply/return to CSU and begin earning a new cumulative GPA (first semester grades remain on the student's transcript but will not be calculated in their cumulative GPA)
- To return, a student must complete a returning student application accompanied by supplemental documentation that addresses a combination of factors, including evidence of maturity and/or academic success at another institution as well as their strengthened preparation for academic success at CSU. (Details online at Office of Admissions (http://admissions.colostate.edu/apply/returning)).

2. Students are eligible for only one Fresh Start opportunity (regardless of whether it is a Freshman Accelerated Fresh Start or a standard academic Fresh Start)

Academic Fresh Start

Former CSU undergraduate students may apply for an academic Fresh Start, a policy which allows students to establish a new academic record. A student may be granted a Fresh Start only once.

An academic Fresh Start may be granted after at least two years have elapsed since the student's last term of enrollment as an admitted, degree-seeking student, regardless of the number of credits taken. Courses taken through the Division of Continuing Education, as a guest student, or the CSU Summer Session after being dismissed or ceasing enrollment as an admitted degree-seeking student will not count against the two-year interval required for a Fresh Start.

Eligibility for a Fresh Start can be achieved in one or both of the following ways:

1. Be successful in a job or volunteer experience and be able to supply strong letters of recommendation from your employer/supervisor (recommendations must not be from a family member or relative).
2. Take at least 15 credits of academic courses either at another institution or as a guest student at CSU and earn a 2.500 or higher cumulative GPA

Students applying for a Fresh Start will also need to:

1. Submit a Returning Student Application by the deadline for the appropriate semester.
2. Write a statement of motivation on why you would like to return to CSU and why you think you are now ready to succeed. Analyze your past behavior and provide evidence of change and success since you left CSU.
3. In your statement, include an action plan for academic success that you have researched and considered carefully. Describe specifically how you will utilize campus advising and resources. Review the Collaborative for Student Achievement (http://www.casa.colostate.edu) website (http://oas.casa.colostate.edu/campus-resources) for suggested resources.
4. Submit all information to the Office of Admissions (http://admissions.colostate.edu/returningstudents).

A student granted a Fresh Start and enrolled will have a demarcation on the permanent academic record to delineate the previous record from the new academic record achieved under the Fresh Start policy. Credits for those courses in which a grade of at least C- or S was awarded prior to the Fresh Start may be applied toward graduation requirements under the Fresh Start policy.

Only grades earned after the Fresh Start demarcation will be computed in the new GPA. A Fresh Start may have implications regarding other requirements for graduation, such as upper-division and in-residence requirements.

If a student receives a Fresh Start, the student must successfully complete at least 30 upper-division credits of course-work in residence at CSU after the Fresh Start is granted in order to graduate.

Resources

U-Turn

U-Turn (https://tilt.colostate.edu/learning/uturn) is a one-day event that provides students access to academic support resources, all in the same room, to assist in making a plan to turn the semester around.

Change of Major

Students who experience academic difficulty may choose to explore a different academic major. Resources for doing so include this General Catalog, the Collaborative for Student Achievement (http://www.casa.colostate.edu), and the CSU Career Center (https://career.colostate.edu/explore/choosing-a-major).

Undergraduate Planned Leave

Other students may decide that taking time off from CSU is in their best interest. Learn more at Undergraduate Planned Leave.

Dean's List

Students should contact their individual college(s) for Dean's List qualifications.

Graduation with Distinction

CSU recognizes outstanding scholarship by granting the baccalaureate degree "Cum Laude," "Magna Cum Laude," and "Summa Cum Laude" to those students in each college who have achieved unusually high academic excellence in their undergraduate programs. To be eligible for graduation with distinction, students must meet the following requirements:

- Minimum grade point average required for graduation with distinction and
- Minimum of 60 credits completed at CSU. Students who have been granted Fresh Start must have completed 60 credits after the Fresh Start designation to qualify for graduation with distinction.

Transfer credits are not considered when determining a) candidacy for graduation with distinction or b) graduation with distinction.

The Current Breakdown of Acceptable GPAs for a Distinction Designation:

College	Summa Cum Laude	Magna Cum Laude	Cum Laude
Agricultural Scienes	3.980	3.900	3.780
Business	3.980	3.900	3.790
Engineering	3.980	3.900	3.780

Health and Human Sciences	3.990	3.910	3.780
Liberal Arts	3.990	3.920	3.828
Natural Resources	3.980	3.900	3.770
Natural Sciences	3.990	3.940	3.830
Veterinary Medicine and Biomedical Sciences	3.990	3.940	3.850

These minimum cumulative grade point averages will be reviewed every four years and may be changed if needed to maintain appropriate academic standards. Such changes will become effective the semester following approval by Faculty Council and publication in the General Catalog. Each of the minimum grade point averages needed to graduate with distinction will be adjusted at the end of each four year period only if the percentage of students graduating with distinction in a distinction category and college have shown a statistically verifiable deviation from the target percentages of:

Summa Cum Laude	1%
Magna Cum Laude	3%
Cum Laude	6%

Candidates for graduation with distinction are recognized at the time of commencement. Candidacy is determined by a student's cumulative grade point average through the semester preceding graduation. "Candidacy" for graduation with distinction does not guarantee graduation with distinction. Graduation with distinction is based on the student's cumulative grade point average at the time of graduation. The CSU GPA calculation is carried to the third decimal place and is not rounded.

Students seeking a second bachelor's degree are eligible for distinction designation. To qualify for graduation with distinction, a minimum of 60 credits completed at CSU is required after the first degree. In determining the grade point average of the student, only grades earned after the first degree are considered.

Graduation as a University Honors Scholar

Students who complete the University Honors Program (http://www.honors.colostate.edu) academic requirements and achieve at least a cumulative 3.500 grade point average earn the designation of University Honors Scholar. Scholars are recognized at graduation by the Honors Program and during the colleges' commencement ceremonies. The University Honors Scholar designation appears on diplomas and transcripts.

Graduate

Graduate students must maintain a 3.000 GPA to be in good standing with the University. Learn more in the Graduate and Professional Bulletin.

Academic Policies

CSU Academic Integrity Policy and Student Conduct Code
Class Attendance Regulations
Final Examinations
Undergraduate Planned Leave
Undergraduate Change of Major, Concentration, Minor, or Certificate

CSU Academic Integrity Policy and Student Conduct Code

The CSU Academic Integrity Policy and Student Conduct Code (https://resolutioncenter.colostate.edu/wp-content/uploads/sites/32/2018/08/Student-Conduct-Code-v2018.pdf) exist to notify students, faculty, and staff of the specific expectations Colorado State University holds related to student behavior and the rights and responsibilities that accompany being a student and participating in student clubs or organizations.

Class Attendance Regulations

Students should attend all classes for which they are registered to obtain maximum educational benefits. Absence or lateness does not excuse students from required course work.

Instructors and departments are responsible for establishing class attendance policies. These policies must accommodate student participation in University-sanctioned, extracurricular/co-curricular activities. Students must inform their instructors prior to the anticipated absence and take the initiative to make up missed work in a timely fashion. Instructors must make reasonable efforts to enable students to make up work which must be accomplished under the instructor's supervision (e.g., examinations, laboratories). In the event of a conflict in regard to this policy, individuals may appeal using established CSU procedures.

For purposes of this regulation, University-sanctioned activities include competitions, events, and professional meetings in which students are officially representing the institution. Appropriate sanctioned activities include:

- Intercollegiate athletics;
- Collegiate club sports and competitions;
- Conferences and workshops recognized by CSU not related to academics;
- Commitments on behalf of CSU (ASCSU, band, etc.); and
- Professional activities recognized by CSU related to academics.

Department heads or their designated representatives must approve sanctioned professional and departmental activities. Other sanctioned activities must be approved by the appropriate program director on record with the Division of Student Affairs offices or the Department of Athletics. Refer to this list for the appropriate approving authority (http://studentaffairs.colostate.edu/class-absence-info).

CSU policy permits only enrolled students, persons attending with the permission of the instructor, and administrative personnel of CSU to be present in a classroom during scheduled classroom periods.

At the discretion of the instructor in charge, any full-time student, faculty member, or lifelong learner may attend any class without formal registration provided adequate class-room space is available.

Academic departments may replace any students in a course who fail to attend both of the first two regularly scheduled meetings of the class (one meeting for laboratory courses or for classes which meet once each week), unless the students have notified the department in advance. Since this procedure is a department option, students remain responsible for dropping courses they do not intend to complete within the required time period for drops.

Religious Holidays and Observances

CSU has a legal obligation to accommodate students' absences due to religious observances. For such an accommodation, it is the student's responsibility to complete the Religious Accommodation Request Form (http://www.studentaffairs.colostate.edu/religious-holidays) at the beginning of each semester and submit the request via the Office of the Vice President for Student Affairs website. The Dean of Students will communicate with the instructor regarding the student's absence and the student is instructed to discuss how best to ensure an accommodation related to class conflicts. For religious observances that cannot reasonably be anticipated at the beginning of the semester, students must follow the procedure above as soon as possible after the course conflict is identified. If a student knows that a particular course or section of the course will have multiple conflicts with his or her religious obligations, the student is advised to locate another course section or defer taking the course to a different semester. In the event of a conflict in regards to this policy, individuals may appeal using established CSU procedures. Instructors are advised to provide reasonable accommodations to ensure compliance with CSU's obligations.

Final Examinations

Final examinations, as appropriate, are given during the final week of each semester. During this week, classes are rescheduled to meet for two-hour periods.

The following procedures apply to all courses during the final week of the semester.

1. Final examination week is part of the regular semester. Student attendance shall be consistent with CSU policy.
2. The final in-class examination period is intended for the end-of-semester examination. No in-class examination constituting more than 10% of the final course grade may be given in undergraduate courses during the week preceding the final examination period of the semester; laboratory, performance, and other alternative classes (e.g., courses in PACe - the individualized mathematics program) excluded. It is the responsibility of the department head, or, where appropriate, the school head, to ensure compliance with this policy.
3. Courses for less than four credits shall meet for one period. Courses for four or more credits may meet for two periods.
4. Classes that begin at times other than on the hour (i.e., 9:30, 2:10, 3:35, etc.) will use the time period assigned for the hour (i.e., 9:00, 2:00, 3:00, etc.). For example, a 4:30 TR class would use the 4:00 TR assigned final examination period.
5. Classes shall meet only at the times indicated on the final examination schedule.
6. Any exception of regulations 3 or 5 above, e.g., special types of examinations which need more time or special locations to conduct, must be approved by the Associate Registrar in Curriculum, Catalog, and Scheduling prior to the second week of class and announced in classes by the second week.
7. If a student has three or more final examinations (not classes) scheduled for the same day or if conflicts of examination times occur, the student may negotiate a time change with the instructors involved. If the parties involved cannot find a mutually agreeable time, the Office of the Registrar indicates which courses must be changed. Note: The Associate Registrar in Curriculum, Catalog, and Scheduling, must be notified at least one week prior to final examination week to allow instructors time to make appropriate accommodations.

Any student who has a conflict with the examination schedule must inform the instructor as soon as possible before the examination. If an agreement cannot be reached between the instructor and student as to the appropriateness of a make-up examination, the student should appeal to the department head.

Undergraduate Planned Leave

Undergraduate Planned Leave is a status intended to help students more easily and effectively take up to two semesters away from their CSU studies and successfully return again. Students who obtain Undergraduate Planned Leave status and comply with its requirements do not have to re-apply for admission to CSU upon return. In addition, Planned Leave students will be tracked in an attempt to help facilitate their successful and timely return.

All undergraduate students seeking their first bachelor's degree are requested to communicate their plans when leaving CSU in order to determine eligibility for an approved Planned Leave. Students who meet the established eligibility requirements will be granted a Planned Leave for up to two semesters. (A semester is defined as a fall or spring semester and excludes summer sessions; for example, Planned Leave is granted for fall and the student returns the following spring, or is granted for spring and returns the following fall.) Semesters may, but are not required to, be taken consecutively. A total of two semesters of Planned Leave are available to all first bachelor's degree seeking students. Any student leaving for more than two semesters should utilize CSU's Returning Student (http://admissions.colostate.edu/returning) process via the Office of Admissions when they return. Any student leaving longer than two semesters due to military service should work with the Adult Learner and Veteran's Services Office (http://www.adultstudents.colostate.edu) or the Veteran's Education Benefits Office (http://registrar.colostate.edu/military-veterans-benefits) to discuss available options.

Some examples of situations where Planned Leave might be appropriate include students on domestic internships, official assignment for CSU, military service, mission service, leave due to medical reasons, family crisis, financial crisis, work, etc.

Per CSU transfer evaluation guidelines, students on Planned Leave may enroll at another domestic post-secondary institution during their Planned Leave. Any student planning on going to an international post-secondary institution must have a conversation with, and follow the processes of, the Education Abroad Office (http://educationabroad.colostate.edu/students) to evaluate what, if any, of the credits taken might transfer back to CSU.

International study while on Planned Leave is not the same as regular Education Abroad. Many different issues arise and processes must be followed by students in the Education Abroad program (http://educationabroad.colostate.edu/students). Students participating in Education Abroad (for-credit study, intern, volunteer, work, or research abroad programs) have a separate CSU process for managing planned leave and therefore are not eligible to participate in this policy.

In order to be eligible for planned leave, a student must meet all of the following criteria:

a. Undergraduate Degree Seeking Student (CSU on-campus and CSU Online) seeking first bachelor's degree (2nd Bachelor students are not eligible)

b. Academic Standing: good standing or academic probation one or two.

Students interested in obtaining Planned Leave status must apply and be approved before leaving. For additional information, see the Office of the Registrar's website (http://registrar.colostate.edu/planned-leave).

Student Financial Assistance

Most Financial Aid is handled under Federal Title IV requirements. Students who are receiving financial aid should request information about current and future term eligibility when considering Planned Leave. Students who are receiving scholarships should request information regarding renewability. Students are not eligible for any financial aid disbursements during the semester(s) on Planned Leave. Students on Planned Leave will be reported to lenders and loan service agencies as "non-attending" and will need to contact lenders for information regarding possible repayment requirements.

International Students

Because there are federal visa requirements, International students must discuss their options for Planned Leave with the Office of International Programs (OIP) (https://international.colostate.edu) to determine the impact of the Planned Leave to their immigration status. All international students must be enrolled in a full course of study while in the United States.

Returning from Planned Leave

All students returning from an approved Planned Leave will be required to respond to the safe campus community questions as part of their process for returning to campus. A full set of steps for students returning from a Planned Leave are available on the Planned Leave website (http://registrar.colostate.edu/planned-leave).*(Faculty Council approved minutes March 6, 2018)*

Undergraduate Change of Major, Concentration, Minor, or Certificate

Change of Undergraduate Major

Newly admitted students who have not begun classes must contact the Office of Admissions (http://admissions.colostate.edu) to change their major.

In many, but not all cases, an undergraduate student regularly enrolled in CSU may change from one major to another. Students complete this process by working with the advisor/academic success coordinator in the department to which they would like to change. Students should schedule an appointment by contacting the department offering the major, minor, or certificate to which they would like to change (or add). Some departments create advising appointments by phone, others via signing up online; some advising appointments are individual, others are group change of major sessions.

Some majors—considered competitive or controlled-entry majors—require specific entrance requirements (portfolio, audition, cumulative GPA, grades in specified courses, etc.). Students wishing to change from one major to another can obtain information about any restrictions or requirements that may be in place, as well as the actual process involved, from their advisor, the academic department offering the major, or from the Collaborative for Student Achievement (http://studentachievement.colostate.edu) office.

Dropping a Major, Minor, Concentration, or Certificate

Students wishing to drop a minor or second major should make an appointment with their academic advisor/academic success coordinator to be sure all options are fully understood. Students then submit a change of major form to the Office of the Registrar (http://registrar.colostate.edu), First Floor in Centennial Hall.

Changes of major, minor, or certificate are generally processed within one business week. Students may check their status in RAMweb (https://ramweb.colostate.edu).

Academic Credit

Credit Hour and Credit Load
Undergraduate Classification
Enrollment Status

Credit Hour and Credit Load

A credit hour is defined as 50 minutes of lecture or discussion/recitation per week for 16 weeks (800 minutes in a semester), 100 minutes of laboratory per week for 16 weeks (1600 minutes in a semester) when outside preparation is required, or 150 minutes of laboratory per week for 16 weeks (2400 minutes in a semester) when no outside preparation is required. For workload planning purposes (and to graduate with 120 credits in eight semesters), students should plan on an average of 15 credits per semester and should expect each credit hour will require approximately two to three hours (for some students, in some classes, more time and in a few classes, less time) of effort per week to attend classes and to accomplish readings and out-of-class assignments in preparation for successful completion of the course requirements.

Undergraduate Classification

Student level (class) is determined by the number of credits at CSU and credits accepted in transfer. Transfer credits may or may not be acceptable in meeting degree requirements.

Student Level Semester Credits

Student Level	Semester Credits
Freshman	0-29
Sophomore	30-59
Junior	60-89
Senior	90 and over

Enrollment Status

Enrollment status (full-time, three-quarter time, half-time, less than half-time) is determined by the number of credits which the student has completed or is pursuing for the term in which the verification is requested. Courses from which the student has withdrawn or is auditing are not included. (The following schedule for enrollment status differs from the full-time/part-time schedule for tuition and fees. (https://financialaid.colostate.edu/base-tuition))

Credit requirements are as follows:

Fall/Spring/Summer Semesters:

Undergraduate Students

Full-time	12 or more credits
Three-quarter time	9-11 credits

Half-time	6-8 credits
Less than half-time	5 credits or less

Graduate Students

Full-time	9 or more credits
Three-quarter time	7-8 credits
Half-time	5-6 credits
Less than half-time	4 credits or less

For verification of enrollment status go to RAMweb (https://ramweb.colostate.edu) and click on *Records* and then on *Enrollment Verification*. For more information visit the Office of the Registrar (http://registrar.colostate.edu/student-resources/enrollment-degree-verification) website.

Groups such as co-op programs may have a different definition of enrollment status and should be verified with the program.

Registration

Class Schedule
Registration Process
Schedule Changes
University Withdrawal
Undergraduate Planned Leave
Graduate Continuous Registration
Registration Alternatives

Class Schedule

The Class schedule is available in RAMweb (https://ramweb.colostate.edu) or to the public via the CSU website (https://ramweb.colostate.edu/registrar/Public/ClassSchedule.aspx), then Resources and A to Z under Class Schedule, prior to the beginning of registration for a given term.

Registration Process

Students register for classes, including adding or dropping courses, online through RAMweb (https://ramweb.colostate.edu). The class schedule is available through RAMweb (https://ramweb.colostate.edu) approximately one month prior to the start of registration, allowing students to plan their schedules (Plan Ahead, a schedule planning tool, is also available in RAMweb (https://ramweb.colostate.edu) through the Registration link). The class schedule is available to the public via the CSU website (https://ramweb.colostate.edu/registrar/Public/ClassSchedule.aspx), then Resources and A to Z under Class Schedule.

Before registering for classes, students must complete the Registration Ready portion of the process. In order to communicate quickly and effectively with students, CSU sends many official campus communications via email. Students affirm their email address via Registration Ready. Students are also required to maintain a current mailing address. Once Registration Ready is complete, and the student's Registration Access Date/Time has arrived (available in RAMweb (https://ramweb.colostate.edu)), a student may register for classes.

Military veterans will receive a priority Registration Access Date/Time to register for their classes.

Registration and payment deadlines must be met in order for registration to proceed. Students should respond to correspondence from CSU, including email correspondence, in a timely manner to avoid missing crucial deadlines.

Registration Waitlist

Registration Waitlists are available for students attempting to register for class sections that are already full. When a class has reached capacity and shows a waitlist is available, students may sign up on the waitlist. Students are e-mailed and texted (if they set their text messaging options to allow Academic and Financial Alerts via RAMweb (https://ramweb.colostate.edu)) when a seat opens in the class. Students then have a 24-hour window to register for the class. If the student does not register, they are taken off the waitlist and a notification goes to the next student on the waitlist.

Please go to RAMweb (https://ramweb.colostate.edu) or the Office of the Registrar's webpage (http://registrar.colostate.edu/registration/registration-waitlist-faqs) for frequently asked questions and answers about the Registration Waitlist.

Course Overrides

Even when a class has reached its published enrollment limit, the instructor may give special permission for a student to register in the course. Students should inquire about overrides with the instructor assigned to teach the class or the department offering the class. Overrides are processed electronically via ARIESweb by the instructor or department offering the course. Once granted an override, the student must still register for the course through RAMweb (https://ramweb.colostate.edu).

Credit Overload

Undergraduate students who wish to register for more than 18 credits per term must have an overload approved and submitted through ARIESweb by their advisor. Requests for undergraduate students to register for 21 or more credits in a given term must be approved by the department chair/department head.

Graduate students who wish to register for more than 15 credits per term must also have an overload approved and submitted through ARIESweb by their advisor. Requests for graduate students to register for 19 or more credits requires approval from the Graduate School.

Variable Credit Course Registration

Some courses, such as research or field placements, are available for variable credits. Learn more about adjusting variable credits on the Office of the Registrar's website (http://registrar.colostate.edu/registration/registration-changes).

Auditing a Class

Students who are interested in learning content of a course but who don't need it to count toward graduation may choose to audit the course, if the option is available. Learn more about auditing a course (https://registrar.colostate.edu/academic-resources/audit-satisfactory-grading).

Late Registration

A Late Registration Charge of $50 (subject to change) is assessed for adding the first course on or after the first day of classes or for late adds after the registration period.

Graduate students who register for Continuous Registration or their first course for the term on or after the first day of the term will be charged a $50 Late Registration Charge.

Repeating a Course

Students may register for and complete a course more than once, but it can only be used one time to fulfill graduation requirements. The original grade and grades earned in repeated courses are used in calculating grade point averages, unless a student exercises the Repeat/Delete policy.

Repeat/Delete

Undergraduate students who retake courses have the opportunity to exercise the Repeat/Delete option. Students need to take steps to make this happen. Learn more about Repeat/Delete.

Enrollment and Degree Verification

For verification of enrollment status, term(s) of attendance, or degree awarded, go to RAMweb (https://ramweb.colostate.edu) and select Enrollment Verification from the Records option in the main menu. Learn more at the Office of the Registrar (http://registrar.colostate.edu/student-resources/enrollment-degree-verification).

Schedule Changes

Schedule Changes and the Add/Drop and Withdrawal Periods

Periods for changing schedules (adds, drops, withdrawals, changes of sections, grading options, or credits) are listed in the Academic Calendar and in the online class schedule. Add, drop and withdraw dates for specific sections may be located by clicking on the section's title in the class schedule. The Class Details section in the pop-up window will list those dates. Once registered, those dates are also available on RAMweb (https://ramweb.colostate.edu) by clicking Registered Course Details. Courses taught in terms of less than 16 weeks are subject to shorter add/drop and withdrawal periods.

Adding a class

During the regular 16-week Fall and Spring semesters, courses may be added without an override through 11:59 PM Sunday at the end of the first week of classes. Beginning Monday of the second week of classes, courses may be added with an electronic Department Approval - Restricted Add override from the instructor through the census date, which is the 12th day of classes of the semester. Course instructors may authorize their department offices to perform these overrides.

Dropping a class

Regular courses may be dropped through the census date, which is the 12th day of classes of the semester. Restricted-drop courses must be dropped before 11:59 PM Friday at the end of the first week of classes. Courses dropped during this period are not reflected on the student's academic record, and tuition and fees may be adjusted as a result. Consult the appropriate online class schedule for course drop deadlines. No drops may be made after the end of the add/drop period.

Withdrawing from a class

The course withdrawal period begins after the add/drop period and closes at the end of the eighth week of the semester. A "W " (withdrawal) grade notation will be recorded on the academic record. See also Class Attendance Regulations. Tuition and fees will not be adjusted for withdrawals during the course withdrawal period. See also Tuition and Fee Adjustments in the Financial Information section.

Courses taught in terms of less than 16 weeks are subject to shorter add/drop and withdrawal periods. Click on the class section's title in the class schedule and then on the Class Details section in the pop-up window to view a class's specific add, drop and withdraw dates.

Students withdrawing from CSU may not use the drop procedure to drop all classes, but must instead complete the University Withdrawal process.

Registration Cancellation (Prior to Start of Term)

Prior to the beginning of the semester, all courses can be canceled via the web registration system on RAMweb (https://ramweb.colostate.edu/registrar/Public/Login.aspx) with no charge.

University Withdrawal

University Withdrawal refers to a student withdrawing from all classes for a given term, starting the first day of the term and on or before the last day of classes (before Final Exams week).

Any student interested in completing a University Withdrawal will do so, online, through RAMweb (https://ramweb.colostate.edu/registrar/Public/Login.aspx). Students are encouraged to discuss their plans to complete a University Withdrawal with the following, as applicable: advisor/academic success coordinator, Financial Aid (http://sfs.colostate.edu), Veterans Education Benefits Office (http://registrar.colostate.edu/military-veterans-benefits), Student Athlete Support Services (http://www.sass.colostate.edu), International Student and Scholar Services (http://isss.colostate.edu), CSU Online (http://www.online.colostate.edu), and the Graduate School (http://graduateschool.colostate.edu).

University Withdrawal for Call to Active Duty

Called to Active Military Duty

CSU will assist any student called to active military service with reasonable accommodations and in making the best possible transition. As a primary point of contact, students are encouraged to work with Adult Learner and Veterans Services (ALVS) (http://alvs.colostate.edu). Depending on when in the semester the student is called to duty, different options may be available including University Withdrawal, late withdrawals, or incompletes.

Students anticipating being gone for a limited amount of time are encouraged to work with ALVS (http://alvs.colostate.edu) in order to explore reasonable accommodations in her/his courses or selected withdrawals from individual courses.

University Withdrawal for Call to Active Duty:

1. To complete a University Withdrawal a student should do so online, through RAMweb (https://ramweb.colostate.edu/registrar/Public/Login.aspx).
2. Ideally, you will have your deployment orders in hand when you visit ALVS. If you do not have your orders with you, or can only complete the withdrawal over the phone, then you can submit the orders to ALVS (http://alvs.colostate.edu) at 970-491-3906. When ALVS (http://alvs.colostate.edu) receives the orders, your tuition assessment will be adjusted to 0%.
3. If you are deployed between academic terms (for example, at the end of the semester or over the summer), you do not need to withdraw online or contact ALVS (http://alvs.colostate.edu) to withdraw; however, you do need to be sure you have cancelled your registration for the upcoming term. You may cancel courses on RAMweb (https://ramweb.colostate.edu/registrar/Public/Login.aspx).
4. Graduate students: Please be sure to review your options for Continuous Registration versus the Graduate Form 1B (Graduate

Application for Readmission) as you make arrangements for your deployment.

5. Short-term deployments may not require a University Withdrawal, depending upon the length of the deployment and when in the semester it occurs. Students given orders for a short-term deployment should work directly with their instructors, who are strongly encouraged to accommodate deployed students with a reasonable plan for making up work. Students who are advised they may be assessed a penalty for the absence should contact Adult Learner and Veteran Services (ALVS) (http://alvs.colostate.edu) to discuss their options. If you have any questions about the withdrawal process, be sure to consult ALVS (http://alvs.colostate.edu).

To return to CSU (whether you were deployed during the academic term or between terms):

1. Returning undergraduate students should go to the Admissions (http://admissions.colostate.edu/returningstudents) website for information on the Undergraduate Intent to Return process.
2. The Intent to Return form asks you which semester you plan to return to CSU. As soon as you know when you will return, you should submit the form so that you can register for classes in a timely manner. Please note the relevant application deadline (http://admissions.colostate.edu/returningstudents). Keep your academic advisor apprised of your plans—by phone or email if necessary—so that your advisor can make sure that you have a schedule figured out for your returning semester.
3. Returning graduate students who have not utilized Continuous Registration must complete and submit a Graduate School Form 1B (http://graduateschool.colostate.edu/documents/GS1B.pdf) (Graduate Application for Readmission) and a copy of the deployment orders in order to have the $150 readmission fee waived.
4. Graduate students who choose to utilize Continuous Registration (http://registrar.colostate.edu/registration/registration-changes) during their deployment are not required to reapply when they return, but they will be charged $150 and the University Technology Fee per academic term that they are away, and the continuous registration fee is NOT waived for deployment.

Important note: If you were admitted to CSU and were not able to enroll due to deployment, you may be required to submit a new application for admission and new supporting documents depending upon your original term of admission. Enrollment deferrals of up to one year beyond the original term of admission are allowed in such cases but must be arranged in advance; deadlines apply.

If you have questions about the return process (for enrolled students) or about obtaining an enrollment deferral (for newly admitted students), please contact the Office of Admissions at admissions@colostate.edu.

Retroactive Withdrawal

A student may request that all grades in an academic period (one or more semesters of continuous enrollment) be retroactively removed and be replaced by entries of "W" on his or her transcript. A retroactive withdrawal may be granted only when a student could neither function normally during the academic period nor be reasonably expected to complete a University Withdrawal due to extenuating circumstances such as an incident leading to major physical or mental trauma.

Failure to academically perform due to factors such as the following would not generally qualify a student for retroactive withdrawal:

- Bad habits or poor judgment
- Time management issues/working too many hours
- Failed relationships/roommate problems
- Failure to use University resources
- Ignorance of University policies

A retroactive withdrawal is not allowed if a student has earned a degree from CSU and the semester in question was used to meet University, college, or departmental requirements for the degree.

Students are allowed two requests for the same period, the second request requiring additional supportive documentation. If granted, assessment of tuition and fees remains unchanged. The student's academic record will remain unchanged if a request is denied.

An undergraduate or graduate student applying for a retroactive withdrawal must submit an online request accompanied by a personal statement from the student and supportive, third-party documentation from a relevant professional. If the justification for the request is based on death or serious illness of someone with whom the student has a very close relationship, the student must document the relationship to this person as well as the death or serious illness of that person. The request will be forwarded to the Faculty Council Committee on Scholastic Standards. In order to start the process, students must meet with their academic success coordinator or advisor, or Collaborative for Student Achievement staff. To make an appointment at the Collaborative for Student Achievement, phone (970) 491-7095 or walk-in to their offices on the main floor of the stadium on campus between 10:00 am and 2:00 pm.

Undergraduate Planned Leave

Undergraduate Planned Leave is a status intended to help students more easily and effectively take a semester or two away from their CSU studies and successfully return again. Students who obtain Planned Leave status and comply with its requirements do not have to re-apply for admission to CSU upon return. In addition, Planned Leave students will be tracked in an attempt to help facilitate their successful and timely return. For more information, see Undergraduate Planned Leave in Academic Standards and Policies.

Graduate Continuous Registration

All students admitted to a graduate degree program are required to be continuously enrolled in their degree programs in the fall and spring semesters. This policy applies from the time of first enrollment through the graduation term. Students should contact their advisor if they do not plan to register for at least one credit of course work or research. Learn more about Continuous Registration.

Registration Alternatives

Auditing a Class

See Auditing a Class in Grading.

Non-Degree GUEST Program

GUEST is a non-degree enrollment option for community members who wish to take one or two CSU classes during a fall or spring semester without applying for admission as a degree-seeking student. Learn more about applying for admission (http://admissions.colostate.edu/guest) to the GUEST program.

CSU Online/Continuing Education

Taking online courses is an appealing option for many students. CSU Online (Continuing Education) offers access to individual courses, full degree programs, and graduate certificates. Learn more at CSU Online (http://www.online.colostate.edu).

Lifelong Learners

CSU is supportive of lifelong learners. Community members age 55 or older may attend academic classes, free of charge, on a space-available basis with permission of the instructor. As visitors, lifelong learners are not registered for the classes, have no academic record of attending, and earn no academic credit. Learn more at the Office of the Registrar's website (http://registrar.colostate.edu/forms/senior-citizen-class-visitation-request-form).

Taking Courses at Another Institution

Enrolled students who wish to take undergraduate courses at another regionally accredited institution to transfer to CSU should first determine how the courses will be accepted in transfer. To do so the student will need to access the Transferology (https://www.transferology.com/login.htm)™ website. For more information about Transferology™ please see the Office of the Registrar's website (http://registrar.colostate.edu/transfer-credit).

If Transferology™ does not list the desired course or its institution, or it shows an equivalent course different from what the student is seeking, the student should contact the Degree and Transfer Evaluation unit of the Office of the Registrar, phone (970)-491-4860, to confirm the equivalent. If the course does not have an established equivalent the student may petition a department to approve a course equivalent using the Transfer Course Equivalency Pre-Approval Form, available on the Office of the Registrar's website (http://registrar.colostate.edu/transfer-credit/csustud-courses-elsewhere). The appropriate academic department must determine if a course can be accepted as the desired equivalent. Upon approval, the student returns the signed form to the Office of the Registrar prior to transferring the course.

Students wishing to take courses at an international institution will need to have the Office of the Registrar evaluate the courses to determine how they will be accepted in transfer. To do so, the student must supply the Office of the Registrar with a copy of the course description and/or syllabus, in English, of each course they wish to take by email at internationalevaluation@colostate.edu, by fax at (970) 491-2283, or in person in Centennial Hall.

Students are responsible for ensuring an official transcript is sent to the Office of the Registrar after the completion of the off-campus course work. No credit will be evaluated until an official transcript has been received. Courses with less than a C- grade are not accepted as transfer credit toward a degree at any time, in any major.

The student must file an Intent to Return form with the Office of Admissions (http://admissions.colostate.edu/apply/returning) prior to leaving campus if the course work is taken in any term other than summer session.

See also Education Abroad, in Interdisciplinary Opportunities.

Credit for Education Abroad

Students are encouraged to participate in accredited education abroad programs. Credit is granted for courses taken in programs approved in advance by CSU, subject to certain conditions. To apply for credit, a student must process an "Education Abroad Transfer Credit Policy & Approval Form" available in the Education Abroad Office, Laurel Hall.

Aims Community College Cooperative Registration Agreement

Under a cooperative program with Aims Community College (Greeley), CSU students may register for one course (maximum of five credits) per term without additional tuition assessment.

Eligibility – Students must be enrolled at CSU in resident instruction courses, i.e., not Continuing Education or Placement.

Credit Load – For the above corresponding terms, CSU students must be registered for at least 12 credits (9 credits in the summer) to attend Aims Community College.

Course Restriction – Registration for a maximum of one undergraduate, resident instruction course (maximum of five credits) is authorized. Registration will be subject to the availability of the course and the student meeting the prerequisites.

Tuition – Tuition and student fees for the course taken under this agreement will not be charged to the eligible student but applicable course fees will be paid by the student. If the student is determined to be ineligible for this cooperative registration privilege, applicable tuition and student fees will be assessed, and the student will be responsible for payment of these charges.

Registration – Applicable forms are available on the Office of the Registrar's website (http://registrar.colostate.edu/academic-resources/exchange-programs) or in the Office of the Registrar in Centennial Hall.

CSU does not have a registration agreement with Front Range Community College.

Colorado Exchange Program

CSU, in cooperation with the Colorado School of Mines, University of Northern Colorado, and the University of Colorado, provides tuition-free instruction for graduate students through a reciprocal agreement. The following conditions must be met to qualify for the program:

1. The graduate student is registered and paying full tuition and fees at the home institution.
2. The course requested is part of a regular load—not an overload.
3. The student is pursuing a program leading to an advanced degree. All courses requested must be required for the degree program or a prerequisite for one of the required courses.
4. The course is not offered on the student's own campus when that student can take advantage of it.
5. The request is presented prior to registration for the semester the course is to be taken.
6. The request is presented any term except the graduation semester.
7. A separate request form is completed for each course taken.
8. Space is available.

Additional information and registration forms are available on the Office of the Registrar's website (http://registrar.colostate.edu/forms-2) or in the Office of the Registrar in Centennial Hall.

Challenging Colorado State Courses for Credit

The opportunity to challenge the content of a course on the basis of an examination may be permitted. This option is at the discretion of the

individual department and may exclude courses where a laboratory or practicum is an integral part of the course being challenged.

A fee of $20 (subject to change) per credit attempted is assessed and is not refundable. Upon successful completion of an exam, a grade of S (satisfactory) is recorded on the student's academic record. No record of unsuccessful attempts is recorded.

A course may not be challenged under the following conditions:

- To satisfy the residence requirement for graduation.
- When the person seeking credit is not currently registered at Colorado State University at the time the examination is administered.
- When a student has previously failed a placement or challenge exam for the course.

Students wishing to establish credit by challenge may obtain information from the University Testing Center (http://testing.colostate.edu) at (970) 491-6498, General Services Building, Room 203.

Degree Requirements

Undergraduate
Graduate

Undergraduate

Credit Requirements

Graduation credit requirements, outlined in detail below, include the following: a minimum of 120 credits, 42 of which need to be upper-division. Thirty of the 42 upper-division need to be taken "in residence" at CSU. And, 15 of the last 30 credits need to be taken "in residence".

Major Requirements

The student wishing to graduate must complete the requirements for a major and the All-University Core Curriculum. A major is a sequence of courses in a subject-matter area or discipline which, when accompanied by appropriate supporting courses, leads to a degree. A minimum of 27 semester credits constitutes a major. Completion of a major is shown on both the student's diploma and academic record. Students may elect to complete the requirements for two or more majors. To graduate with more than one major, students must complete all the requirements for each major (some majors will accept, as fulfilling their own category 4A-C requirements, the fulfillment of the category 4A-C requirements in another declared major the student completes). Common requirements may count in meeting the curriculum requirements for each major, but each major must have a minimum of 27 unique credits. Also see requirements for multiple degrees.

Concentration Requirements

Some majors have concentrations (or specialization areas). A concentration is a sequence of at least 12 unique semester credits of designated courses within a major designed to accommodate specific interests of students. Completion of a concentration is shown on a student's academic record (transcript) if completed in conjunction with a degree program, but is not noted on the diploma.

Options

Some majors have options which are a sequence of courses within a major or concentration of either guided electives or electives selected from areas of interest as approved by the student's advisor. Options do not appear on diplomas or a student's academic record. (Courses taken to complete an option do appear on the student's transcript.)

Minor Requirements (Including Interdisciplinary Minors)

Minor programs of study are optional and are offered by certain departments. A minor consists of a minimum of 21 specified credits of course work outside the major. A minimum of 12 of the 21 credits must be course work at the upper-division level (300- to 400-level) and a minimum of 12 credits must be from course work within the department offering the minor. Minors are noted on the student's academic record (transcript) if completed in conjunction with a degree program, but not on the diploma. If a student does not intend to complete the requirements of the minor then that minor must be dropped before the degree can be conferred for the primary major. Minors must be awarded in conjunction with the major, they cannot be awarded post graduation.

Certificate

Undergraduate Certificates are optional and are offered by certain departments. An undergraduate certificate consists of a minimum of 9 specified credits, and not more than 15 credits. A minimum of 9 credits must be course work at the upper-division level (300- to 400-level). A student must earn a cumulative GPA of 2.000 or better in the courses required in the Undergraduate Certificate.

An Undergraduate Certificate may include courses from one or more departments. For certificates involving courses from two or more departments, the coordinating department is indicated in Programs A-Z.

Students must apply for and complete the certificate requirements while enrolled in their baccalaureate degree. Undergraduate certificates by title are noted on the student's academic record (transcript) at the time of degree conferral. The undergraduate certificate title is not noted on the diploma. Certificates must be awarded in conjunction with the major, they cannot be awarded post graduation.

Multiple Majors

Undergraduate Students With A Second Major

If both of the completed majors are of the same degree type (e.g., B.A., B.S., B.M., B.F.A.) and the student has fewer than 150 credits, the student will be awarded a single degree which displays all majors earned on one diploma.

If the completed majors are of a different degree type and the student has fewer than 150 credits, the student will be given the following choices at the time they file their graduation contract:

1. One diploma listing only the primary major's degree type (e.g. B.A., B.S., B.M., B.F.A., B.S.W.) and listing all majors conferred.
2. One diploma listing The Bachelor of Arts and Sciences (B.A.S.) if one major is a B.A. degree type and another is a B.S. degree type (if this option is chosen the degree type of B.A.S. shows on the diploma and the official transcript along with both majors).

Students must complete degree requirements for the first (primary) major before they can graduate. Students who have declared two majors must complete all degree requirements for the second (secondary) major, with exception to the AUCC Category 4A-C, in order to graduate. If a student does not intend to complete the requirements of the second major then that major must be dropped before the degree can be conferred for the primary major.

Degrees Earned Concurrently

Students pursuing more than one major, who have successfully completed a minimum of 150 credits, completed a minimum of 27 unique credits for each major, completed major and AUCC category 1-3

requirements, and completed AUCC category 4A-C requirements for each major, will be conferred separate baccalaureate degrees resulting in separate diplomas.

Second Baccalaureate Degree Requirements

A student enrolling at CSU after previously graduating with one or more baccalaureate degree(s) or a student who has already earned one baccalaureate degree at CSU may earn an additional undergraduate degree in a different major if the following requirements are met:

1. Minimum of 30 semester credits in residence (after admission as a Second Baccalaureate student (http://admissions.colostate.edu/secondbachelorsapplicants)) beyond the credits earned at the time the student graduated with a previous baccalaureate degree.
2. All curriculum requirements for the new major, including All-University Core Curriculum Category 4 requirements and AUCC Categories 1-3E if applicable.
3. Minimum of 27 unique credits for the major not used toward completion of the previous baccalaureate degree.

The first or subsequent baccalaureate degree(s) may be from CSU or from another institution accredited by a regional institution accreditor recognized by the U.S. Department of Education, the Council for Higher Education Accreditation, or equivalent. Regionally accredited accepted coursework will fulfill the All-University Core Curriculum (AUCC) requirements with the exception of AUCC courses in category 4 that are required in the major. Baccalaureate degrees earned at an International Institution may lack components of the AUCC which could result in additional coursework beyond the major requirements to complete the degree.

Graduate

Learn more in the Graduate and Professional Bulletin.

Graduation Procedures and Information

Undergraduate
Graduate

Undergraduate Degrees

Student Bill of Rights

The Student Bill of Rights (also known as Colorado Revised Statute § 23-1-125) notes that a student may formalize a plan to obtain a degree in four years. Colorado State University supports this timeline for graduation by publishing Major Completion Maps defining a common four-year course progression for most majors. (There are some majors a student may not be able to complete in eight semesters because of additional degree requirements recognized by the Colorado Department of Higher Education.)

Review CSU Major Completion Maps on the "Major Completion Map" tab for each Undergraduate program of study listed in this General Catalog.

General Requirements

Students are required to complete all curricular requirements in place in the current catalog at the time of graduation, including the All-University Core Curriculum (AUCC) requirements.

The list of general requirements below is a sufficient guide for academic planning, but does not represent all rules which might apply to a particular student or program of study.

Graduation Procedures and Information

Checking undergraduate graduation requirements is the responsibility of the Office of the Registrar. Curriculum requirements are checked by the department head of the first major, second major, minor and/or certificate if applicable.

Students planning on transferring coursework from another post-secondary institution in order to meet the requirements for degree completion should contact the Degree and Transfer Evaluation unit within the Office of the Registrar for assistance. It is very important that all grades/transcripts are received by the end of the 4th week after the semester has ended. If grades/transcripts are not received within this timeframe students will experience a delay regarding the formal posting of their official graduation for that semester as well as delays in printing their diploma.

A request for waivers or substitutions for major program requirements may be made if completing a curricular requirement:

1. Will extend the time normally required to complete the degree; or
2. Will force students classified as juniors or seniors to take additional lower-division courses, exclusive of AUCC requirements.

Requests for waivers or substitutions of the All-University Core Curriculum must be submitted on an appeal form (http://registrar.colostate.edu/forms-2), signed by the advisor and department head and turned in to the Degree and Transfer Evaluation unit of the Office of the Registrar. Ultimate responsibility for ensuring that AUCC curriculum requirements are observed and that substitution of equivalent courses or waivers are for good and sufficient academic reasons rests with the Provost/Executive Vice President.

Graduation Credit Requirements

To meet requirements for the bachelor's degree, a student must fulfill:

Minimum Credit Requirement

A bachelor's degree requires a minimum of 120 semester credits; however, individual programs in some colleges and departments may exceed the minimum.

Minimum Grade Requirement

Only credits completed with grades of A+, A, A-, B+, B, B-, C+, C, D, and S may count toward the graduation total. (Note: Grades of C-, D+, and D- earned at CSU prior to Fall 2008 apply to graduation requirements.) Some majors require a minimum grade of C or higher in required courses. For further information refer to your Undergraduate Degree Progress Audit (DARS) or contact the department offering the major.

Cumulative GPA

The minimum cumulative grade point average acceptable for graduation is 2.000 computed only for courses attempted at CSU. The CSU GPA calculation is carried to the third decimal place and is not rounded.

Total credits earned and counted toward graduation may differ from total credits used in computing a scholastic average, since the scholastic average is computed by dividing the total grade points at CSU by the total GPA credit including credits for grades of A+, A, A-, B+, B, B-, C+, C, D, and F. Note: Grades of C-, D+, and D- earned at CSU prior to Fall 2008 are applied to CSU GPA calculations.

Upper-Division Credit Requirement

A minimum of 42 semester credits in upper-division courses (300-400 level) is required of all students completing a bachelor's degree program. Although 500-level courses cannot be required in undergraduate programs of study, elective credits taken at the 500-level may be used to fulfill the upper-division requirement.

Use of 500-Level Courses Within an Undergraduate Program

With written approval of an advisor, junior and senior undergraduate students may use 500-level courses to fulfill major requirements, either by selecting from an approved department list of courses, or by exception signed by the advisor. However, students are never required to take 500-level courses to complete an undergraduate program of study, whether a major or a minor. Courses at the 600-level are automatically excluded from use for an undergraduate degree. Undergraduate students may not enroll in courses numbered 700-799.

Use of 500-level Courses Taken as an Undergraduate in Graduate Studies

Undergraduates may apply a maximum of nine credits of graduate-level course work toward a graduate degree at CSU provided that such course work:

1. Is not used to meet bachelor's degree requirements; and
2. Has been approved by the department head of the graduate degree program being sought.

Students who enroll in 500-level courses not applied toward a bachelor's degree may request that an exclusion statement be placed on their academic records for those courses, making them potentially applicable to a CSU graduate degree. Students cannot exclude any courses below the 500-level under this policy. (See the Key to Courses for additional information.) A written request must be filed in the Degree and Transfer Evaluation unit of the Office of the Registrar no later than the end of the term in which the excluded course is taken. Exclusion of these courses from the bachelor's degree does not assure acceptance of this credit toward a graduate degree program. These excluded courses are computed in the undergraduate grade point average. Undergraduate students may not enroll in courses numbered 600-699 to satisfy undergraduate degree requirements. Undergraduate students may not enroll in courses numbered 700-799.

In Residence Requirement

A minimum of 30 upper-division semester credits must be completed in residence at CSU. "In residence" courses include any authorized Colorado State University course recorded as CSU credit on the CSU transcript. As an approved exception, "in residence" may also be satisfied by pre-approved upper-division credits earned in authorized study abroad programs and designated domestic exchange programs, if simultaneously enrolled in designated CSU courses. Pre-approval procedures are required.

Senior Year Requirement

Of the last 30 semester credits earned immediately preceding graduation, at least 15 must be completed at CSU.

Academic Fresh Start Requirement

Upon receipt of a Fresh Start, a student must successfully complete at least 30 upper-division credits of coursework in residence at CSU after the Fresh Start is granted in order to graduate.

Degree Progress Audit (DARS)

The Degree Progress Audit (DARS/DPA) is the degree audit tool used for verification of university, program, minor, options, certificate and interdisciplinary requirements. The audit provides a dynamic and concise report, viewed over the web that is used for advising as well as for final graduation certification. The Degree Progress Audit provides students with current and accurate transfer and course information to enhance their degree and program planning. Students are able to view a "What-If" degree audit for display of how their credits would be used to fulfill another major's requirements.

Time Limitation on Credits

Courses completed within the preceding ten years may apply toward a bachelor's degree. After ten years, course work is reviewed by the department head and college dean or a designee to determine its appropriateness to the major requirements.

Admission to Degree Program

Students are required to be admitted into a degree-seeking program in the term for which they plan to graduate. Contact the Office of Admissions (http://admissions.colostate.edu) for application procedures.

Intent to Graduate

Students will file their Intent to Graduate during registration via the Registration Ready Tool in RAMweb upon completion of 85 credits. Students are prompted to verify their curriculum, their correct graduation term, and to give their desired name (within reason) for the commencement program as well as their diploma.

Contract for Completion of a Major or Minor

Graduation contracts reflect the most updated version of the Degree Progress Audit (DARS/DPA), which will be used for final graduation certification. Graduation Contracts will be completed electronically within the student's Degree Progress Audit in consultation with their advisor(s) at each department where the student is enrolled in a major, minor, or certificate program of study. Students seeking to graduate will be notified via RAMweb to review their Degree Progress Audit (DARS/DPA) to ensure all requirements are in progress or complete and they must acknowledge they are aware of their graduation requirements. Students who do not complete the degree requirements in their graduation term will be contacted by the Office of the Registrar requesting they update their anticipated graduation term.

Good Standing Status

A student must be in good standing to receive a CSU degree. Accordingly, any student who is subject to suspension or probation for scholastic or disciplinary reasons will not graduate until the conditions of suspension or probation have been satisfied.

Off-Campus Completion of Degree Requirements

Seniors who are registered for final course work at another institution, either in residency or by correspondence or extension, must have their Contracts for Completion of Major/Minor on file in the Office of the Registrar by the end of the add/drop period of the graduation term. Official transcripts showing completion of work from another institution must be on file in this office no later than the fourth week after the graduation term.

Degree Conferral

Degree conferral only occurs three times each year, after the conclusion of the Fall, Spring, and Summer terms. The conferral date is the date which will be posted on the official transcript and the diploma. This is the date when the degree is considered officially awarded. A degree is a credential. There are three documents that provide evidence of

that credential: an official transcript, a diploma, and a formal letter of completion from the Registrar's Office.

CSU degrees will not be posted on the student's record until the official degree conferral date has been reached for the semester in which the degree is being awarded. Completion of all requirements prior to the official degree conferral date will not result in an early conferral of the degree. A student in this situation may request an official "Upon Completion Letter" from the Office of the Registrar showing pending conferral of the degree. The degree will be conferred for the term in which the requirements are completed.

Degree Verification Process

To confirm that a degree has been awarded, the most common options are through use of the official transcript or, for students, receipt of the diploma. In addition, many employers access the Degree Verification process (http://registrar.colostate.edu/student-resources/enrollment-degree-verification) through the National Student Clearinghouse.

Degrees Awarded Posthumously

In exceptional circumstances, the Board of Governors of Colorado State University may award degrees posthumously. Recommendations for such an award will only be considered when the student had completed nearly all of the requirements for his or her degree before dying, and when the student's academic record clearly indicates that the degree would have been successfully completed had death not intervened. Nominations for posthumous awards of degree will be initiated by the student's department and approved internally by the relevant college dean and the Provost/Senior Vice President. The posthumous nature of the recommended degree award shall be made explicit when the recommendation is forwarded to the Board of Governors. The Provost/Executive Vice President's Office shall be responsible for presenting the degree to appropriate survivors.

Commencement (Graduation Ceremonies)

Students may graduate in Fall, Spring, or Summer terms. CSU celebrates at Commencement ceremonies (http://commencement.colostate.edu) twice a year, at the end of each Fall and Spring semester. Students completing degree requirements during any term receive their diplomas by mail within 6-8 weeks after the degree conferral date, if there is no outstanding financial obligation to the University. Candidates must appear in appropriate academic attire at commencement exercises.

Graduate Degrees

The graduation procedures and information for Graduate Students is available in the Graduate and Professional Bulletin.

CO-CURRICULAR ENGAGEMENT

Student Leadership
Research and Creative Opportunities
Athletics
Fraternity and Sorority Life
Student Leadership, Involvement and Community Engagement (SLiCE)
Student Clubs and Organizations
Student Media

Student Leadership

A member of Campus Compact, CSU promotes programs that develop citizenship skills and values, including service learning and partnerships between the campus and community. CSU has been named a "Top Character-Building Institution" by the Templeton Foundation. CSU encourages students to explore the many opportunities to enhance learning by getting involved on campus and in local communities.

Associated Students of CSU (ASCSU)
Graduate Student Council
College Councils
President's Leadership Program (PLP)
Honorary Societies
Campus Connections

Associated Students of CSU (ASCSU)

All fee-paying CSU students are members of Associated Students of Colorado State University (http://ascsu.colostate.edu) (ASCSU), the student governing body that advocates for student interests and welfare across the campus, city, state, and federal level. ASCSU serves as the direct student representation on multiple areas of campus such as the Board of Governors, Student Fee Review Board, and the Board of Student Organization Funding. ASCSU comprises three main branches: Legislative, Executive, and Judicial. Through these branches, different levels of representation exists to ensure that the student's voice is heard. ASCSU offers programs and services to all CSU students such as Ram Leadership Team, Grill the Buffs, and the For-Ever-Green shirt program.

Graduate Student Council

The Graduate Student Council (http://graduateschool.colostate.edu/campus-life/get-involved) represents and advocates for graduate and professional students to improve the experience of graduate education. The Graduate Student Council consists of student representatives from each department which enrolls graduate or profession students, with two representative seats allocated to each department. The Council elects its own officers and nominates representatives for committees such as Faculty Council, boards overseeing student fee areas, etc.

College Councils

Students who have declared a major can contact their Dean's Office in order to find out more about the College's Student Council and the leadership opportunities it may afford. Students who have not declared a major should contact the Collaborative for Student Achievement (http://studentachievement.colostate.edu) for information about the Undeclared Leadership Council.

President's Leadership Program (PLP)

The President's Leadership Program (http://lsc.colostate.edu/slice/slice-leadership) is a fourteen credit leadership development experience consisting of three independent year-long (two semester) academic and experiential courses designed to explore the personal, organizational, and social dimensions of leadership through course-work, retreats, and service learning. Students must apply and be selected to participate in each year of the program. Successful completion of PLP can contribute to an interdisciplinary minor in leadership studies.

Honorary Societies

By promoting, advancing, and recognizing the top scholars of our campus community, honorary societies (http://provost.colostate.edu/honorcsu) assist students in their pursuit of academic excellence. Students are advised to exercise caution when accepting invitations from honor societies. Not all such organizations provide honors that will be recognized and valued by the academic community and potential employers.

Campus Connections

Campus Connections (http://www.hdfs.chhs.colostate.edu/students/undergraduate/campusconnections) is a high-impact service learning course where undergraduate students serve as mentors to at-risk youth. Students from any major work one on one with at-risk youth ranging in age from 10-18 who are referred to Campus Connections from community partners within the juvenile justice system, local schools, community agencies, and directly from families. Youth participate in Campus Connections with their mentor on the CSU campus once a week in a structured and engaging mentoring community.

Research and Creative Opportunities

Qualified undergraduate and graduate students have many opportunities to engage in research and creative activity while enrolled at CSU. These opportunities allow students to enhance their education by working closely with a faculty mentor. Settings for these activities include laboratory, office, concert hall, and studio environments on campus. Some opportunities exist off campus, as well, at state and national laboratories located in and near Fort Collins. Students can identify faculty research and creative activity by contacting the Office of Undergraduate Research and Artistry (http://tilt.colostate.edu/oura) at The Institute for Learning and Teaching, by searching departmental websites, the Graduate School (http://graduateschool.colostate.edu/for-prospective-students) or by contacting advisors or college and departmental offices. Students can then contact faculty who are willing to enlist undergraduates and graduates in their research and creative work. The amount of time spent in such activities varies but generally ranges from six to ten hours per week on average. Placement, time commitments, and

qualifications are dependent upon an agreement between the student and faculty mentor.

More than 300 performances, exhibits, and arts events are staged each year, from an internationally-recognized poster show to student-produced theater and opera. Facilities include the Hatton and Curfman Galleries, the Music Recital Hall, and the Lory Student Center Theatre. The University Center for the Arts houses the Edna Rizley Griffin Concert Hall (listed by the Denver Post as one of the top five places for live chamber music), the University Theatre, the Studio Theatre, the Runyan Music Hall, production support facilities, recital and rehearsal halls, dance performance space and studios, classrooms, and faculty offices. The campus culture at CSU is steeped in the performing arts.

Celebrate Undergraduate Research and Creativity Showcase
MURALS
Graduate Student Showcase

Celebrate Undergraduate Research and Creativity Showcase (CURC)

The achievements of students in the areas of research and creativity are recognized each spring semester during CURC (http://curc.colostate.edu). Students are invited to participate in a variety of events focused on original research, creative arts, and design, culminating in a showcase that features outstanding performers and award winners from all disciplines. Award winning projects from recent years ranged from genetic and neural studies to improvements in the apparel design process to poetry.

MURALS (http://www.murals.colostate.edu/home)

The Multicultural Undergraduate Research Art and Leadership Symposium (MURALS) intentionally engages students of color in a variety of disciplines in preparation for CURC (see above).

Mentoring, presenting their work (creative writing, visual art, performing art, science, social science, humanities), networking, and learning about multicultural leadership are four main aspects of the symposium.

Slated for Spring, MURALS also provides opportunities for graduate students to work with undergraduate students and for faculty to serve as mentors.

Graduate Student Showcase (http://gradshow.colostate.edu)

The Graduate Student Showcase (GradShow) is a one-day conference organized by the Graduate School (http://graduateschool.colostate.edu/for-prospective-students) to celebrate research, creativity and entrepreneurship. The showcase aims to encourage connection and collaboration among all graduate students at CSU.

Approximately 300 graduate students present their scholarship alongside fellow students from all eight of the colleges to more than 100 judges from across the campus. In the spirit of interdisciplinary collaboration, judging assignments are made on a random basis to give students the opportunity to hone their ability to communicate with audiences outside their own disciplines. The mingling of minds from different disciplines in this environment is specifically designed to further spark innovation and encourage collaboration.

In addition to providing an arena for interdisciplinary collaboration, the GradShow provides both presenters and non-presenters with professional development opportunities. Participants are encouraged to engage in the showcase as an opportunity to build a variety of presentation skills and to use the experience to excel at future national conferences. A variety of professional development workshops are offered to all grad students in the afternoon.

Winners receive cash prizes or scholarships from generous award sponsors in a variety of categories during the formal awards reception.

Athletics

Intercollegiate Athletics
Sport Clubs
Intramural Sports

Intercollegiate Athletics

McGraw Athletic Center
(970) 491-7217 / http://csurams.com

CSU sponsors 16 NCAA Division I varsity programs (6 men's teams and 10 women's teams) participating in the Mountain West Conference. The department serves approximately 380 student-athletes and awards 215 scholarship equivalents each academic year. Our mission statement, **TO EDUCATE, ENGAGE AND EXCEL**, embraces the philosophy of the entire CSU campus, whereby our priority is to provide access to education for student-athletes; engage the broader community by drawing thousands of stakeholders to the University and excel in all pursuits. Complete information about our intercollegiate athletic program can be accessed at http://csurams.com.

Sport Clubs

Sport Clubs are student-managed teams that train together, travel, and compete on a national level. As student-managed organizations, team members are involved in fundraising, coaching selection, budgets, and more. Sport Clubs students are serious athletes and games/matches are held throughout the state and country. To find out more information about Campus Recreation's 29 teams visit https://csurec.colostate.edu/

Intramural Sports

Intramural Sports are a great way to engage in the CSU community throughout the entire year. The Intramural Sports Program offers tons of leagues and tournaments each semester from flag football to soccer, kickball, tube water polo, and more. Different divisions (women's, men's, coed, or open) are offered depending on the sport and some sports offer both recreational and competitive leagues. The best prize of all are the great memories and the chance to have fun! To find out more information about the variety of sports and how to sign up visit https://csurec.colostate.edu/

Fraternity and Sorority Life

Office in Lory Student Center
(970) 491-0966

The Office of Fraternity and Sorority Life (http://fsl.colostate.edu) (OFSL) provides resources and support to social fraternities and sororities at CSU as well as advising to fraternity and sorority governing councils and auxiliary organizations. The OFSL conducts leadership training, provides accountability, and supports individual chapters and members as they enhance their curricular experience with fraternity or sorority involvement.

Student Leadership, Involvement and Community Engagement (SLiCE)

Office in Lory Student Center, Room 210
(970) 491-1682

With a variety of leadership and community engagement programs, the Student Leadership, Involvement, and Community Engagement (http://lsc.colostate.edu/slice) (SLiCE) office at CSU provides an important link between students and their surrounding communities.

SLiCE brings together student organizations, student leaders and student volunteers under one umbrella; making the campus a better community and a more involved place. Being involved in SLiCE programs allows students to enrich their academic and social experience at CSU. The office also assists recognized student organizations in obtaining official university recognition, program planning, public relations, financial/budgetary matters, and leadership development for organizational officers, members, and advisors. More than 450 campus organizations reflect interests such as academic, political, religious, sport clubs, programming/service, governance, social, Greek, and special interests.

Student Clubs and Organizations

When students look back at their college experience, they often think beyond the books, papers, and exams. They remember what they did, who they met, and how they felt. With over 450 student clubs and organizations, getting involved can be fun, easy, and a transformational way to make the most of your Ram experience. Whether it's competing in a sport club, joining a fraternity or sorority, focusing on cultural awareness, volunteering through service teams, or taking up a new hobby – there is something for every Ram to enjoy! Check out CSU's registered student organizations via RamLink (http://www.ramlink.colostate.edu). If you do not find the perfect fit, the office of Student Leadership, Involvement and Community Engagement (http://lsc.colostate.edu/slice) will help you start your own student organization. So get involved, stay connected, and make the most of your time.

Student Media

Office in Lory Student Center, Room 118
(970) 491-1683

Rocky Mountain Student Media Corp. (https://collegian.com/corporate) is a non-profit organization housed within the Lory Student Center on CSU Campus. RMSMC is the student media of CSU, encompassing our newspaper, magazine,radio and TV stations. RMSMC employs over 350 students across all of our media properties. Every medium is student-run, meaning the students determine each medium's content. RMSMC's student newspaper is published in print and online at Collegian.com (https://collegian.com), where users can also find campus TV broadcasts. The genre-inclusive radio station broadcasts music, news, and sports coverage 24/7 at 90.5 FM in Fort Collins, and at kcsufm.com (http://kcsufm.com).

RMSMC was created in 2008 by the Board of Governors of the Colorado State University System. RMSMC operates with an independent Board of Directors consisting primarily of CSU students, two community members, and a representative from both the Vice President for Student Affairs and the Chair of the Department of Journalism and Media Communication.

Mission Statement

The RMSMC is dedicated to community service and enhancing the educational mission of Colorado State University by empowering, training, and equipping students to excel in journalistic and other media methods, ethics, critical thinking, and management.

The primary goals of the RMSMC are to:

- Commit to uphold truth, fairness, integrity, independence, accountability, accuracy, professionalism, and minimizing harm as stated in the RMSMC's codes of ethics;
- Create and maintain a welcoming environment and diversity in staffing, media content, and access through responsiveness and outreach;
- Empower students through training and practical experience to become thoughtful, ethical, and skilled media producers;
- Operate in a socially and financially responsible manner;
- Protect student control over media content, free from prior restraint or censorship;

- Recognize both the unique characteristics of each medium and the value of working together to maximize benefits for listeners, viewers, and readers;
- Remain abreast of media technology, equipment, and training to provide students with the necessary tools to succeed; and,
- Serve the community by delivering relevant and timely news, information, and entertainment, and maintaining the public trust by ensuring the public's business is conducted in an open and transparent manner.

ACADEMIC SERVICES AND STUDENT SUPPORT

Diversity Resources for Students
Student Resources and Campus Life
Academic Services and Programs
INTO-CSU
Administrative Resources
Facilities

Diversity Resources for Students

Academic Advancement Center/TRIO Student Support Services
The Access Center
Adult Learner and Veterans Services
Asian Pacific American Cultural Center
Assistive Technology Resource Center
Black/African American Cultural Center
Graduate Center for Inclusive Mentoring (GCIM)
El Centro
First Generation College Students
Native American Cultural Center
Office of Equal Opportunity
Office of Vice President for Diversity
Pride Resource Center
Student Disability Center
Women and Gender Advocacy Center

Academic Advancement Center/TRIO Student Support Services

Office in L.L.Gibbons Building, Room 117
(970) 491-6129

The Academic Advancement Center (https://www.chhs.colostate.edu/atrc) provides academic support for eligible participants including: Academic coaching, tutoring, facilitated group study, study and life skills strategies instruction, peer mentoring, career planning, study abroad information, and student involvement and leadership opportunities. Program eligibility criteria include: Neither parent has a bachelor's degree, and/or meets low-income criteria, and/or student has a disability, and is a U.S. citizen or legal resident. Applications are available at the AAC, L.L. Gibbons Building, Room 117 or online.

The Access Center

Office in Student Services Building, Room 304
(970) 491-6473

The Access Center (http://accesscenter.colostate.edu) programs provide outreach services and support to first-generation, low-income students in their pursuit of postsecondary education. Students receive academic advising; tutoring and support; academic, career planning and exploration; college and financial aid counseling; financial literacy; weekend study skills workshops; engagement in summer programs and institutes; and opportunities to visit colleges and universities. Students are engaged in educational, cultural, and social experiences that will help prepare them to enter and succeed in college. The Access Center provides services to students in grades 6^{th} – 12^{th}, and to adults that have an interest in preparing for college, completing high school equivalency programs, transferring between universities, or continuing their postsecondary education programs. The programs provide information on vocational, two and four-year colleges/universities and seek to make systematic changes in select communities by increasing the number of individuals with postsecondary degrees. The Access Center programs accomplish this by demystifying the importance, access, and attainability of higher education.

Adult Learner and Veterans Services

Office in Lory Student Center, Room 288
(970) 491-3977; FAX: (970) 491-3906

Adult Learner and Veteran Services (http://alvs.colostate.edu) (ALVS) supports the transition, education, leadership, and engagement of Adult Learners and Student Veterans to strengthen their academic achievement and holistic development. Adult Learners are students who do not fit the characteristics of a traditional college student, including but not limited to students with dependents and veterans. ALVS facilitates the success of students through individual meetings, resource referrals, and engagement programs. The ALVS office includes a student lounge that promotes networking, community building, and access to resources.

Asian Pacific American Cultural Center

Office in Lory Student Center, Room 333
(970) 491-6154

The Asian Pacific American Cultural Center (http://apacc.colostate.edu) (APACC) provides programs and services to support the retention, graduation and success of students. APACC runs educational and volunteer programs to help spread awareness of Asian American culture and build community among Asian Americans, Pacific Islanders, and their allies. The Center welcomes all students and seeks to create a safe place for students of all backgrounds. The Center contributes to an inclusive campus environment by providing resources for Asian Pacific American awareness, education, and identity development.

Assistive Technology Resource Center

Office in Occupational Therapy Building, Room 302
(970) 491-6258

The Assistive Technology Resource Center (https://www.chhs.colostate.edu/atrc) (ATRC) ensures equal access to technology and electronic information for CSU students and employees with disabilities. The ATRC works to ensure that CSU students and

employees are aware of and have access to assistive technology options that allow for success in their respective educational and work roles.

Services include assistive technology assessments and training, as well as consultation and education regarding accessibility and universal design of mainstream and instructional technologies.

Black/African American Cultural Center

Office in Lory Student Center, Room 335
(970) 491-5781

When you are in this open environment, surrounded by diverse people, you know you're in a home away from home; you know you are in the Black/African American Cultural Center (http://baacc.colostate.edu) (B/AACC) office! Full of life and a sense of community, B/AACC provides educational programs, opportunities to socialize, mentorship, community service, leadership, professional development, and an academic environment. B/AACC helps you network while getting involved on campus, building strong relationships, and experiencing new things throughout your college career. Next time you're curious about visiting our office, do not walk on by – walk in! We are unique individuals with varying goals and different struggles: all destined for success.

Graduate Center for Inclusive Mentoring (GCIM)

Office in Student Services, Room 108
(970) 491-6817

Graduate Center for Inclusive Mentoring (GCIM) (http://graduateschool.colostate.edu/diversity) is a formalized program that highlights resources on campus, offers professional development activities and provides access to faculty mentors, while also supporting additional socialization activities to encourage professional networks.

El Centro

Office in Lory Student Center, Room 225
(970) 491-5722

El Centro (http://elcentro.colostate.edu) provides an energetic, welcoming, and inclusive environment. We have resources to support personal, professional, social, cultural, and academic needs of all students who want to become involved with El Centro. We offer a place for discovering and appreciating diverse heritages, traditions, and cultures. Student can visit El Centro to relax, socialize, laugh, engage in dialogue, and build life-long memories. El Centro is a family, a "home away from home," a place that provides a sense of belonging.

First Generation College Students

First generation college students are defined as students whose parents have not earned a bachelor's degree. CSU is proud of the success of our first generation college students. Learn about the history of first generation college students at CSU (http://www.colostate.edu/features/first-generation.aspx). The Collaborative for Student Achievement (http://osp.casa.colostate.edu/first-generation-award-program.aspx) coordinates the first generation award. The Academic Advancement Center (http://www.aac.colostate.edu) (AAC) provides tutoring and support resources for first generation college students.

Native American Cultural Center

Office in Lory Student Center, Room 327
(970) 491-1332

The office of Native American Cultural Center (http://nacc.colostate.edu) (NACC) was established in 1979. The four primary advocacy and service areas include recruitment, retention, graduation, and community outreach. The office embraces and encourages a supportive environment based on the traditions and cultures of Native American peoples. We embrace diversity and commit to improving the campus climate of inclusion. All students are welcome in our office.

Office of Equal Opportunity

Office in Student Services, Room 101
(970) 491-5836

The Office of Equal Opportunity (http://oeo.colostate.edu) (OEO) is charged with implementing, monitoring and evaluating programs, activities and procedures that support the CSU's commitment to excellence.

The following are key programs and activities of OEO:

- Monitor and support CSU compliance with federal and state laws and CSU policies prohibiting discrimination and harassment.
- Develop and implement CSU's affirmative action program.
- Oversee CSU's search and selection process for all Academic Faculty and Administrative Professionals.
- Conduct investigations and resolve complaints of discrimination and harassment in accordance with CSU procedures.
- Serve as a resource and provide assistance to units, departments, and CSU constituencies regarding matters related to equal opportunity, affirmative action, access, and nondiscrimination.
- Provide education and training to faculty, staff, and students on matters related to equal opportunity, discrimination, and harassment.
- Coordinate CSU compliance with the Americans with Disabilities Act, Section 504 of the Rehabilitation Act of 1973, and Title IX of the Education Amendments of 1972.
- Collaborate with the Vice President for Diversity to cultivate awareness, appreciation, and engagement with diversity and inclusion and their relevance in a CSU environment.

Office of Vice President for Diversity

Office in 645 South Shields Street
Fort Collins, CO 80523-1060

The **Office of the Vice President for Diversity** strives to foster an inclusive campus that promotes and nurtures diversity, broadly defined. We are committed to a foundational principal of inclusive excellence recognizing that our institutional success depends on how well we welcome, value, and affirm all members of the CSU community.

Our efforts focus on addressing diversity and inclusion policies and practices that are essential to stay competitive and competent in the global market place and are necessary in the recruitment and retention of a diverse workforce. We recognize that all members of the campus community (administrators, faculty, staff, students, and alumni) must assume responsibility for the climate of CSU. A unit or person can drive the process, but every individual at CSU assumes responsibility for positive change.

Pride Resource Center

Office in Lory Student Center, Room 232

(970) 491-4342

The Pride Resource Center (http://glbtrc.colostate.edu) supports and affirms the diverse identities and lives of lesbian, gay, bisexual, transgender, queer, questioning (LGBTQ), Two-Spirit, and same-gender loving people as individuals and as groups, especially as students, staff, and faculty of CSU and their families, friends, and allies, through the cultivation of safe space, educational outreach, advocacy, increased visibility of LGBTQ issues, information and referral resources, and academic and leadership opportunities.

Student Disability Center

TILT Building, Room 121
Office in Lory Student Center, Room 223
(970) 491-6385

Student Disability Center provides support to students who have physical or learning disabilities as well as chronic physical or mental illnesses/conditions that may impact their ability and/or access to effectively participate as a student. Support includes advocacy as well as accommodation services to minimize the effects of a disability or condition.

Accommodation services include:

- Alternative testing conditions
- Alternative text conversion
- Note taking support
- Accessible transportation
- Sign language/oral interpreting.

Women and Gender Advocacy Center

Office in Student Services Building, Room 112, and
Office in Lory Student Center, Room 234
(970) 491-6384

The Women and Gender Advocacy Center (http://wgac.colostate.edu) provides programs and resources focusing on all genders, social justice, and interpersonal violence prevention. Staff and volunteers also provide confidential advocacy and support for victims of sexual violence, stalking, sexual harassment, and relationship violence. Programs concentrate on examining the intersections of oppression and creating conditions that allow all people to equally access opportunities in a safe campus environment.

Student Resources and Campus Life

Campus Activities
Career Center
Child Care Options
CSU Health Network
Housing & Dining Services
International Student and Scholar Services
Off-Campus Life
Orientation and Transition Programs
CSU Police Department
Parking and Transportation Services
Student Legal Services
Student Resolution Center

Campus Activities

Office in Lory Student Center, Room 130
(970) 491-6626

Campus Activities (http://lsc.colostate.edu/campus-activities) offers students many opportunities to become involved and active on the CSU campus through our four entities: RamEvents, Flea Market, Campus Information and Box Office, and LSC Arts Program. Learn about the many exciting outside-the-classroom possibilities and volunteer opportunities available through the Lory Student Center and Campus Activities.

Our Vision: Have a transformational impact on the lives of every student.

Our Mission: Create incredible experiences that reach all students through programming and services.

Our Values:

- **Community**: We believe in the intentional creation of an interdependent and inclusive environment based on shared experiences, awareness of differences, individual development and a commitment to the CSU spirit.
- **Diversity**: We acknowledge that social justice is both a process and a goal; we continually challenge oppression and seek to embrace difference.
- **Education**: We enrich the educational mission of CSU by creating and sustaining opportunities for active and ongoing learning.
- **Collaboration**: We leverage our strengths and resources by partnering to create exceptional results. We are accountable and responsive.
- **Innovation**: We actively seek creative ways to serve our community while honoring traditions and pursuing best practices.

Career Center

Office in Lory Student Center, Room 120
(970) 491-5707

The Career Center (http://career.colostate.edu) provides career exploration, planning, and job/internship search services for both graduate and undergraduate students in all majors and colleges.

Services include:

- Career counseling and career workshops
- Resume and job/internship correspondence writing skills
- On-campus recruiting program that includes two annual all-campus career fairs and several specialized fairs
- Career interviewing opportunities with over 100 employers via Handshake
- Available career and internship positions with area, regional, and national employers—information through Handshake

Child Care Options

See Adult Learner and Veterans Services (http://www.alvs.colostate.edu).

CSU Health Network

CSU Health Network is every student's home for health and well-being. **All CSU students have full access** to the wide range of medical, counseling, and health education and prevention services provided by CSU Health Network, **regardless of their insurance plan**.

All services are located under one roof in the state-of-the-art CSU Health and Medical Center, conveniently located on-campus at 151 West Lake St. (corner of College Ave. and Prospect Rd.)

Contact CSU Health Network:
(970) 491-7121
health.colostate.edu (http://health.colostate.edu)

Medical Services

The CSU Health Network Medical Services (http://health.colostate.edu/services/medical-services) offers care and consultation for students' medical concerns. In addition to scheduling appointments by telephone, students may schedule through the online health portal for some of the most common symptoms, conditions, and needs.

CSU Health Network is an in-network medical provider with most insurance carriers, which means they can files claims with your private health insurance plan for services received.

General Medical Services

- Primary Care
- Behavioral Health
- Immunizations
- Laboratory
- Pharmacy
- Radiology

Specialty Services

- Allergy and Asthma
- Dental
- Men's Care
- Massage Therapy
- Nutrition Consultation for Disordered Eating
- Optometry
- Physical Therapy
- Psychiatry
- Sports Medicine/Orthopedics
- Transgender Care
- Travel Medicine
- Women's Care

Counseling Services

Whether students are experiencing a situational problem, an immediate crisis, or have a longstanding mental health concern, CSU Health Network Counseling Services (https://health.colostate.edu/about-counseling-services) are available to help. The professional staff includes licensed psychologists, licensed clinical social workers, and licensed professional counselors, as well as graduate student staff from each of these disciplines.

By paying student fees, all CSU students can access a wide range of mental health support services. If you are in need of support, call (970) 491-6053 or visit Counseling Services on the 3rd floor of the CSU Health and Medical Center, and we will work together with you to find out which services are are best for you.

All counseling is confidential. No information is released to anyone without a student's written consent except in the case of a life-threatening emergency or when it is otherwise required by law.

Services Offered:

- Individual and Couples
- Groups and Workshops
- Drugs, Alcohol and You (DAY) Programs
- Crisis Intervention
- Post-Hospitalization Support (iTEAM)
- Consultations with Colleagues/Parents/Friends

Health Education and Prevention Services (HEPS)

Health Education and Prevention Services (https://health.colostate.edu/about-health-education-prevention-services) supports the health and well-being of students through the identification of campus health priorities and delivery of relevant programs, services and multidisciplinary initiatives that enable students to accomplish their academic goals and enhance personal development. Using evidence-based best practices, in collaboration with campus and community constituents, a holistic approach to health education and prevention is used for a diverse campus population. These practices involve opportunities to foster awareness and skills, as well as address the environmental context in which health behavior decisions are made.

Focus areas include:

- Substance Abuse Prevention
- Mental Health Initiatives
- Peer Education (CREWS)
- Resiliency and Well-Being
- Sexual Health Initiatives
- Tobacco Cessation
- Spiritual Care

Student Insurance Services

Colorado State University requires all domestic students taking six or more resident instruction credits, and international students enrolled at any level, to carry health insurance as a way of protecting your educational investment. You must meet the health insurance requirement your first semester at CSU and every fall semester thereafter.

CSU Health Network is an in-network provider with most major insurance carriers and can file claims with them. Students' out-of-pocket costs are dependent on their health insurance plan benefits. Learn more about Private Health Insurance Billing here (https://health.colostate.edu/private-insurance-billing).

The CSU Student Health Insurance Plan (http://health.colostate.edu/student-health-insurance) provides benefits both within the CSU Health Network and off-campus. The RamCare Supplement Program (http://health.colostate.edu/student-health-insurance/ramcare-supplement-program) is designed for students who have another health insurance plan. It covers certain services at the CSU Health Network that would otherwise be billed at the time of services.

Services Offered:

- Student Health Insurance
- RamCare Supplemental Program
- Private Health Insurance Billing

Housing & Dining Services

Offices in the Palmer Center, 1005 W. Laurel
(970) 491-6511

Housing & Dining Services (http://housing.colostate.edu) provides all services and resources related to Residence Halls, Residential Dining Services, University Apartments, Conference & Event Services, and the CSU Mountain Campus.

Residence Halls

Office in the Palmer Center
(970) 491-6511

University Housing provides educational opportunities, services, programs, and facilities that are designed to enhance each student's total campus experience. Students who live in the residence halls (http://www.housing.colostate.edu/residence-halls) have a choice of several different room and floor types. Students in the halls also have the option to join one of more than 20 Residential Learning Communities (RLCs) that are centered on students' academic and personal interests. Students who live on campus have access to resources such as professional staff and 24/7 security. Residence hall living allows students to actively participate in a variety of academic and social activities. These activities provide experiences in leadership development and co-curricular education that supplement classroom instruction and greatly enhance the quality of on-campus University life.

Housing Assignments

A Housing Guide is mailed to all newly admitted students as part of the admissions packet. Inquiries from continuing students should be directed to University Housing at (970) 491-6511 or housing@colostate.edu (residencelife@colostate.edu).

Residential Learning Communities

Residential Learning Communities (RLCs) - academic and themed floors in the residence halls - provide students with an opportunity to quickly develop a sense of community at CSU. Developed around academic majors and personal interests, these communities assist students in succeeding both academically and socially. Through a wide variety of programs, tutoring, and involvement opportunities, students in an RLC have the chance to get the most from their college experience. For more information on these communities, see Housing Options (http://housing.colostate.edu/housing-options).

First Year Residence Hall Requirement - First-Year Students

Experience and research have demonstrated that students who live on campus adjust to college life more successfully, have higher GPAs, and are more likely to graduate than students who live off campus. For this reason, all newly admitted first-year students and transfer students with fewer than 15 post-high school credits, who are single, under 21 years of age, and not living with their parents in the Fort Collins area, are required to live their first two consecutive semesters in a residence hall. Credits taken concurrent with high school and/or credits attained through Advanced Placement (AP) or International Baccalaureate (IB) do not apply toward previous college experience.

All residents are required to sign a contractual agreement (http://reshallpolicies.colostate.edu/residence-hall-contract-guidelines), which includes meals, and is binding for the entire academic year. Inquiries regarding this requirement, including guidelines for requesting an exemption, should be directed to University Housing at (970) 491-6511.

Residential Dining Services

Office in the Palmer Center
(970) 491-4754

Residential Dining Services (http://housing.colostate.edu/dining) operates five dining centers, two Express locations, and RAMwich - an online sandwich ordering system. "Late Night" dining options are available at three of our full-service locations until 11 p.m., as well as both express locations until 1 a.m. Each dining center features a unique combination of food concepts, offering choices such as sushi, pizza, pasta, stir-fry, vegan/vegetarian options, Tex-Mex, an array of international options, and made-to-order entrees. Extensive salad bars feature fresh fruits and vegetables, and a variety of toppings and dressings. The on-campus bakery, Grateful Bread, provides a wide range of artisan breads, desserts, gluten-free and specialty items. Students have a choice of meal plans that allow access to any of our dining centers. Menus include vegetarian, vegan, gluten-free friendly, and a host of healthy and nutritional options at each meal. Residential Dining Services has a registered dietitian nutritionist on staff, who can assist students with special dietary needs.

University Apartment Housing

Office in the Palmer Center
(970) 491-6511

The University Apartments (http://housing.colostate.edu/apartments) offer more than 1,100 apartments in four communities. University Housing has options for couples and family housing, graduate student housing, upperclass undergraduate student housing, as well as post-doctoral and visiting scholar housing. Academic year leases are available. Individual leases in shared apartments are also offered. All apartment communities are available to domestic and international students in multicultural communities founded on the CSU Principles of Community (https://diversity.colostate.edu/principles-of-community). The Housing & Dining Services website offers rental rates, 3D floor plans, and a video of each apartment village.

A Housing Guide is mailed to all newly admitted students as part of the CSU admissions packet. Inquiries from continuing students should be directed to University Housing at (970) 491-6511.

International Student and Scholar Services (ISSS)

Office in Laurel Hall
(970) 491-5917

International Student and Scholar Services (http://isss.colostate.edu), within the Office of International Programs, assists international students and scholars with cultural adjustment, academic integration, professional growth and personal support, and oversees orientation and arrival, regulatory compliance, immigration services, and sponsor services and programming.

Off-Campus Life

Office in Lory Student Center, Room 274
(970) 491-2248/491-6196

Off-Campus Life (http://offcampuslife.colostate.edu) provides services and programs to meet the diverse needs of off-campus and commuter students and to assist students in successfully transitioning, integrating, and engaging in the local community.

Services include:

- Information on housing options in the community, including online rental listing service
- Help in finding roommates
- Transportation information
- Tenant rights and responsibilities, including ordinance information
- Connection with community members through volunteer opportunities
- Tools and resources for students to have a successful off-campus living experience.

Orientation and Transition Programs

Office in east side of stadium (part of Collaborative for Student Achievement)
1415 Meridian Ave
(970) 491- 6011

Orientation and Transition Programs (http://otp.colostate.edu) provides programming and services designed to assist first-year, second-year, and transfer students with a successful transition at CSU. OTP offers a continuum of services beginning with Ram Orientation to Ram Welcome (prior to classes beginning) to transition programming throughout the first two years of students' experiences at CSU. OTP believes in assisting students in creating a sense of belonging at CSU and understanding what it means to be a CSU Ram.

CSU Police Department

Office in Green Hall
(970) 491-6425

The CSU Police Department (http://police.colostate.edu) (CSUPD) operates 24 hours a day, every day of the year. "911" access is TDD compatible and a TDD service line is available at (970) 491-2323.

The CSU Police Department is a full-service, accredited law enforcement agency whose officers are armed and have full law enforcement authority on all property owned or controlled by CSU. Officers are committed to a philosophy of community based policing and work in partnership with others to augment campus safety. CSU officers also possess peace officer commissions from the State of Colorado, the City of Fort Collins, and are commissioned deputy sheriffs in Larimer County.

CSU police enforce criminal and traffic laws, investigate all crimes that occur on campus, make arrests, and maintain full integration with the criminal justice system, including close working relationships with the District Attorney's Office, Fort Collins Police, Larimer County Sheriff's Department, and other state and federal law enforcement agencies and investigation bureaus. The programs and services of the department are designed to meet the demands and needs of a growing and thriving CSU community.

The Jeanne Clery Disclosure of Campus Security and campus Crime Statistics Act is the landmark federal law that requires colleges and universities to disclose information on security policies and timely, annual information about crime on and around campus. The CSU Safety Report (https://safetyreport.colostate.edu) is published annually.

The Bicycle Education and Enforcement Program (http://police.colostate.edu/bike-traffic) (BEEP) is a unit of the police department designed to address bicycling issues on campus. Bicyclists are expected to comply with CSU bicycle regulations, obey all traffic laws, and register their bicycles with the CSUPD.

The Safe Walk Program (http://police.colostate.edu/safe-walk) is a service designed to assist those who walk during the hours of darkness. Trained Campus Service Officers are available to walk people to and from their destination within a defined service area. Call (970) 491-1155 or use any police service callbox on campus.

Campus Safety and the Clery Act

The Jeanne Clery Disclosure of Campus Security and Campus Crime Statistics Act ("Clery Act") is the landmark federal law that requires colleges and universities to disclose information on security policies and timely, annual information about crime on and around campus. Additional information about the Clery Act, and campus safety is available in University Policies, and online (http://police.colostate.edu).

Concerned about someone? *Tell Someone*

If you are concerned about the health, well being, or safety of a CSU student or employee, you are encouraged to Tell Someone (http://supportandsafety.colostate.edu/tell-someone). Examples of when to Tell Someone include but are not limited to:

- Threats, gestures, writings, or attempts related to suicide or violence
- Harmful to themselves or others
- Self-injurious behavior (e.g. cutting self)
- Alcohol or other substance abuse problems
- Pattern of bizarre behaviors or actions
- Hospitalization for mental health issues or drug or alcohol use
- Sudden, rapid weight loss or gain
- Poor health due to restrictive eating or possible eating disorder
- Disruption to the living, learning, or working environment.

Tell Someone by calling (970) 491-1350 or filling out the online form (http://supportandsafety.colostate.edu/referral-form).

The Tell Someone system is designed to help the individual you are concerned about, not to punish them. All reports are treated with discretion and with a reasonable expectation of confidentiality. You may access additional information regarding CSU's policy on Student Sexual Harassment and Sexual Violence (http://supportandsafety.colostate.edu/sexual-harassment).

Parking and Transportation Services

Office in Lake Street Garage, 1508 Center Avenue
(970) 491-7041

Parking at CSU is available for faculty, staff, students, and visitors and does require a parking permit. Parking and Transportation Services (http://parking.colostate.edu) can assist with more information regarding purchasing an annual permit, information on visitor or short term permits, or pay by plate locations. In addition to commuting via automobile, many

members of the campus community choose alternative transportation options. Visit the Parking and Transportation Services website for information on biking or walking to CSU, carpooling, and using the Transfort system.

Alternative Transportation

Brought to campus by ASCSU, Parking and Transportation Services, and Transfort (https://pts.colostate.edu/transportation-options/transit-general), leave cars at home and use MAX, other Transfort (https://pts.colostate.edu/transportation-options/transit-general)routes and Around the Horn (https://pts.colostate.edu/transportation-options/transit-general/horn) to get around campus. Thirteen stops are serviced every 10 minutes Monday through Saturday. In addition to mass transit, CSU encourages alternative transportation (http://pts.colostate.edu) (biking, walking, and carpooling).

Student Legal Services

Office in Lory Student Center, Room 284
(970) 491-1482

Student Legal Services (http://sls.colostate.edu) provides free legal advice to fee-paying students on a variety of legal matters. Common cases involve housing issues (e.g., review of leases), criminal law, consumer complaints, and debt problems, but all questions are welcome. Some services such as preparation of wills and powers of attorney carry an additional nominal charge. The staff also educates clients about their legal rights and responsibilities and, where helpful, guides students in the use of negotiation, mediation, and small claims court to resolve their disputes. Students who don't pay the student fee package may, in appropriate cases, pay SLS's semester fee (less than $10) and receive services. Educational presentations by the SLS attorneys are always available.

Student Resolution Center

Office in Aggie Village Walnut, 501 W. Lake, Suite A
(970) 491-7165; FAX (970) 491-1800

Student Resolution Center (SRC) (https://resolutioncenter.colostate.edu) supports the developmental, behavioral, and educational needs of students. Through a myriad of approaches SRC strives to maximize individual student success while upholding community standards and helping students navigate challenging times. The SRC aims to assist, educate and support CSU students through two processes:
• **Conflict Resolution Services** – voluntary, neutral, confidential process to assist students when conflicts, disputes or issues arise.
• **Student Conduct Services** – one-on-one meetings to discuss alleged violations of the Student Conduct Code, hear perspectives, explore personal responsibility, hold students accountable and provide educational and restorative outcomes when appropriate.

SRC offers the following:

- Conflict coaching/consultation
- Assistance with grade appeals, roommate disagreements, student/faculty conflicts, academic matters/appeals
- Mediation/facilitation between individuals or organizations
- Student conduct hearings
- Pre-admission hearings
- Training/outreach related to conflict prevention and management, academic integrity, and civility
- Outcomes/education, including referrals to the Drugs, Alcohol and You (DAY) Programs, Party Partners, and skill-building workshops.

Academic Services and Programs

Collaborative for Student Achievement
Learning Communities
Office of International Programs
The Institute for Learning and Teaching (TILT)

Collaborative for Student Achievement

Located in the Canvas Stadium
1415 Meridian Avenue
(970) 491-7095

The Collaborative for Student Achievement (http://www.casa.colostate.edu) is a dynamic organization that empowers students to make the most of their educational experience beginning at orientation and continuing through to graduation. The Collaborative offers essential services integral to both the academic and personal success of students. Services include **Orientation and Transition Programs, Key Communities, Undeclared Advising, Health Professions Advising, Community for Excellence Scholar Programs, and Outreach and Support Programs.**

Learning Communities at CSU

Colorado State University offers students a variety of residential and non-residential Learning Communities and Residential Theme Programs (http://www.lc.colostate.edu) that bring cohorts of students together in shared learning experiences. Learning Communities integrate curricular (co-enrollment in classes) and co-curricular learning in order to provide a supportive, academically-focused environment that cultivates a sense of community and empowers students to become engaged citizens on campus and in the community.

In partnership with University Housing (https://housing.colostate.edu/halls/communities), Residential Learning Communities and Theme Communities are in many of the residence halls, offering a unique residential experience consisting of special interest areas that help build positive communities with students who share similar academic or personal interests and/or lifestyles. These communities connect students with faculty and staff who engage students in their learning and provide information about opportunities available at CSU.

Residential Learning Communities include:

Arts and Creative Expression Residential Learning Community: (ACE) The ACE (http://www.ace.colostate.edu) program in Parmelee Hall provides students in the visual and performing arts a collaborative environment in which to grow creatively. Students will learn to become strong advocates of the arts and will have opportunities to participate in service learning programs and outings such as gallery walks, museum visits, and live performances both on and off campus. The ACE Program is open to first year students majoring in Art, Music, Dance, and Theatre. Pre-music majors do not qualify.

College of Natural Sciences Learning Community: (CNSLC) The CNSLC (http://www.cnslc.colostate.edu) in Laurel Village provides a positive and diverse learning environment for science students and offers classrooms, faculty and advising offices, study groups, fabulous social spaces to promote interaction among the students, and a wide variety of social &

academic activities and projects. Peer Academic Leaders (PALs), help students make connections to what they are learning in their courses through engaging projects and activities that connect science to their lives and the world.

In addition to participating in the CNSLC, there are two thematic clusters that offer additional, optional experiences for select students:

- *Science Outreach Scholars:* Students who are interested in how they can use science to change the world will all live together on one floor. They will take a one-credit seminar class that will explore issues of social justice and diversity in science. Through the class, students will work with local, culturally-diverse K-12 classes. This cluster will provide opportunities to connect with other students from diverse backgrounds and connect with faculty and staff at CSU including: CSU diversity programs and offices, the Education and Outreach Center, the Little Shop of Physics, the School of Education, and other campus partners. Students in this program also participate in academic study groups with their peers.
- *Sustainability Cluster:* Students who are interested in sustainability will live together on one floor in Piñon Hall, a LEED-certified building that provides a perfect platform for exploring sustainability on the CSU campus. Students collaborate with University Housing, Housing & Dining Services, and the College of Natural Sciences to push the boundaries of sustainability in a residence hall and explore the ideas of global sustainability through the lens of a scientist. Students lead a sustainability committee that spearheads multiple initiatives. Some of the student-driven projects include designing and managing the CNSLC community garden beds and piloting in-hall composting to inform larger university decisions. Members of this cluster will have the opportunity to get involved in research and to propose and spearhead other sustainability-related projects.

Engineering Residential Learning Community: The **Engineering Learning Community** in Academic Village, Aspen Hall and Edwards Hall offers Engineering students an academically supportive and fun environment. Residents can take advantage of design studios, collaborative work rooms, an electronic classroom, as well as in-house tutoring and academic advising. In addition, students who choose to live in the Engineering Learning Community also have the opportunity to engage with a live-in faculty-in-residence, live-in graduate students, and Walter Scott, Jr. College of Engineering Peer Mentors on a daily basis to help them with their transition to CSU and their major. Currently, this community is limited to Engineering majors and a small population of Undeclared Engineering Interest majors only.

Global Village: Global Village (GV) is a diverse learning community that will give students the unique opportunity to live with and get to know students from around the world. It is a place where who students are is important—wherever they may be from—and where we value learning about each other, our cultures, and our stories. Students will be supported in their first year by their GV Mentor and will have the chance to participate in numerous activities designed to develop academic success, create cultural connection and understanding, and build leadership skills in a diverse world. Global Village students enroll in 6 credits of courses shared with other Global Village students including SPCM 100 and KEY 192C: Global Village Seminar, focused on studying culture in the US and around the world. Global Village is the place to form long-lasting friendships, discover new cultures, and understand what it means to be part of a global community, now and in the future. This community is open to first year and transfer students.

Health and Exercise Science Community: (HES) In the Health & Exercise Science (HES) Community (http://www.hes.chhs.colostate.edu/students/undergraduate/housing.aspx), students live with other students who are taking the same courses, have similar career goals, and who are often vested in living active and healthy lifestyles. Living in the HES community will allow for residents to connect with each other not only academically but socially as well through engaging University Housing programming. The HES community is conveniently located in Corbett Hall, across the street from Moby B Complex where students have access to a computer lab, where major courses are offered, and where the Department of Health & Exercise Science is located. In the fall, students in the community will take HES 145 – Health & Wellness together as a cluster. In the spring students will take HES 207 – Anatomical Kinesiology as a cluster. The HES Community is open to first-year students who are declared as Health & Exercise Science majors at CSU.

Honors Residential Learning Community: (HRLC) The **HRLC**, housed in the Academic Village and Edwards Residence Hall, serves half of the students admitted to the University Honors Program. First year students develop a sense of community by residing with other high achieving students who share similar academic interests and goals. Honors staff are located at the Academic Village and are available for advising and assistance.

Key Communities: Key Communities (http://key.lc.colostate.edu) are first and second year learning communities designed to assist students who identify as first generation to college, limited-income, and/or ethnically diverse with their transition to and through the university. Based on active and experiential learning through interdisciplinary classes, service-learning, academic and career exploration, undergraduate research and leadership development, Key aims to increase retention and academic performance of participants, encourage campus and community involvement, and promote diversity awareness. Through Key, students: achieve academic excellence, establish meaningful relationships, enhance leadership skills, connect with a diverse community, and engage in personal exploration. The Key Communities offer six first-year community options. These community options include Key Academic, Key Civic/Service, Key Culture Communication and Sport, Key Explore, Key Health Professions, and Key Natural Sciences. In addition to the six first-year Communities, Key offers two options for second year and continuing students. These community options include Key Plus Course Track and Key Plus Leaders Engaging in Academic, Diversity and Service.

Leadership Development Community: (LDC) The **LDC** is a Residential Learning Community comprised of a diverse group of students with all majors and minors who have a similar passion focused on leadership development and making a change in the world. Participating students live in Durward Hall while enrolled in a year-long course (2 credits in the fall, 2 credits in the spring) as part of the President's Leadership Program (PLP). Acceptance into PLP is required.

Natural Resources and Sustainability Learning Communities: (NRSLC) The NRSLC (https://warnercnr.colostate.edu/prospective-students/natural-resources-residential-learning-communities), located in Summit Hall, is for Natural Resources students to engage in the research and outreach of the Warner College of Natural Resources. Through this experience, NRSRLC students will have the opportunity to network with natural resources faculty, community members and dive into their field of study. There are two distinct tracks to choose from: **Natural Resources and Sustainability** or **Outdoor Leadership**.

Residential Theme Communities include:

Living Substance Free: This themed community (http://www.lc.colostate.edu), located in Corbett and Westfall Halls, is a community for students who are committed to a lifestyle free from alcohol, tobacco, or drugs. A wide variety of social events and programs are offered to first year and returning students. This program is co-sponsored by University Housing and the CSU Health Network.

Second-Year Experience Community: The Year 2@CSU: Residential Experience (http://www.otp.colostate.edu/sy-year2.aspx) is a co-sponsored community between University (http://www.housing.colostate.edu/residence-halls) Housing and Orientation and Transition Programs (http://www.otp.colostate.edu) **(OTP)** housed in Laurel Village. Forty suite-style rooms have been designated for students to live in a community that is focused on the second year experience. Specifically, the community focuses on outreach and learning connected to the following areas: career and major exploration, global citizenship and service, academic engagement and outdoor adventure. Students living on the floor connect with each other through academic workshops, a fall outdoor mountain retreat, service projects, and a variety of other floor outings. This themed community will ask residents to sign a learning agreement and no class is required to participate in this community. Any current first year student is welcome to apply to live in this community.

Transfer Residential Community: The Transfer Residential Community (http://www.otp.colostate.edu/csu-transfer-networks.aspx) in Braiden, Allison, and Summit Halls is a partnership between Orientation and Transition Programs and University Housing. The Community consists of transfer students with an interest in learning more about the resources at CSU and making connections with other transfer students. The Transfer Residential Community is about supporting student success at CSU and encouraging active engagement while introducing students to the many opportunities available to them through CSU. In addition, the Transfer Residential Community provides resources and direct contact with Transfer Transition Leaders, connecting students to CSU and the community, while fostering meaningful friendships. Finally, by living and participating in the Transfer Residential Community, students get the help and guidance they need to thrive in their transition and excel in their academic and social experience at CSU. This community is open to new transfer students.

Learning Communities without a residential requirement include:

Campus Connections Learning Community: The **Campus Connections Learning Community** (https://www.chhs.colostate.edu/cc/csu-student-involvement) **(CCLC)** provides ongoing co-curricular opportunities for CSU students to enrich their involvement with Campus Connections through leadership and service.

Catalyst Learning Community: The Catalyst Learning Community (https://tilt.colostate.edu/catalyst) is a non-residential learning community for second year students who are passionate about learning and teaching. This experience provides the chance for students to be leaders within an academic setting, while exploring their own career paths. The three semester experience includes a Learning Assistant (https://tilt.colostate.edu/catalyst/earn/laDesc.cfm) internship, an Undergraduate Research Assistant (https://tilt.colostate.edu/catalyst/earn/raDesc.cfm) internship, and two one-credit courses that explore peer education and CSU research.

Office of International Programs

Offices in Laurel Hall
(970) 491-5917

The **Office of International Programs** (OIP) fosters intercultural understanding through high-impact learning and community engagement in support of CSU's land grant mission. OIP's broad array of programs and services provide international experiences for CSU students, scholars, faculty and staff. Services include **Education Abroad**, **International Student and Scholar Services** (https://isss.colostate.edu), Global Institutional Partnerships (https://international-initiatives.colostate.edu/international-partnerships), International Development Studies (https://international-initiatives.colostate.edu/international-development-studies), Curricular (https://international-initiatives.colostate.edu/internationalizing-the-curriculum) and Co-curricular programs (https://international-initiatives.colostate.edu/distinguished-speakers), China Programs, (https://china.colostate.edu) the Confucius Institute (https://cicsu.colostate.edu) and CSU's Todos Santos Center (https://todossantos.colostate.edu) in Mexico.

The Institute for Learning and Teaching (TILT)

Offices in the TILT Building
(970) 491-3132

The Institute for Learning and Teaching (http://tilt.colostate.edu) (TILT) supports students' academic success and pursuit of long-term goals through several curricular and co-curricular learning programs. Tutoring, study groups, and Learning Assistants help students succeed in challenging courses. Serving as a TILT tutor, study group leader, or learning assistant allows students to take up academic leadership roles, learn course material very deeply, and gain experience relevant to prospective employers, graduate programs, and internships. Academic success workshops, such as time management, exam preparation, and learning strategies, help students improve study skills and learn about topics of interest. Through TILT, students can participate in service-learning opportunities or in undergraduate research and artistry projects with faculty mentoring. National research has shown that taking part in these opportunities improves learning, increases academic achievement, and promotes connections with faculty and other mentors who often help students achieve professional and personal goals.

INTO-CSU

Office in Spruce Hall
(970) 492-4686
into.colostate.edu (http://into.colostate.edu)

The mission of INTO Colorado State University is to provide quality English language and Pathway programs and comprehensive support services to international students interested in learning English for personal, professional, or academic purposes, and to serve the university and student body at large.

Through INTO CSU (https://into.colostate.edu), international students can study Academic English or choose to attend one of the many International Year One or Graduate Pathway programs to strengthen academic credentials and English proficiency before applying to a CSU degree program. All programs are in a highly supportive learning environment, designed to accelerate students' success. Students, regardless of INTO CSU program of study, have all the benefits and experiences of campus life at CSU, including access to all of the academic, social, and cultural resources and activities that CSU has to offer.

English Language Programs

Academic English (AE) at INTO CSU helps international students improve their English proficiency when their English levels are lower than required for entry to Pathway programs by introducing them to generic academic skills in English. AE serves students who may or may not wish to pursue a degree at CSU after successful AE program completion.

Academic English Program

The Academic English (https://www.intostudy.com/en/universities/colorado-state-university/programs/academic-english) program at INTO CSU is accredited by the Commission on English Language Program Accreditation (CEA) and prepares international students for university study in the U.S. This academically rigorous program provides international students with high-quality English language instruction and the academic skills to succeed at CSU through development of:

- Listening
- Speaking
- Reading
- Writing
- Grammar
- Academic study skills

English Foundations

INTO CSU offers an English Foundations program for students who require more support before entering the full Academic English program. Our professional instructors help improve a student's English proficiency and prepare students to retake the English placement test to determine their Academic English level or entry to a Pathway in the following semester.

Pathway Programs

INTO CSU offers Pathway programs (https://www.intostudy.com/en/universities/colorado-state-university) for undergraduate and graduate level international students designed to improve both their English and academic performance (G.P.A.) to successfully complete their first year or semester in their targeted degree programs at CSU. Pathway students are integrated with direct-entry students from the start to enhance their adjustment to the new academic context.

International Year One

International Year One (https://www.intostudy.com/en/universities/colorado-state-university/programs) allows undergraduate students to begin earning credits toward their CSU degree even if they don't meet the academic and English requirements for direct entry. They receive additional support to move successfully through their first year and graduate in the same amount of time as domestic students. Depending on the student's English language scores, students enter International Year One through a 1-Semester, 2-Semester or 3-Semester Pathway program.

Transfer Program

The Undergraduate Transfer Program (https://www.intostudy.com/en/universities/colorado-state-university/programs/undergraduate-transfer-program) is specifically designed to support international students who have already completed college or university-level courses and want to transfer to CSU. They receive an estimate of transferable credits toward their degree before they start the program.

Graduate Pathways

The Graduate Pathway (https://www.intostudy.com/en/universities/colorado-state-university) program gives graduate students the academic foundation, essential language skills and GMAT/GRE test preparation to successfully move on to a CSU master's degree. They receive the highest level of support throughout their program, including personalized academic advising.

Administrative Resources

Academic Computing and Network Services (ACNS)
Office of the Registrar
Office of Financial Aid
University RamCard

Academic Computing and Network Services (ACNS)

Office in University Services Center, Sixth Floor
(970) 491-5133

Academic Computing and Network Services (http://www.acns.colostate.edu) (ACNS) provides networking services and central and distributed computing support to the academic and administrative units of CSU.

Account information, documentation, and assistance with personal computers and CSU's central computing systems are available from the Central IT Help Desk, located in Morgan Library (970) 491-7276. Computers, software, and technology supplies may be purchased at RAMtech, located in the Lory Student Center (970) 491-7625. A current CSU identification card is required for purchases.

Office of the Registrar

Office in Centennial Hall
(970) 491-4860

The **Office of the Registrar** supports students throughout their academic careers and beyond by providing innovative services to the CSU community. The Office of the Registrar serves as a central administrative office for students, families, faculty, staff, and alumni by providing the following services:

- Maintain and provide official academic transcripts
- Maintain student academic and biographical records (such as preferred first name, legal name, address, phone number, date of birth, etc.). Changes to biographical data can be student initiated via RAMweb (https://ramweb.colostate.edu) and become part of the student's CSU record.
- Collect and serve as resource for academic appeals
- Oversee and support all academic registration functions
- Report, certify, and maintain academic, degree, and enrollment verifications
- Support transfer students and manage the transfer credit process
- Certify military and veterans educational benefits
- Coordinate academic and classroom scheduling
- Act as a central academic information resource
- Comply with, and educate campus on, Federal and State legislation and institutional policy
- Publish final examination schedules
- Lead and participate in cross-divisional and institution-wide projects
- Manage on-line course grading and reporting
- Support curriculum approval process
- Publish annual General Catalog
- Maintain RAMweb (https://ramweb.colostate.edu), ARIES, and ARIESweb access and security
- Serve on and support numerous university committees as well as national level organizations.

Office of Financial Aid

Office in Centennial Hall
(970) 491-6321

The Office of Financial Aid (http://sfs.colostate.edu) administers a variety of institutional, state, federal, and private financial assistance programs for qualified students. Financial assistance programs include scholarships, grants, loans, and employment.

Student Employment Services

Office in Lory Student Center, room 120
(970) 491-5714

Employment opportunities available include the Work-Study Program, on-campus departmental positions, and community part-time employment. Refer to the Student Employment Services (http://ses.colostate.edu) website for more details.

University RamCard and RamCash

Office in Lory Student Center, Room 271
(970) 491-2344

Email: ramcard@colostate.edu

RamCards (http://housing.colostate.edu/ramcard) (CSU identification cards) for students, faculty, and staff are used for identification, meals, RamCash, building access, Recreation Center access, library materials checkout, Transfort, printing with PaperCut, sporting and cultural events, entrance to exams, and more. The RamCard (http://housing.colostate.edu/ramcard) can be obtained during normal business hours at the RamCard Office in the Lory Student Center, Room 271. A current government-issued picture ID is required to obtain a RamCard. This could be a passport from any country or one of the following U.S. government-issued picture IDs: a driver license, driver permit, state ID, or military ID. The initial card cost is $20, and replacement cards cost $25 (all costs subject to change). RamCash is a convenient campus declining-balance account. Students, faculty, staff, and University visitors can use RamCash to easily purchase food, beverages, goods, and services across campus.

Facilities

CSU spans five primary campuses on 4773 acres, plus numerous Agricultural Experiment Stations, Cooperative Extension offices, and Colorado State Forest Service sites across the state that cover an additional 4038 acres. Altogether, CSU has 705 buildings including 3295 classrooms and 1237 laboratories totaling 10,434,578 gross square feet. In addition to acres owned, CSU manages an additional 9,978,478 acres throughout the state, most of which is the Colorado State Forest.

Bookstore
Coffee Shops
CSU Transit Center
Lory Student Center
CSU Mountain Campus
CSU Sports and Athletic Facilities
Student Recreation Center
Study Spaces
University Center for the Arts
University Libraries
Veterinary Teaching Hospital

Bookstore

The CSU Bookstore (http://www.bookstore.colostate.edu/home.aspx) is located in the Lory Student Center. Proceeds from the CSU Bookstore go back to students and the CSU community. CSU insignia items, school supplies, and art supplies are available as well as textbooks for every class at CSU.

Coffee Shops

Coffee shops are great places to grab a refresher and dive into studying or group meetings. Here are the locations (https://myatlascms.com/map/?id=748&mrklid=1268) of some coffee shops on CSU's campus.

Sweet Sinsations (http://lsc.colostate.edu/dining-at-the-lory-student-center/food-brands/#sweetsinsations) - Lory Student Center
Intermissions (http://lsc.colostate.edu/dining-at-the-lory-student-center/food-brands) - Lory Student Center
Sweet Temptations (http://lsc.colostate.edu/dining-at-the-lory-student-center/food-brands) - Behavioral Sciences Building
Morgan's Grind Café (http://lsc.colostate.edu/dining-at-the-lory-student-center/food-brands) - Morgan Library
The Bean Counter (http://lsc.colostate.edu/dining-at-the-lory-student-center/food-brands) - Rockwell Hall
Ram's Horn Express (http://lsc.colostate.edu/dining-at-the-lory-student-center/food-brands) - Academic Village

CSU Transit Center

The CSU Transit Center (http://lsc.colostate.edu/lory-student-center-transportation-information) is located on the first floor of the north end of the Lory Student Center. It includes a Transfort (http://www.ridetransfort.com) customer counter, flat screen monitors displaying departure times and news stories, and an indoor passenger waiting area to make public transportation more comfortable and convenient for CSU students and visitors.

Transfort, Around the Horn

Transfort (http://www.ridetransfort.com) is the local Fort Collins bus service that offers a multitude of stops close to student living areas and runs schedules that complement CSU class schedules. This mass transportation system cuts down on pollution and brings students right to the center of campus. CSU students account for nearly thirty-five percent of Transfort's ridership!

Public transportation options are available to get you to campus and around Fort Collins. All students and employees receive a Transfort (http://www.ridetransfort.com) transit pass (on their Ramcard (https://housing.colostate.edu/ramcard)) thanks to the investment by the Associated Students of Colorado State University (ASCSU (https://ascsu.colostate.edu)) and Parking and Transportation Services. You can ride any Transfort (http://www.ridetransfort.com) route in the city along with MAX. Your transit pass can also get you to Loveland, Longmont, and Boulder via the FLEX (http://www.ridetransfort.com/flex).

Lory Student Center

The Lory Student Center (http://www.sc.colostate.edu) is the dynamic hub of campus, serving more than 20,000 people each day. It encourages the lifelong learning development of students, faculty, staff, and community members. Lory Student Center services and programs create a stimulating and supportive atmosphere to complement academic learning and social enrichment. You may reach Campus Information and Box Office at (970) 491-6444.

CSU Mountain Campus

Nestled in a beautiful, secluded mountain valley at an elevation of 9,000 feet, **CSU's Mountain Campus** (http://www.mountaincampus.colostate.edu) provides field research and education, conference facilities, a challenge course, and world-class hiking. The Mountain Campus is located 50 miles west of Fort Collins and is adjacent to Rocky Mountain National Park, the Comanche Peak Wilderness Area, and Roosevelt National Forest. The campus is open from mid-May to mid-October and is available for field studies and research, conferences, workshops, meetings, and retreats.

CSU Sports and Athletic Facilities

Sonny Lubick Field at Canvas Stadium

"Welcome Home" is the theme behind Colorado State's new 41,000-seat on-campus stadium facility. The facility, includes nearly 800,000 square feet of space, features a club area and meeting space available for use by the community, as does the entire area. Included in the new facility is the Iris and Michael Smith Alumni Center, the Collaborative for Student Achievement (http://www.casa.colostate.edu), as well as classroom and study space. CSU's new on-campus stadium provides the latest in fan amenities and technology to guarantee an amazing fan experience.

Glenn Morris Field House

The Rams' indoor track and field training facility is the venerable Glenn Morris Field House (http://www.csurams.com/facilities/south-college-fieldhouse.html), near the Jack Christiansen Track. This historic venue, built in 1924, underwent a renovation in 1998.

The venue contains three main wings: the south area, which includes the indoor track; the middle area, which houses offices and locker rooms; and the north area, which is where the basketball team formerly played and now is used for indoor court sports.

Indoor Practice Facility

The Indoor Practice Facility (http://www.csurams.com/facilities/IPF.html) is designed for use by multiple sports programs at the University.

Features:

- Gymnasium easily encloses a regulation basketball court and two half courts
- Volleyball configuration can accommodate two full-length courts
- Contains a synthetic-turf football field (including one end zone)
- Features a four-lane, 70-meter track and a unique shoe-changing room adjacent to the football field
- Has flexibility to allow the softball team to set up batting cages on the football field
- Will provide shelter for any student-athlete in each of the Rams' 16 varsity sports
- Includes training room, equipment storage, lobby and trophy display case, and restrooms
- Uses an innovative air circulation system.

Jack Christiansen Track

One of the finest track and field facilities in the region in a picturesque setting lends itself comfortably to annually hosting marquee events, including the 2011 and 2005 Mountain West Track & Field Championships. Such is the history surrounding the Jack Christiansen Memorial Track (http://www.csurams.com/facilities/christiansen-track.html) on the east side of CSU's main campus.

Regarded as one of the region's finest facilities since it opened in 1989, the venue has provided a backdrop for success for the Rams. As a result, the program has the ability to attract some of the region's finest athletes.

Moby Arena

Moby Arena (http://www.csurams.com/facilities/moby-arena.html) is a cozy and intimate playing facility nestled in the heart of the university's central campus area.

With a capacity of 8,745, the whale-shaped venue features the pride and tradition of the Rams' program that dates back 100 years, and a newness associated with a recent renovation to the arena's concourses, athletic training facilities and locker rooms.

Ram Field

CSU's softball facility, Ram Field (http://www.csurams.com/facilities/ram-field.html), has been the home of the school's varsity softball program since its opening in 1995. The diamond is a state-of-the-art, NCAA-regulation field, just south of Moby Arena, complete with a high-quality sound system. The foul lines are 200 feet from home plate, and the center-field fence is 225 feet away.

University Tennis Courts

The University Tennis Courts are one of the finest tennis facilities in the nation. The $2 million dollar facility that opened in 2010-2011 features 12 post-tensioned concrete courts, eight of which are lighted for night play. For information about use of the Tennis Complex, visit Campus Recreation (https://csurec.colostate.edu).

Student Recreation Center

Campus Recreation (https://csurec.colostate.edu) (http://csurec.colostate.edu)actively promotes the pursuit of a balanced, healthy lifestyle to a diverse university community by providing quality programs, facilities, and services that encourage personal growth, leadership development, and employment opportunities. Students paying full student fees for the current term are automatically eligible for Campus Recreation programs and services including use of the Student Recreation Center. Memberships are available to part-time students, employees, and spouses/partners. Inquire at the Service Center in the Student Recreation Center lobby for more information. To learn more about Campus Recreation at CSU, pick up a copy of the Campus Recreation Guide or check out Campus Recreation's (https://csurec.colostate.edu) (http://csurec.colostate.edu)website.

Study Spaces

In addition to spaces in residence halls, among the shelves in Morgan Library (http://lib.colostate.edu) and throughout the floors of the Lory Student Center, CSU offers a variety of other study spaces. Some study spaces are reservable through the library reservation system (https://lib.colostate.edu).

Some popular options include:

- Behavioral Sciences Building
- TILT Building -Russell George Great Hall
- Morgan Library - Group Study Rooms and The Cube
- The Durrell Center
- Clark Building - A-wing study lounge
- Scott Bioengineering Building
- The Microbiology Study Lounge
- Rockwell Hall West.

University Center for the Arts

Located at 1400 Remington Street, the University Center for the Arts (http://uca.colostate.edu) is an exquisite venue for music, theatre, dance and art where future generations of arts professionals – be it in performance, creative production and design, education, therapy, or research – are becoming contributors to the essential vitality of our culture and society and advance knowledge in the arts through discovery, dissemination, teaching, and preservation. Located in the old Fort Collins High School, the state-of-the-art UCA houses music, theatre, and dance performance venues, museums and galleries, rehearsal spaces, classrooms, and more.

Fort Collins offers an exceptional environment for students in the arts through a community that is closely connected to activities at the UCA. Fort Collins has a thriving cultural and artistic community and is consistently ranked as one of the best or the best place to live in the country. Its culture and its inviting Old Town architecture are complemented by its prime location immediately at the foot of the Rocky Mountains with breathtaking scenery and an almost infinite opportunities for first-rate outdoor activities.

University Libraries

William E. Morgan Library (http://lib.colostate.edu), located in the center of the main campus, offers nearly 300,000 square feet of research and learning space and houses a large part of the paper collection, which includes books, maps, journals, technical reports, archives, and manuscripts.

The University Libraries connects CSU to information and knowledge critical for research and learning. With a diverse collection of more than 2 million physical items, more than 100,000 electronic serial titles, more than 1 million electronic books and a broad range of research services, the Libraries provides faculty and students with opportunities to develop projects and ideas. These services include library instruction, research assistance, archives, electronic reserves, desktop resource delivery, and interlibrary loan.

The University Libraries is a member of the Association of Research Libraries (ARL), Greater Western Library Alliance (GWLA), and the Colorado Alliance of Research Libraries. These memberships enable the Libraries to participate in preservation, resources sharing, and collection development programs on a national scale. Resource sharing is further enhanced by the Libraries' participation in RapidILL, a service developed at the CSU Libraries, which links the collections of more than 300 research libraries around the world.

Veterinary Teaching Hospital

CSU's south campus contains the Veterinary Teaching Hospital (http://csuvets.colostate.edu) including the research and teaching programs and the federal Natural Resources Research Center.

ALL-UNIVERSITY CORE CURRICULUM

Office of Vice Provost for Undergraduate Affairs
Administration Building, Room 108
Academics at Colorado State University (https://provost.colostate.edu/academic-programs)

All-University Core Curriculum (AUCC)
Early Completion of Quantitative Reasoning/Composition Requirement
English Composition Requirement
Quantitative Reasoning Requirement

All-University Core Curriculum (AUCC)

Office of Vice Provost for Undergraduate Affairs

Administration Building, Room 108
provost.colostate.edu/academic-programs (http://provost.colostate.edu/academic-programs)

Preface
The AUCC Experience
Note Regarding the All-University Core Curriculum
Categories 1A, 1B and 2: Fundamental Competencies
Category 3A-3E: Foundations and Perspectives
Note Regarding Guaranteed Transfer (GT) Pathways courses

For more in-depth descriptions of each AUCC category (including Content Criteria and Core Student Learning Outcomes), please visit the Curriculum & Catalog website (https://curriculum.colostate.edu/aucc)**.**

Preface

The All-University Core Curriculum (AUCC) at CSU helps students refine their academic skills and introduces them to areas of knowledge, methodologies, and ways of knowing in various fields of study. The AUCC is integral to the entire undergraduate educational experience.

The AUCC promotes the acquisition and effective practice of essential competencies within areas of learning stipulated by the state of Colorado. These include math, writing, arts and humanities, social sciences, and history. Courses approved for inclusion in the AUCC at CSU collectively satisfy all of the requirements of the state with regard to subject area and general transfer agreement (GT Pathways) content, competencies, and student learning outcomes. Essential competencies include the ability to write clearly, speak effectively, recognize diverse perspectives, understand and apply quantitative reasoning, make sense of abstract ideas, reason analytically, and read critically.

The AUCC Experience

Each course approved to satisfy requirements of the AUCC calls upon the instructor to introduce and reinforce academic success skills, provide students with ample and prompt feedback to encourage their academic progress and development, encourage reflection and development of metacognition, and foster an academic mindset.

AUCC courses should provide high impact practices such as writing, collaborative learning, community/civic engagement, or research as relevant to the field. Students learn and retain knowledge when they write, reflect upon what they are learning, and engage in revision processes that utilize feedback. Courses in categories 3B, 3C, 3D, and 3E must base at least 25% of the final grade on writing, a portion of which must be written outside of class. Writing activities may range from brief in-class reflective writing to multi-draft revised papers.

Teaching that encourages this mindset involves setting high and realistic goals for students; making clear the course objectives and academic competencies they help to develop; and demonstrating connections among content, competencies, and life applications. It encourages ongoing effort and offers frequent constructive feedback. Such teaching makes explicit that productive studying, active engagement in learning experiences, practicing, questioning, participating, reflecting, and learning from mistakes contribute to student success.

Students in AUCC Courses may anticipate:

1. Graded feedback early in a course.
2. Early and consistent access to information about their progress in a course.
3. Prompt evaluation of their work, as well as frequent and ongoing feedback that assesses strengths and weaknesses and encourages continuing effort.
4. When relevant, referral to campus resources to support their success.
5. When appropriate, collaboration, peer interaction, and peer feedback.
6. Consultation outside of class.

Research at CSU has shown that there is a relationship between student engagement and academic success. Engagement includes, but is not limited to, the following:

1. Regularly attending class and coming prepared to learn.
2. Practicing effective study habits.
3. Completing required assignments.
4. Asking questions and seeking help when needed.
5. Learning about campus resources that support students.
6. Embracing intellectual challenges, opportunities for growth, and breadth of perspectives and opinions.

Note Regarding the All-University Core Curriculum

Credits earned in the College Board Advanced Placement Program (AP), the College-Level Examination Program (CLEP), and International Baccalaureate (IB) can be used to satisfy particular All-University Core Curriculum requirements.

All CSU undergraduate students share a common learning experience. Faculty members from across the University contribute to that experience.

The Intermediate Writing and Quantitative
Reasoning requirements must be completed within the first 60 credits (CSU and transfer) taken.

Each baccalaureate Program of Study must incorporate the following elements:

Fundamental Competencies

Code	Title	Credits
1A. Intermediate Writing		3
1B. Quantitative Reasoning		3
2. Advanced Writing		3

Foundations and Perspectives

Code	Title	Credits
3A. Biological and Physical Sciences (At least one course will include an associated lab)		7
3B. Arts and Humanities		6
3C. Social and Behavioral Sciences		3
3D. Historical Perspectives		3
3E. Diversity and Global Awareness		3

Depth, Application, and Integration

Code	Title	Credits
Minimum 5 credits, 2 courses		5
4A. Applying Fundamental Competencies: designated courses must apply and integrate knowledge from courses in the Fundamental Competencies of AUCC Categories 1A, 1B, and 2. At least 50% of the course grade must be based on activities that involve writing, speaking, and/or problem solving. Early guidance and feedback will support students' growth as writers, speakers, and problem solvers.		
4B. Integrating Foundations and Perspectives: designated courses must build upon the Foundations and Perspectives of AUCC Categories 3A, 3B, 3C, 3D, and 3E in an integrative and complementary way. Each course designated to fulfill this requirement shall emphasize the connections between its course content and the concepts and intellectual approaches that exemplify Foundations and Perspectives categories.		
4C. Capstone Experience: every major must require a capstone experience that offers the opportunity for integration and reflection on students' nearly completed undergraduate education.		

Students are advised to see if their program of study has particular recommendations for satisfying All-University Core Curriculum requirements.

A student must earn a cumulative grade point average of 2.000 or better in the courses used to satisfy categories 1 through 3 of the All-University Core Curriculum requirements.

What follows is a brief description of each category in the All-University Core Curriculum and a list of the courses currently approved to meet that category. **Note: No courses are listed in more than one category; courses listed in one category cannot be used to fulfill any other category in the AUCC.**

Fundamental Competencies

Fundamental Competencies are central to success in all courses. These include written and oral communication and quantitative reasoning. Therefore, the learning outcomes and instructional aims of these courses seek to develop and reinforce such competencies.

Category 1A. Intermediate Writing (3 credits)

The ability to communicate in written form is an essential component of success in any academic program and enhances the possibility of one's success in personal and professional life. Courses in this category provide instruction in the skills essential to effective written communication, extensive practice in the use of those skills, and evaluation of students' writing to guide them in improving their skills.

Code	Title	Credits
CO 150	College Composition (GT-CO2)	3
HONR 193	Honors Seminar	3

Category 1B. Quantitative Reasoning (3 credits)

Quantitative reasoning and problem solving are essential skills for success in academics and in life. Quantitative reasoning, which includes Mathematics and Statistics, develops ways of knowing that involve abstraction, generalization, and analysis. Such thinking involves problem solving, interpretation, representation, application, and communication.

Code	Title	Credits
MATH 101	Math in the Social Sciences (GT-MA1)	3
MATH 105	Patterns of Phenomena	3
MATH 117	College Algebra in Context I (GT-MA1)	1
MATH 118	College Algebra in Context II (GT-MA1)	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1
MATH 125	Numerical Trigonometry (GT-MA1)	1
MATH 126	Analytic Trigonometry (GT-MA1)	1
MATH 141	Calculus in Management Sciences (GT-MA1)	3
MATH 155	Calculus for Biological Scientists I (GT-MA1)	4
MATH 157	One Year Calculus IA (GT-MA1)	3
MATH 159	One Year Calculus IB (GT-MA1)	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	4
MATH 255	Calculus for Biological Scientists II	4
STAT 100	Statistical Literacy (GT-MA1)	3

Category 2. Advanced Writing (3 credits)

Building on and adapting skills and strategies developed in courses in Intermediate Writing, the objective of Advanced Writing is the further development of competence in written communication.

Code	Title	Credits
BUS 300	Business Writing and Communication (GT-CO3)	3
CHEM 301	Advanced Scientific Writing--Chemistry (GT-CO3)	3
CO 300	Writing Arguments (GT-CO3)	3
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)	3
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	3
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	3
CO 301D	Writing in the Disciplines: Education (GT-CO3)	3
CO 302	Writing in Digital Environments (GT-CO3)	3
JTC 300	Professional and Technical Communication (GT-CO3)	3
JTC 301	Corporate and Professional Communication (GT-CO3)	3
LB 300	Specialized Professional Writing	3

Foundations and Perspectives

Foundations and Perspectives courses emphasize subject area methodologies, perspectives, modes of expression and creativity, concepts, and knowledge. Courses in this category help students effectively use fundamental competencies to bring diverse viewpoints, knowledge, application, creativity, and skills to life. Courses explore distinctive characteristics as well as critical linkages among fields of study, promoting synthesis of learning.

Category 3A. Biological and Physical Sciences (7 credits)

Biological and Physical Science courses examine scientific perspectives, build familiarity with scientific knowledge and the scientific method, develop competencies in reasoning, inquiry, and analysis and evaluate the impacts of science and technology on society to facilitate communication in an increasingly complex and technological world. At least one course used to satisfy this requirement must have a laboratory component.

Code	Title	Credits
AA 100	Introduction to Astronomy (GT-SC2)	3
AA 101	Astronomy Laboratory (GT-SC1)	1
ANTH 120	Human Origins and Variation (GT-SC2)	3
ANTH 121	Human Origins and Variation Laboratory (GT-SC1)	1
BSPM 102	Insects, Science, and Society (GT-SC2)	3
BZ 101	Humans and Other Animals (GT-SC2)	3
BZ 104	Basic Concepts of Plant Life (GT-SC2)	3
BZ 105	Basic Concepts of Plant Life Laboratory (GT-SC1)	1
BZ 110	Principles of Animal Biology (GT-SC2)	3
BZ 111	Animal Biology Laboratory (GT-SC1)	1
BZ 120	Principles of Plant Biology (GT-SC1)	4
CHEM 103	Chemistry in Context (GT-SC2)	3
CHEM 104	Chemistry in Context Laboratory (GT-SC1)	1
CHEM 107	Fundamentals of Chemistry (GT-SC2)	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	1
CHEM 111	General Chemistry I (GT-SC2)	4
CHEM 112	General Chemistry Lab I (GT-SC1)	1
FW 104	Wildlife Ecology and Conservation (GT-SC2)	3
GEOL 110	Introduction to Geology-Parks and Monuments (GT-SC2)	3
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)	3
GEOL 121	Introductory Geology Laboratory (GT-SC1)	1
GEOL 122	The Blue Planet - Geology of Our Environment (GT-SC2)	3
GEOL 124	Geology of Natural Resources (GT-SC2)	3
GEOL 150	Physical Geology for Scientists and Engineers	4
GR 304	Sustainable Watersheds	3
HONR 292A	Honors Seminar: Knowing in the Sciences	3
HORT 100	Horticultural Science	4
LAND 220	Fundamentals of Ecology (GT-SC2)	3
LIFE 102	Attributes of Living Systems (GT-SC1)	4
LIFE 201A	Introductory Genetics: Applied/Population/ Conservation/Ecological (GT-SC2)	3
LIFE 201B	Introductory Genetics: Molecular/ Immunological/Developmental (GT-SC2)	3
LIFE 220	Fundamentals of Ecology (GT-SC2)	3
MIP 101	Introduction to Human Disease (GT-SC2)	3
NR 120A	Environmental Conservation (GT-SC2)	3
NR 130	Global Environmental Systems (GT-SC2)	3
NR 150	Oceanography (GT-SC2)	3
PH 110	Physics of Everyday Phenomena (GT-SC2)	3
PH 111	Physics of Everyday Phenomena Laboratory (GT-SC1)	1
PH 121	General Physics I (GT-SC1)	5
PH 122	General Physics II (GT-SC1)	5
PH 141	Physics for Scientists and Engineers I (GT-SC1)	5
PH 142	Physics for Scientists and Engineers II (GT-SC1)	5
WR 304	Sustainable Watersheds	3

Category 3B. Arts and Humanities (6 credits)

The Arts and Humanities explore uniquely human expressions. The Arts and Humanities investigate the cultural character and literatures of human experiences, fundamental questions of values and meaning, and, both in word and beyond words, the symbols and creative expressions of human life. Courses in Arts and Humanities may be in Arts and Expression; Literature and Humanities; Ways of Thinking; or World Languages. No more than three credits of intermediate world language (L*** 200, L*** 201) may be used toward this category.

Code	Title	Credits
AM 130	Awareness and Appreciation of Design	3
ART 100	Introduction to the Visual Arts (GT-AH1)	3
ART 200	Media Arts in Context	3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)	3
CS 150	Culture and Coding (GT-AH3)	3
D 110	Understanding Dance (GT-AH1)	3
E 140	The Study of Literature (GT-AH2)	3
E 232	Introduction to Humanities (GT-AH2)	3
E 236	Short Fiction	3
E 242	Reading Shakespeare (GT-AH2)	3
E 270	Introduction to American Literature (GT-AH2)	3
E 276	Survey of British Literature I (GT-AH2)	3
E 277	Survey of British Literature II (GT-AH2)	3
ETST 240	Native American Cultural Experience (GT-AH2)	3
HONR 292B	Honors Seminar: Knowing in Arts and Humanities (GT-AH2)	3
HONR 392	Honors Seminar	3
IDEA 210	Introduction to Design Thinking (GT-AH1)	3
INTD 110	Visual Expression of Interior Environments (GT-AH1)	3
LAND 110	Introduction to Landscape Architecture	3
LARA 200	Second-Year Arabic I (GT-AH4)	4
LARA 201	Second-Year Arabic II (GT-AH4)	4
LARA 250	Arabic Language, Literature, Culture in Translation (GT-AH2)	3
LCHI 200	Second-Year Chinese I (GT-AH4)	5
LCHI 201	Second-Year Chinese II (GT-AH4)	5
LCHI 250	Chinese Language, Literature, Culture in Translation (GT-AH2)	3
LFRE 200	Second-Year French I (GT-AH4)	3
LFRE 201	Second-Year French II (GT-AH4)	3
LFRE 250	French Language, Literature, Culture in Translation (GT-AH2)	3
LGER 200	Second-Year German I (GT-AH4)	3
LGER 201	Second-Year German II (GT-AH4)	3
LGER 250	German Language, Literature, Culture in Translation (GT-AH2)	3
LGER 251	The Holocaust in Literature and Film	3
LITA 200	Second-Year Italian I (GT-AH4)	3
LITA 201	Second-Year Italian II (GT-AH4)	3
LJPN 200	Second-Year Japanese I (GT-AH4)	5
LJPN 201	Second-Year Japanese II (GT-AH4)	5
LJPN 250	Japanese Language, Literature, Culture in Translation (GT-AH2)	3
LRUS 200	Second-Year Russian I (GT-AH4)	4
LRUS 201	Second-Year Russian II (GT-AH4)	4
LRUS 250	Russian Language, Literature, Culture in Translation (GT-AH2)	3
LSGN 200	Second-Year American Sign Language I	3
LSGN 201	Second-Year American Sign Language II	3
LSPA 200	Second-Year Spanish I (GT-AH4)	3
LSPA 201	Second-Year Spanish II (GT-AH4)	3
LSPA 230	Spanish for Heritage Speakers	3
LSPA 250	Spanish Language, Literature, Culture in Translation (GT-AH2)	3
MU 100	Music Appreciation (GT-AH1)	3
MU 110	Music and Technology	3
MU 111	Music Theory Fundamentals (GT-AH1)	3
MU 131	Introduction to Music History and Literature (GT-AH1)	3
PHIL 100	Appreciation of Philosophy (GT-AH3)	3
PHIL 103	Moral and Social Problems (GT-AH3)	3
PHIL 110	Logic and Critical Thinking (GT-AH3)	3
PHIL 120	History and Philosophy of Scientific Thought (GT-AH3)	3
SPCM 100	Communication and Popular Culture (GT-AH1)	3
SPCM 201	Rhetoric in Western Thought (GT-AH3)	3
TH 141	Introduction to Theatre (GT-AH1)	3

Category 3C. Social and Behavioral Sciences (3 credits)

The Social and Behavioral Sciences are designed to help students acquire broad foundations of social science knowledge and the ability to apply this understanding to contemporary problems and issues. The Social and Behavioral Sciences use methods of the field to study the complex behaviors of individuals and their relationships with others in families, public institutions, and cultures. The Social and Behavioral Sciences requirements help students explore the forms and implications of individual and collective behaviors, and their ties to formal institutions.

Code	Title	Credits
ANTH 100	Introductory Cultural Anthropology (GT-SS3)	3
ANTH 232	Soundscapes-Music as Human Practice	3
AREC 202	Agricultural and Resource Economics (GT-SS1)	3
AREC 240	Issues in Environmental Economics (GT-SS1)	3
ECON 101	Economics of Social Issues (GT-SS1)	3
ECON 202	Principles of Microeconomics (GT-SS1)	3
ECON 204	Principles of Macroeconomics (GT-SS1)	3
ECON 212	Racial Inequality and Discrimination (GT-SS1)	3
ECON 240	Issues in Environmental Economics (GT-SS1)	3
EDUC 275	Schooling in the United States (GT-SS3)	3
ETST 260	Contemporary Indigenous Issues	3
ETST 277	Racial Representations of Black Athletes	3
GR 100	Introduction to Geography (GT-SS2)	3
HDFS 101	Individual and Family Development (GT-SS3)	3
HONR 492	Honors Senior Seminar	3
JTC 100	Media in Society (GT-SS3)	3
LEAP 200	Advocacy in the Visual and Performing Arts	3
MU 232	Soundscapes-Music as Human Practice	3

POLS 101	American Government and Politics (GT-SS1)	3
POLS 103	State and Local Government and Politics (GT-SS1)	3
PSY 100	General Psychology (GT-SS3)	3
PSY 152	Science of Learning	3
SOC 100	General Sociology (GT-SS3)	3
SOC 105	Social Problems (GT-SS3)	3
SOWK 110	Contemporary Social Welfare (GT-SS1)	3
SPCM 130	Relational and Organizational Communication (GT-SS3)	3
WS 200	Introduction to Women's Studies	3

Category 3D. Historical Perspectives (3 credits)

The goal of the Historical Perspectives requirement is to engage students in an analytical, chronological or thematic study of significant events, to investigate different perspectives and interpretations of them, and to understand historical methods, sources, and concepts as they relate to multi-dimensional human experiences. It should provide students with a foundation for relating perspectives of the past to aspirations for the future.

Code	Title	Credits
AGED 210	History of Agriculture in the United States	3
AMST 100	Self/Community in American Culture, 1600-1877 (GT-AH2)	3
AMST 101	Self/Community in American Culture Since 1877 (GT-AH2)	3
ANTH 140	Introduction to Prehistory (GT-HI1)	3
ETST 250	African American History (GT-HI1)	3
ETST 252	Asian American History (GT-HI1)	3
ETST 255	Native American History (GT-HI1)	3
HIST 100	Western Civilization, Pre-Modern (GT-HI1)	3
HIST 101	Western Civilization, Modern (GT-HI1)	3
HIST 115	The Islamic World: Late Antiquity to 1500	3
HIST 116	The Islamic World Since 1500	3
HIST 120	Asian Civilizations I (GT-HI1)	3
HIST 121	Asian Civilizations II (GT-HI1)	3
HIST 150	U.S. History to 1876 (GT-HI1)	3
HIST 151	U.S. History Since 1876 (GT-HI1)	3
HIST 170	World History, Ancient-1500 (GT-HI1)	3
HIST 171	World History, 1500-Present (GT-HI1)	3
HIST 201	Seminar – Approaches to History	3
HIST 250	African American History (GT-HI1)	3
HIST 252	Asian American History (GT-HI1)	3
HIST 255	Native American History (GT-HI1)	3

Category 3E. Diversity and Global Awareness (3 credits)

Courses that address Diversity and Global Awareness engage students in the study of cultural identities, explore the interactions among these identities, and reflect upon patterns of interaction related to the larger contexts in which they take place. These courses provide opportunities to expand self-awareness, examine perspectives, and engage in dialogue in order to analyze personal and social responsibility, domestic or global systems, and contemporary contexts.

Code	Title	Credits
AGRI 116	Plants and Civilizations (GT-SS3)	3
AGRI 270	World Interdependence-Population and Food (GT-SS3)	3
AM 250	Clothing, Adornment and Human Behavior (GT-SS3)	3
ANTH 200	Cultures and the Global System (GT-SS3)	3
E 142	Reading Without Borders (GT-AH2)	3
E 238	20th-Century Fiction (GT-AH2)	3
E 245	World Drama (GT-AH2)	3
ECON 211	Gender in the Economy (GT-SS1)	3
ETST 100	Introduction to Ethnic Studies (GT-SS3)	3
ETST 205	Ethnicity and the Media (GT-SS3)	3
ETST 253	Chicanx History and Culture (GT-HI1)	3
ETST 256	Border Crossings: People/Politics/Culture (GT-SS3)	3
GR 102	Geography of Europe and the Americas (GT-SS2)	3
HONR 292C	Honors Seminar: Knowing Across Cultures (GT-SS3)	3
HORT 171	Environmental Issues in Agriculture (GT-SS3)	3
IE 116	Plants and Civilizations (GT-SS3)	3
IE 179	Globalization: Exploring Our Global Village (GT-SS3)	3
IE 270	World Interdependence-Population and Food (GT-SS3)	3
INST 200	Interdisciplinary Approaches to Globalization	3
LB 170	World Literatures to 1500 (GT-AH2)	3
LB 171	World Literatures-The Modern Period (GT-AH2)	3
MU 132	Exploring World Music	3
PHIL 170	World Philosophies (GT-AH3)	3
POLS 131	Current World Problems (GT-SS1)	3
POLS 232	International Relations (GT-SS1)	3
POLS 241	Comparative Government and Politics (GT-SS1)	3
SA 482	Study Abroad	1-18
SOC 205	Contemporary Race-Ethnic Relations (GT-SS3)	3
SOC 220	Global Environmental Issues (GT-SS3)	3
SOCR 171	Environmental Issues in Agriculture (GT-SS3)	3

Note Regarding Guaranteed Transfer (GT) Pathways Courses

Courses that the Colorado Commission on Higher Education (CCHE) (http://highered.colorado.gov/Academics/Transfers/gtPathways/curriculum.html) has approved for inclusion in the Guaranteed Transfer (GT) Pathways program are guaranteed to transfer among all public higher education institutions in Colorado. For transferring students,

successful completion with a minimum C- grade guarantees transfer and application of credit in this GT Pathways category.

Courses that the CCHE has approved for inclusion in the Guaranteed Transfer (GT) Pathways program are designated with a GT code after the course title (e.g., "MATH 101: Math in the Social Sciences (GT-MA1)".) The subcode listed after "GT-" refers to the specific statewide general education category the course fulfills. For more information on the GT Pathways program, please visit the Colorado Department of Higher Education (http://highered.colorado.gov/academics/transfers/gtpathways/curriculum.html) website.

Early Completion of Quantitative Reasoning/Composition Requirement

Analysis of campus data reflects national research indicating that students who successfully complete 30 credits in the first academic year, which include a college level math course and a college level composition course, demonstrate higher retention and graduation rates when compared to students who do not complete these milestones.

While we recommend most students complete these milestones in the first academic year, for some students there may be extenuating circumstances to suggest a different approach. Students are encouraged to discuss their specific situation with their Academic Success Coordinator/Academic Advisor.

English Composition Requirement

CSU's English Composition Requirement

All CSU students are required to fulfill the All-University Core Curriculum (AUCC) Intermediate Writing Requirement (AUCC Category 1A) prior to completion of 60 credits. Students can complete the AUCC Intermediate Writing requirement in one of five ways:

1. Satisfactory completion of CO 150: College Composition.
2. Achieving a score of 5 on the Advanced Placement English Composition and Literature Test; or a score of 4 or 5 on the Advanced Placement English Language and Composition Test; or placing in CO 150 -section 550 (credit by exam for CO 150) on the Composition Placement Challenge and Re-evaluation Essay.
3. Transferring equivalent credits from another college. (Students who transfer with less than 2.6 semester credits in composition will have the option of writing the Composition Placement Challenge and Re-evaluation Essay. With a score of 5, we can request the additional credit be waived).
4. Satisfactory completion of HONR 193 (Honors students only).
5. Submission of International Baccalaureate scores that document an English at the Higher Level score of 5, 6, or 7.

Credit for CO 150 will not be given for high scores on the College-Level Examination Program (CLEP).

Students (except first-semester transfer and readmitted students) who have earned 60 or more CSU and transfer semester credits and who have not met this requirement will have a Composition HOLD placed on their record. Transfer and readmitted students will be allowed the initial term of enrollment before this restriction is imposed.

What if I Have a Composition HOLD Placed on My Registration?

Before the start of every semester, undergraduate students are informed, via email from the Office of the Registrar, if they have not completed the AUCC composition requirement. After a student has earned 60 or more CSU and transfer semester credits without fulfilling the AUCC composition requirement, the email will also give notice that a Composition HOLD has been placed and provide information on how to remove the HOLD.

The procedure to remove a Composition HOLD is as follows:

1. You can contact the Office of the Registrar as soon as you receive the email letting you know that a Composition HOLD has been placed on your registration – you do not have to wait for your registration access time.

- You can contact the Registrar's Office immediately, if you are currently registered for CO 130 or have transfer credit for CO 130 .
- If you need to take the Directed Self-Placement Survey, once the Survey is completed, you can contact the Office of the Registrar.
- If you are in the Honors Track I program, you will need to register for HONR 193.
- If you were automatically placed into CO 130 or selected CO 130 on the Directed Self-Placement Survey , you will need to select a section of that course for which to register. After successful completion of CO 130, you will need to register for CO 150 the following term. CO 150 satisfies the All-University Core Curriculum Intermediate Writing requirement (AUCC Category 1A).
- If you were automatically placed into CO 150 or selected CO 150 on the Directed Self-Placement Survey , you will need to select a section of that course that works with your course schedule.
- If you were automatically placed into CO 130 or CO 150 and wish to challenge that placement, you will need to write the Composition Placement Challenge and Re-evaluation Essay as soon as possible.
- If you chose to write the Composition Placement Challenge and Re-evaluation Essay, once your score has been entered, you can contact the Office of the Registrar (http://registrar.colostate.edu).

2. Once you have chosen a section of composition that works with your schedule, contact the Office of the Registrar in Centennial Hall by calling (970) 491-4860, or emailing registrarsoffice@colostate.edu. **If sending an email, please do so from your RAMS email account and include your full name, CSUID number, and the CRN for the CO course for which you want to be registered. Please make sure to have the CRN of the section you have chosen available in order to expedite your request.**

3. The Office of the Registrar will then remove the Composition HOLD from your academic record and register you for the composition section you selected, which will allow you to proceed with registration starting on your designated registration date/time.

CSU's Composition Placement Program

Critical reading and writing skills are significant components of every program and degree at CSU. Moreover, research at CSU, as well as nation-wide, demonstrates a clear connection between academic success and the ability to write effectively for various audiences. The CSU Composition Placement Program is designed to ensure that you register for the composition course most suited to your needs, CO 130: Academic Writing or CO 150: College Composition.

To learn more about CSU's Composition Placement Procedures, go to http://composition.colostate.edu/students/placement

Appeals Process

Students wishing to appeal (http://registrar.colostate.edu/forms/3364) this registration restriction must complete the Intermediate Writing/Quantitative Reasoning (MATH/COMP) Appeal (https://registrar.colostate.edu/forms/3364) form, including a detailed rationale as to why they were unable to complete the course within the first 60 credits. Students must also outline their plan for completion of the requirement. If registered for an equivalent course at another institution, students should include proof of registration. Appeals must be received by the student's academic advisor and department head for their signatures and indication of support/lack of support of the appeal. The signed appeal must then be submitted through the Office of the Registrar, First Floor, Centennial Hall, to the Vice Provost for Undergraduate Affairs who holds authority for final approval or disapproval.

Quantitative Reasoning Requirement

To satisfy the requirements of category 1B of the All-University Core Curriculum (AUCC), students must earn three credits in Quantitative Reasoning. These credits may be earned by:

1. Scoring well on the CSU Math Challenge Exam;
2. Presenting AP calculus scores of 3, 4, or 5 on the Calculus AB, Calculus BC, or Statistics exam -or- IB mathematics scores of a 4 or higher on either the standard or higher level exam (see Office of the Registrar (http://registrar.colostate.edu/transfer-credit/transfer-other-credit) for details on Advanced Placement and International Baccalaureate equivalencies);
3. Taking an approved CSU All-University Core Curriculum (AUCC) 1B Course (MATH or STAT);
4. Presenting suitable transfer credits from another accredited institution.

Any student admitted to CSU may take STAT 100. Students who wish to take a Quantitative Reasoning course other than STAT 100 must satisfy one of the following requirements in addition to any course prerequisites:

- Score sufficiently well on the Math Placement Exam or the Math Challenge Exam;
- Present a score of SAT MATH: 500, or ACT MATH: 19;
- Present an AP calculus score of 3, 4, or 5 on the Calculus AB, Calculus BC, or Statistics exam -or- IB mathematics scores of a 4 or higher on either the standard or higher level exam;
- Present suitable transfer credits from another accredited institution.

Math Placement Exam and Math Challenge Exam (MPE)

The **MPE** designation refers to either the unproctored Math Placement Exam or the proctored Math Challenge Exam. The **MPE** covers pre-college algebra and college algebra, logarithmic and exponential functions, and trigonometry.

The following minimum SAT/ACT test scores will allow a student to enroll in MATH 101 without taking the **MPE**: SAT MATH: 500, or ACT MATH: 19.

A student wishing to take a math course other than MATH 101, or a student who does not have the minimum SAT/ACT test scores described above will need to take the **MPE** (https://placement.math.colostate.edu/welcome/directory.html)**,** unless they can satisfy either point 2 or 4 above.

A student who displays proficiency on the **MPE** may place out of one or more of the pre-calculus courses—MATH 117, MATH 118, MATH 124, MATH 125, and MATH 126 without earning credit. Placement out of a course on the **MPE** will satisfy prerequisites for other classes. A student who demonstrates a higher level of proficiency on the Math Challenge Exam may earn credit in one or more of those courses. Only earned credits count toward the three-credit AUCC Quantitative Reasoning requirement, i.e. placement out of a course will not satisfy the CSU Quantitative Reasoning requirement.

A student (except a first semester transfer or a first semester readmitted student) who has earned 60 or more CSU and transfer credits and who has not completed the Quantitative Reasoning requirements of category 1B of the All-University Core Curriculum must enroll in a course that will fulfill this requirement in order to have a hold lifted from his or her registration. A transfer or readmitted student will be allowed the initial term of full-time enrollment before this restriction is imposed. *(Faculty Council approved minutes May 1, 2018)*

Appeals Process

Students wishing to appeal (http://registrar.colostate.edu/forms/3364) this registration restriction must complete the Intermediate Writing/Quantitative Reasoning (MATH/COMP) Appeal (https://registrar.colostate.edu/forms/3364) form, including a detailed rationale as to why they were unable to complete the course within the first 60 credits. Students must also outline their plan for completion of the requirement. If registered for an equivalent course at another institution, students should include proof of registration. Appeals must be received by the student's academic advisor and department head for their signatures and indication of support/lack of support of the appeal. The signed appeal must then be submitted through the Office of the Registrar, First Floor, Centennial Hall, to the Vice Provost for Undergraduate Affairs who holds authority for final approval or disapproval.

INTERDISCIPLINARY OPPORTUNITIES

Education Abroad

- Semester at Sea
- Todos Santos

Health Professions

Teacher Licensure/Education

Health Professions

Collaborative for Student Achievement (http://www.casa.colostate.edu)

Offices in the Stadium Complex, 1415 Meridian

Health Professions Advising - Human & Animal Healthcare Professions

CSU does not offer specific “pre-health” or "pre-vet" majors as health professions programs neither prefer nor recommend any particular undergraduate major(s). Students interested in a career in any health profession may select a major from among the many choices offered by CSU. After declaring an academic major, a student is assigned an academic advisor from that department to ensure they fulfill the requirements for that major. Placement into health professions programs is extremely competitive and a successful applicant needs to be well informed regarding course requirements and other factors considered by veterinary admissions committees

Health professions advisors work with students in conjunction with their departmental advisor to determine courses required to satisfy professional school prerequisites. They also help students identify and gain the experiences needed to make them competitive candidates. All Health Professions advisors assist students from any major in planning for entrance into any accredited program of medicine, veterinary medicine, physician’s assistant, occupational therapy, physical therapy, dentistry, nursing, pharmacy, optometry, podiatry, chiropractic and others. They also assist students in preparing their applications to those programs.

Student Clubs

Offices for several student clubs related to the health professions are located in Collaborative for Student Achievement Offices in the Stadium complex. Staff members serve as advisors for the Pre-Vet Club and the Health Professions Student Association and the associated clubs of Premedica, Pre-Dental, Pre-Pharmacy, Pre-Optometry, Pre-Occupational Therapy, Pre-Physical Therapy and provide assistance and support for club activities.

More information about Health Professions Advising (http://hp.casa.colostate.edu) may be found on the Collaborative for Student Achievement website.

Teacher Licensure/Education

Teacher and principal licensure is available through the School of Education's Center for Educator Preparation (CEP).

One of the most important ways to help people and to impact our society is through involvement in schools. Teachers make lasting contributions to our nation and its many generations of learners. Teacher education programs at CSU serve the needs of individuals preparing to teach in:

- Early Childhood Education (PreK-3rd grade)
- Grades K-12: Art, Foreign Languages, Instructional Technology, Music
- Secondary (Grades 7-12): Agricultural Education, Business Education, English, Family and Consumer Sciences, Marketing Education, Mathematics, Science, Social Studies, Speech, Technology Education

CSU is one of the public institutions in Colorado designated to offer programs leading towards a career and technical (vocational) credential. Candidates for teacher licensure are skilled in a teaching concentration and educational methodology. These students take their professional education course work concurrently while completing their content area coursework. Candidates may complete licensure while enrolled in an undergraduate program or after completing a bachelor’s degree at an accredited university.

Endorsements available through the program include:

Endorsement	Levels	U	P	G
Agricultural Education	Secondary	X	X	X
Art	K-12	X	X	X
Business Education	Secondary		X	X
Early Childhood Education	Ages 0-8	X	X	X
English/Language Arts	Secondary	X	X	X
Family and Consumer Sciences	Secondary	X	X	X
Foreign Language (French, German, Spanish)	K-12	X	X	X
Instructional Technology	K-12	X	X	X
Marketing Education	Secondary		X	X
Mathematics	Secondary	X	X	X
Music	K-12	X	X	
Science	Secondary	X	X	X
Social Studies	Secondary	X	X	X
Speech	Secondary	X	X	X
Technology Education	Secondary	X	X	X

Special Services/Administrative Endorsements

Endorsement	Levels	U	P	G
Occupational Therapist	Ages 0-21			X
School Counselor	Ages 0-21			X
School Principal	K-12			X
School Social Worker	Ages 0-21			X

(Pursued at indicated level(s). G = graduate; P = post-baccalaureate; U = undergraduate)

Education Abroad

Office of International Programs – Laurel Hall

(970) 491-6342

Education Abroad (http://educationabroad.colostate.edu) opportunities engage students in an international arena, providing new academic perspectives, broadening knowledge of international affairs, and allowing for a deeper understanding of other cultures. In addition to enhancing a student's degree program, education abroad provides students with direct experience developing intercultural skills necessary for success in an increasingly diverse and global workforce.

The Office of International Programs offers more than 1000 international opportunities, including for-credit and not-for-credit programs for study, research, internships and service learning. Students can maintain full-time enrollment at CSU while abroad, and credit from approved programs may be applied towards an overall degree program at CSU. Students who successfully complete an 3+ credit course (with a grade of C- or better) are eligible for a waiver of the All-University Core Curriculum requirement.

Education Abroad oversees programs in nearly every country around the world and provides support services to students, including advising, orientations, outreach, program coordination and risk management oversight. Students considering any type of international experience are required to work with the Office of International Programs in preparation for their time abroad. Advance planning helps assure that international endeavors will not unnecessarily prolong degree completion and that health and safety preparations have been addressed. Advance planning also assures that students meet application deadlines, which can range anywhere from two to twelve months before a program begins.

The Office of International Programs also works closely with CSU's academic partners Semester at Sea (http://catalog.colostate.edu/general-catalog/interdisciplinary-opportunities/semester-at-sea) and the CSU Todos Santos Center to foster international opportunities for CSU students, faculty and staff.

Financial Aid for Education Abroad

In most cases, CSU financial aid can be applied to cover the costs of an education abroad program. In addition, through CSU's partnerships, the Office of International Programs facilitates nearly $600,000 in annual scholarship funds to support education abroad. Students can apply for many of these through the Education Abroad Common Application (http://educationabroad.colostate.edu/scholarships) and/or their CSU sponsored programs.

These opportunities include nationally competitive scholarships, such as the NSEP Boren and IIE Gilman awards. Students interested in scholarships should contact the Office of International Programs early in their college career since some scholarship deadlines are due as much as a year in advance.

Further information on eligibility requirements, deadlines, policies, procedures, financial aid, and costs related to study abroad may be found on the Education Abroad (http://educationabroad.colostate.edu) website.

Semester at Sea

SEMESTER AT SEA

800.854.0195 | info@semesteratsea.org | www.semesteratsea.org (http://www.semesteratsea.org)

Ready to embark on the educational travel experience of a lifetime?

SEMESTER AT SEA OFFERS A WORLD CLASS CURRICULUM

Semester at Sea offers an unparalleled educational program in partnership with CSU. The distinctive feature of Semester at Sea is the opportunity it affords students to engage in global comparative education. All Semester at Sea academic credits are earned through fully-accredited CSU courses. The University appoints the academic dean from among its most accomplished faculty, oversees curriculum, and approves course syllabi for the Semester at Sea academic program. The *MV World Odyssey* serves as a traveling home and campus that brings approximately 550 students to the farthest reaches of the globe every semester, giving deeper meaning to education, experiential learning, and community.

The Semester at Sea (http://www.semesteratsea.org) program itineraries are built around international challenges, trends, and issues. Since 1963, more than 60,000 students from 1,700 colleges and universities around the world have studied with Semester at Sea. Notable alumni and contributors include Nobel Laureates Archbishop Desmond Tutu, Nelson Mandela, Mother Teresa, and many other world leaders and global thinkers.

EXPERIENCE NON-TRADITIONAL LOCATIONS

Semester at Sea itineraries are carefully selected to maximize the value of a comparative, global education. The focus is on destinations both in the developing world and in the developed world, allowing for rich observations, insights, and learning. The countries and regions visited offer examples of varying stages of economic development, contrasting political systems, and great diversity of religious and cultural values.

NEW CULTURES, NEW PERSPECTIVES

The program exposes students to cultures that most students have only read about in books. Exposure to new cultures and people of the world will give new perspectives. That is why we travel.

FINANCING, AID AND SCHOLARSHIPS

The Institute for Shipboard Education, the parent organization of Semester at Sea, annually awards approximately $4.0 million in financial aid. Semester at Sea recognizes that a study abroad experience is a significant investment, and also knows that it is one of the best possible investments in a student's future. The Institute for Shipboard Education is committed to helping as many students as possible realize the benefits of that goal. For further information on eligibility requirements, deadlines, policies, procedures, financial aid, and costs related to the program, go to Semester at Sea (http://www.semesteratsea.org).

WHY ARE STUDENTS CHOOSING SEMESTER AT SEA?

- Improved understanding of the world
- Greater awareness of cultural difference
- Improved self-confidence and autonomy
- Improved flexibility and understanding of multiple perspectives
- Better understanding of one's own culture

- Greater recognition of other perspectives and world views
- Ability to live in close community

SEMESTER AT SEA ATTRACTS OUTSTANDING, AWARD-WINNING FACULTY

At the core of the Semester at Sea academic experience is a team of 25-28 innovative, stimulating, and flexible educators who are passionate about global education. The unparalleled environment of Semester at Sea provides engaging shipboard courses in unique combination with field classes.

Past voyages have included internationally recognized experts on social movements and media, environmental systems, international business, intercultural communication, and world cinema, as well as a Pulitzer Prize-winning poet and a Carnegie Foundation Professor of the Year.

With the world as their classroom, Semester at Sea professors teach in a global context and excel in the field of experiential learning. All faculty hold doctorates or other terminal degrees and have international experience and expertise in one or more of the regions visited.

FOR MORE INFORMATION 800.854.0195 | info@semesteratsea.org | www.semesteratsea.org (http://www.semesteratsea.org)

Todos Santos

todossantos.colostate.edu (http://todossantos.colostate.edu) / csutodossantos@colostate.edu

Mission

To cultivate generations of global citizens and thriving communities through collaboration, experience, and exchange of knowledge.

The Colorado State University Todos Santos Center

The Colorado State University Todos Santos Center is located in Baja California Sur, Mexico. As the only international extension location of the university, the Center answers the call of a 21st-century land-grant institution on a global scale by utilizing education to build bridges between the United States and Mexico, between students and faculty, and between research and action.

The Center combines education, outreach, research, and access for CSU students, students in the regional community, and area residents. CSU's educational resources and expertise combine with natural, cultural and historical aspects offered by the community to create expansive possibilities in research, learning and experiences.

Unique, once-in-a-lifetime programs at the Colorado State University Todos Santos Center

The Center provides a variety of unique research opportunities and hands-on educational experiences to complement the existing CSU curriculum, allowing students to have an international experience without delaying graduation.

Students who study in Todos Santos grow as responsible ambassadors of CSU and the United States, learn through immersion in Mexican culture and ecosystems, and work alongside Mexican students, faculty, and citizens.

Students can:

- Explore the challenges, successes, and community priorities of Baja California Sur
- Collaborate and co-create activities to address global challenges
- Support and further regional initiatives and priorities as identified through a community needs assessment process
- Engage individually and collectively in actions promoting desired changes

Programs are currently available in the following areas of study:

- Veterinary medicine
- Fish, Wildlife, and Conservation Biology
- Liberal Arts and Community Engagement
- Oceanography
- Sustainable and Alternative Tourism
- Student Leadership Exchange
- Theatre
- Various outreach, service learning, and leadership programs
- Custom research projects and internships
- And more

Please contact Education Abroad or csutodossantos@colostate.edu for additional information.

Why are students choosing to study at CSU Todos Santos?

- Hands-on, immersive, experiential education
- Explore global challenges within a community setting
- Learn about the language, culture, people, animals, and ecosystems of Baja California Sur, Mexico
- Interact and work alongside Mexican youth, college students, and organizations in Baja California Sur
- Explore what it means to be a global citizen

For more information todossantos.colostate.edu (http://todossantos.colostate.edu) / csutodossantos@colostate.edu

PROGRAMS A-Z

Academic Program	Department	College	Academic Level	Offered As	Degree Type
Accountancy	Accounting	BU	Graduate	Main Campus	M.Acc., Plan C
Accountancy, Data Analytics and Systems Specialization	Accounting	BU	Graduate	Main Campus	M.Acc., Plan C Specialization
Accountancy, Financial Analysis, Auditing, and Reporting Specialization	Accounting	BU	Graduate	Main Campus	M.Acc., Plan C Specialization
Accountancy, Taxation Specialization	Accounting	BU	Graduate	Main Campus	M.Acc., Plan C Specialization
Accounting, Business Administration, Accounting Concentration	Accounting	BU	Undergraduate	Main Campus, Online	B.S. Concentration
Adult Basic Education	School of Education	HS	Graduate	Main Campus, Online	Certificate
Advanced Clinical Behavioral Health	School of Social Work	HS	Graduate	Main Campus, Online	Certificate
Adventure Tourism	Human Dimensions of Natural Resources	NR	Graduate	Main Campus, Online	Certificate
Aerospace Studies Minor	Air Force ROTC	UW	Undergraduate	Main Campus	Minor
Agribusiness and Food Innovation Management	Agricultural and Resource Economics	AG	Graduate	Online	M.A.F.I.M., Plan C
Agricultural and Resource Economics	Agricultural and Resource Economics	AG	Graduate	Main Campus	M.S. Plan A
Agricultural and Resource Economics	Agricultural and Resource Economics	AG	Graduate	Main Campus	M.S. Plan B
Agricultural and Resource Economics	Agricultural and Resource Economics	AG	Graduate	Main Campus	Ph.D.
Agricultural Business	Agricultural and Resource Economics	AG	Undergraduate	Main Campus, Online	B.S.
Agricultural Business Minor	Agricultural and Resource Economics	AG	Undergraduate	Main Campus, Online	Minor
Agricultural Business, Agricultural Economics Concentration	Agricultural and Resource Economics	AG	Undergraduate	Main Campus	B.S. Concentration
Agricultural Business, Farm and Ranch Management Concentration	Agricultural and Resource Economics	AG	Undergraduate	Main Campus	B.S. Concentration
Agricultural Education	Agricultural and Resource Economics	AG	Undergraduate	Main Campus	B.S.
Agricultural Education, Agricultural Literacy Concentration	Agricultural and Resource Economics	AG	Undergraduate	Main Campus	B.S. Concentration
Agricultural Education, Agricultural Literacy Minor	Agricultural and Resource Economics	AG	Undergraduate	Main Campus	Minor
Agricultural Education, Teacher Development Concentration	Agricultural and Resource Economics	AG	Undergraduate	Main Campus	B.S. Concentration
Agricultural Sciences		AG	Graduate	Main Campus, Online	M.Agr., Plan A
Agricultural Sciences		AG	Graduate	Main Campus, Online	M.Agr., Plan B

Agricultural Sciences, Integrated Resource Management Specialization		AG	Graduate	Main Campus, Online	M.Agr., Specialization
Agricultural Sciences, Teacher Development Specialization		AG	Graduate	Main Campus	M.Agr., Plan A Specialization
Agricultural Sciences, Teacher Development Specialization		AG	Graduate	Main Campus	M.Agr., Plan B Specialization
Agriculture, Organic Agriculture Interdisciplinary Minor	University-Wide	UW	Undergraduate	Main Campus	Minor
Agritourism Management	Human Dimensions of Natural Resources	NR	Graduate	Online	Certificate
Animal Nutrition	Animal Sciences	AG	Undergraduate	Main Campus	Certificate
Animal Sciences	Animal Sciences	AG	Graduate	Main Campus	M.S. Plan A
Animal Sciences	Animal Sciences	AG	Graduate	Main Campus	Ph.D.
Animal Sciences	Animal Sciences	AG	Undergraduate	Main Campus	B.S.
Anthropology	Anthropology and Geography	LA	Graduate	Main Campus	M.A. Plan A and Plan B
Anthropology	Anthropology and Geography	LA	Graduate	Main Campus	Ph.D.
Anthropology	Anthropology and Geography	LA	Undergraduate	Main Campus, Online	B.A.
Anthropology Minor	Anthropology and Geography	LA	Undergraduate	Main Campus	Minor
Anthropology, Archaeology Concentration	Anthropology and Geography	LA	Undergraduate	Main Campus	B.A. Concentration
Anthropology, Biological Anthropology Concentration	Anthropology and Geography	LA	Undergraduate	Main Campus	B.A. Concentration
Anthropology, Cultural Anthropology Concentration	Anthropology and Geography	LA	Undergraduate	Main Campus	B.A. Concentration
Anthropology, The Anthropology of Health and Well-Being Specialization	Anthropology and Geography	LA	Graduate	Main Campus	M.A. Plan A and Plan B Specialization
Anthropology, Humans and the Environment Specialization	Anthropology and Geography	LA	Graduate	Main Campus	M.A. Plan A and Plan B Specialization
Anthropology, International Development Specialization	Anthropology and Geography	LA	Graduate	Main Campus	M.A. Plan A and Plan B Specialization
Anthropology, Professional Methods and Techniques Specialization	Anthropology and Geography	LA	Graduate	Main Campus	M.A. Plan A and Plan B Specialization
Apparel and Merchandising	Design and Merchandising	HS	Undergraduate	Main Campus	B.S.
Apparel and Merchandising, Apparel Design and Production Concentration	Design and Merchandising	HS	Undergraduate	Main Campus	B.S. Concentration

Apparel and Merchandising, Merchandising Concentration	Design and Merchandising	HS	Undergraduate	Main Campus	B.S. Concentration
Apparel and Merchandising, Merchandising Minor	Design and Merchandising	HS	Undergraduate	Main Campus	Minor
Apparel and Merchandising, Product Development Concentration	Design and Merchandising	HS	Undergraduate	Main Campus	B.S. Concentration
Applied Computing Technology	Computer Science	NS	Undergraduate	Main Campus	B.S.
Applied Computing Technology, Computing Education Concentration	Computer Science	NS	Undergraduate	Main Campus	B.S. Concentration
Applied Computing Technology, Computing Technology Concentration	Computer Science	NS	Undergraduate	Main Campus	B.S. Concentration
Applied Developmental Science	Human Development and Family Studies	HS	Graduate	Main Campus	Ph.D.
Applied Finance	Finance and Real Estate	BU	Graduate	Main Campus, Online	Certificate
Applied Global Stability, Agriculture	SoGES	UW	Graduate	Main Campus, Online	Certificate
Applied Global Stability, Natural Resources	SoGES	UW	Graduate	Main Campus, Online	Certificate
Applied Global Stability, Water Resources	SoGES	UW	Graduate	Main Campus, Online	Certificate
Applied Management Accounting for Decision Making	Accounting	BU	Undergraduate	Main Campus	Certificate
Applied Statistics, Data Science Specialization	Statistics	NS	Graduate	Main Campus, Online	M.A.S., Plan C Specialization
Applied Statistics, Statistical Science Specialization	Statistics	NS	Graduate	Main Campus, Online	M.A.S., Plan C Specialization
Art	Art and Art History	LA	Graduate	Main Campus	M.F.A.
Art	Art and Art History	LA	Undergraduate	Main Campus	B.A.
Art	Art and Art History	LA	Undergraduate	Main Campus	B.F.A.
Art, Art Education Concentration	Art and Art History	LA	Undergraduate	Main Campus	B.F.A. Concentration
Art, Art History Concentration	Art and Art History	LA	Undergraduate	Main Campus	B.A. Concentration
Art, Drawing Concentration	Art and Art History	LA	Undergraduate	Main Campus	B.F.A. Concentration
Art, Electronic Art Concentration	Art and Art History	LA	Undergraduate	Main Campus	B.F.A. Concentration
Art, Fibers Concentration	Art and Art History	LA	Undergraduate	Main Campus	B.F.A. Concentration
Art, Graphic Design Concentration	Art and Art History	LA	Undergraduate	Main Campus	B.F.A. Concentration
Art, Integrated Visual Studies	Art and Art History	LA	Undergraduate	Main Campus	B.A. Concentration
Art, Metalsmithing Concentration	Art and Art History	LA	Undergraduate	Main Campus	B.F.A. Concentration

Art, Painting Concentration	Art and Art History	LA	Undergraduate	Main Campus	B.F.A. Concentration
Art, Photo Image Making Concentration	Art and Art History	LA	Undergraduate	Main Campus	B.F.A. Concentration
Art, Pottery Concentration	Art and Art History	LA	Undergraduate	Main Campus	B.F.A. Concentration
Art, Printmaking Concentration	Art and Art History	LA	Undergraduate	Main Campus	B.F.A. Concentration
Art, Sculpture Concentration	Art and Art History	LA	Undergraduate	Main Campus	B.F.A. Concentration
Arts Leadership and Administration Minor	LEAP Institute for the Arts	LA	Undergraduate	Main Campus	Minor
Arts Leadership and Cultural Management	LEAP Institute for the Arts	LA	Graduate	Main Campus, Online	M.A.L.C.M., Plan C
Atmospheric Science	Atmospheric Science	EG	Graduate	Main Campus	M.S. Plan A
Atmospheric Science	Atmospheric Science	EG	Graduate	Main Campus	M.S. Plan B
Atmospheric Science	Atmospheric Science	EG	Graduate	Main Campus	Ph.D.
Beef Feedlot Management	Animal Sciences	AG	Undergraduate	Main Campus	Certificate
Beef Production Systems	Animal Sciences	AG	Undergraduate	Main Campus	Certificate
Bioagricultural Sciences	Bioagricultural Sciences and Pest Management	AG	Graduate	Main Campus	M.S.
Bioagricultural Sciences	Bioagricultural Sciences and Pest Management	AG	Graduate	Main Campus	Ph.D.
Bioagricultural Sciences, Entomology Minor	Bioagricultural Sciences and Pest Management	AG	Undergraduate	Main Campus	Minor
Bioagricultural Sciences, Entomology Ph.D. Specialization	Bioagricultural Sciences and Pest Management	AG	Graduate	Main Campus	Ph.D. Specialization
Bioagricultural Sciences, Entomology Specialization	Bioagricultural Sciences and Pest Management	AG	Graduate	Main Campus	M.S. Plan A Specialization
Bioagricultural Sciences, Pest Management Specialization	Bioagricultural Sciences and Pest Management	AG	Graduate	Main Campus	M.S. Plan B Specialization
Bioagricultural Sciences, Plant Health Minor	Bioagricultural Sciences and Pest Management	AG	Undergraduate	Main Campus	Minor
Bioagricultural Sciences, Plant Pathology Ph.D. Specialization	Bioagricultural Sciences and Pest Management	AG	Graduate	Main Campus	Ph.D. Specialization
Bioagricultural Sciences, Plant Pathology Specialization	Bioagricultural Sciences and Pest Management	AG	Graduate	Main Campus	M.S. Plan A Specialization
Bioagricultural Sciences, Weed Science Ph.D. Specialization	Bioagricultural Sciences and Pest Management	AG	Graduate	Main Campus	Ph.D. Specialization
Bioagricultural Sciences, Weed Science Specialization	Bioagricultural Sciences and Pest Management	AG	Graduate	Main Campus	M.S. Plan A Specialization
Biochemistry	Biochemistry and Molecular Biology	NS	Graduate	Main Campus	M.S. Plan A

Biochemistry	Biochemistry and Molecular Biology	NS	Graduate	Main Campus	M.S. Plan B
Biochemistry	Biochemistry and Molecular Biology	NS	Graduate	Main Campus	Ph.D.
Biochemistry	Biochemistry and Molecular Biology	NS	Undergraduate	Main Campus	B.S.
Biochemistry Minor	Biochemistry and Molecular Biology	NS	Undergraduate	Main Campus	Minor
Biochemistry, ASBMB Concentration	Biochemistry and Molecular Biology	NS	Undergraduate	Main Campus	B.S. Concentration
Biochemistry, Health and Medical Sciences Concentration	Biochemistry and Molecular Biology	NS	Undergraduate	Main Campus	B.S. Concentration
Biochemistry, Pre-Pharmacy Concentration	Biochemistry and Molecular Biology	NS	Undergraduate	Main Campus	B.S. Concentration
Bioengineering	School of Biomedical Engineering	EG	Graduate	Main Campus	M.S.
Bioengineering	School of Biomedical Engineering	EG	Graduate	Main Campus	Ph.D.
Biological Science	Biology	NS	Graduate	Main Campus	M.S. Plan A and Plan B
Biological Science	Biology	NS	Graduate	Main Campus	Ph.D.
Biological Science	Biology	NS	Undergraduate	Main Campus	B.S.
Biological Science, Biological Science Concentration	Biology	NS	Undergraduate	Main Campus	B.S. Concentration
Biological Science, Botany Concentration	Biology	NS	Undergraduate	Main Campus	B.S. Concentration
Biology, Molecular Biology Interdisciplinary Minor	Biochemistry and Molecular Biology	UW	Undergraduate	Main Campus	Minor
Biomanufacturing and Biotechnology	Chemical and Biological Engineering	EG	Graduate	Main Campus	M.P.S.M.
Biomedical Engineering combined with Chemical and Biological Engineering		EG	Undergraduate	Main Campus	Dual Degree B.S.
Biomedical Engineering combined with Electrical Engineering, Electrical Engineering Concentration		EG	Undergraduate	Main Campus	Dual Degree B.S. Concentration
Biomedical Engineering combined with Electrical Engineering, Lasers and Optical Concentration		EG	Undergraduate	Main Campus	Dual Degree B.S. Concentration
Biomedical Engineering combined with Mechanical Engineering		EG	Undergraduate	Main Campus	Dual Degree B.S.
Biomedical Engineering Interdisciplinary Minor	Mechanical Engineering	UW	Undergraduate	Main Campus	Minor
Biomedical Sciences	Biomedical Sciences	VM	Graduate	Main Campus	M.S. Plan A
Biomedical Sciences	Biomedical Sciences	VM	Graduate	Main Campus	M.S. Plan B, Paper
Biomedical Sciences	Biomedical Sciences	VM	Graduate	Main Campus	Ph.D.
Biomedical Sciences	Biomedical Sciences	VM	Undergraduate	Main Campus	B.S.

Biomedical Sciences Minor	Biomedical Sciences	VM	Undergraduate	Main Campus	Minor
Biomedical Sciences, Anatomical and Physiological Sciences Specialization	Biomedical Sciences	VM	Graduate	Main Campus	M.S. Plan B Specialization
Biomedical Sciences, Anatomy and Physiology Concentration	Biomedical Sciences	VM	Undergraduate	Main Campus	B.S. Concentration
Biomedical Sciences, Environmental Public Health Concentration	Environmental and Radiological Health Sciences	VM	Undergraduate	Main Campus	B.S. Concentration
Biomedical Sciences, Microbiology and Infectious Disease Concentration	Microbiology, Immunology, and Pathology	VM	Undergraduate	Main Campus	B.S. Concentration
Biomedical Sciences, Reproductive Technology Specialization	Biomedical Sciences	VM	Graduate	Main Campus	M.S. Plan B Specialization
Botany Minor	Biology	NS	Undergraduate	Main Campus	Minor
Business Administration	Business	BU	Graduate	Main Campus, Online	M.B.A.
Business Administration	Business	BU	Undergraduate	Main Campus	B.S.
Business Administration Minor	Business	BU	Undergraduate	Main Campus	Minor
Business Administration, Global Social and Sustainable Enterprise Specialization	Business	BU	Graduate	Main Campus	M.B.A. Specialization
Business Administration, Impact Specialization	Business	BU	Graduate	Main Campus	M.B.A. Specialization
Business Administration, Marketing Data Analytics Specialization	Business	BU	Graduate	Online	M.B.A. Specialization
Business Analytics and Accounting Systems	Computer Information Systems	BU	Graduate	Main Campus, Online	Certificate
Business Information Systems	Computer Information Systems	BU	Graduate	Main Campus, Online	Certificate
Business Intelligence	Computer Information Systems	BU	Graduate	Main Campus, Online	Certificate
Business Management	Business	BU	Graduate	Online	Certificate
Campus Crisis Management	School of Education	HS	Graduate	Main Campus, Online	Certificate
Cell and Molecular Biology	University-Wide	UW	Graduate	Main Campus	M.S. Plan A and Plan B
Cell and Molecular Biology	University-Wide	UW	Graduate	Main Campus	Ph.D.
Cell and Molecular Biology, Cancer Biology Ph.D. Specialization	University-Wide	UW	Graduate	Main Campus	Ph.D. Specialization
Chemical and Biological Engineering	Chemical and Biological Engineering	EG	Undergraduate	Main Campus	B.S.

Chemical Engineering	Chemical and Biological Engineering	EG	Graduate	Main Campus	M.S. Plan A
Chemical Engineering	Chemical and Biological Engineering	EG	Graduate	Main Campus	M.S. Plan B
Chemical Engineering	Chemical and Biological Engineering	EG	Graduate	Main Campus	Ph.D.
Chemistry	Chemistry	NS	Graduate	Main Campus	M.S. Plan A
Chemistry	Chemistry	NS	Graduate	Main Campus	M.S. Plan B
Chemistry	Chemistry	NS	Graduate	Main Campus	Ph.D.
Chemistry	Chemistry	NS	Undergraduate	Main Campus	B.S.
Chemistry Minor	Chemistry	NS	Undergraduate	Main Campus	Minor
Chemistry, ACS Certified Concentration	Chemistry	NS	Undergraduate	Main Campus	B.S. Concentration
Chemistry, Non-ACS Certified Concentration	Chemistry	NS	Undergraduate	Main Campus	B.S. Concentration
Civil Engineering	Civil and Environmental Engineering	EG	Graduate	Main Campus	M.S. Plan A
Civil Engineering	Civil and Environmental Engineering	EG	Graduate	Main Campus, Online	M.S. Plan B
Civil Engineering	Civil and Environmental Engineering	EG	Graduate	Main Campus	Ph.D.
Civil Engineering	Civil and Environmental Engineering	EG	Undergraduate	Main Campus	B.S.
Clinical Sciences	Clinical Sciences	VM	Graduate	Main Campus	M.S.
Clinical Sciences	Clinical Sciences	VM	Graduate	Main Campus	Ph.D.
Communication	Communication Studies	LA	Graduate	Main Campus	Ph.D.
Communications for Conservation	Human Dimensions of Natural Resources	NR	Graduate	Online	Certificate
Communication Studies	Communication Studies	LA	Undergraduate	Main Campus	B.A.
Communication Studies	Communication Studies	LA	Graduate	Main Campus	M.A. Plan A
Communication Studies, Deliberative Practices Specialization	Communication Studies	LA	Graduate	Main Campus	M.A. Plan B Specialization
Communication Studies, Speech Teacher Licensure Concentration	Communication Studies	LA	Undergraduate	Main Campus	B.A. Concentration
Communications and Media Management	Journalism and Media Communication	LA	Graduate	Main Campus, Online	M.C.M.M., Plan C
Computer Engineering	Electrical and Computer Engineering	EG	Graduate	Main Campus, Online	M.S. Plan A
Computer Engineering	Electrical and Computer Engineering	EG	Graduate	Main Campus, Online	M.S. Plan B
Computer Engineering	Electrical and Computer Engineering	EG	Graduate	Main Campus	Ph.D.
Computer Engineering	Electrical and Computer Engineering	EG	Undergraduate	Main Campus	B.S.
Computer Information Systems	Computer Information Systems	BU	Graduate	Main Campus, Online	M.C.I.S., Plan C
Computer Information Systems, Business Administration, Information Systems Concentration	Computer Information Systems	BU	Undergraduate	Main Campus	B.S. Concentration

Computer Information Systems, Information Technology for Business Professionals	Computer Information Systems	BU	Undergraduate	Main Campus	Certificate
Computer Science	Computer Science	NS	Graduate	Main Campus	M.S. Plan A
Computer Science	Computer Science	NS	Graduate	Main Campus	M.S. Plan B
Computer Science	Computer Science	NS	Graduate	Main Campus, Online	M.C.S., Plan C
Computer Science	Computer Science	NS	Graduate	Main Campus	Ph.D.
Computer Science, Computer Science Concentration	Computer Science	NS	Undergraduate	Main Campus, Online	B.S. Concentration
Computer Science, Human-Centered Computing Concentration	Computer Science	NS	Undergraduate	Main Campus	B.S. Concentration
Computer Science Minor	Computer Science	NS	Undergraduate	Main Campus	Minor
Computer Systems Engineering	Electrical and Computer Engineering	EG	Graduate	Main Campus, Online	Certificate
Conflict Resolution and Mediation	School of Social Work	HS	Graduate	Main Campus, Online	Certificate
Conservation Actions with Lands, Animals, and People	Fish, Wildlife, and Conservation Biology	NR	Graduate	Online	Certificate
Conservation Biology Interdisciplinary Minor	Natural Resources	UW	Undergraduate	Main Campus	Minor
Conservation Leadership	Human Dimensions of Natural Resources	NR	Graduate	Main Campus	M.C.L., Plan C
Construction Management	Construction Management	HS	Graduate	Main Campus	M.S. Plan A
Construction Management	Construction Management	HS	Graduate	Main Campus	M.S. Plan B
Construction Management	Construction Management	HS	Undergraduate	Main Campus	B.S.
Construction Management Minor	Construction Management	HS	Undergraduate	Main Campus	Minor
Counseling and Career Development, Career Counseling Specialization	School of Education	HS	Graduate	Main Campus	M.A. Plan B Specialization
Counseling and Career Development, Clinical Mental Health Counseling Specialization	School of Education	HS	Graduate	Main Campus	M.A. Plan B Specialization
Counseling and Career Development, School Counseling Specialization	School of Education	HS	Graduate	Main Campus	M.A. Plan B Specialization
Creative Writing	English	LA	Graduate	Main Campus	M.F.A.
Creative Writing Minor	English	LA	Undergraduate	Main Campus, Online	Minor
Dance	Music, Theatre, and Dance	LA	Undergraduate	Main Campus	B.A.
Data Analysis	Statistics	NS	Graduate	Main Campus, Online	Certificate
Data Science, Computer Science Concentration		NS	Undergraduate	Main Campus	B.S. Concentration

Data Science, Economics Concentration		NS	Undergraduate	Main Campus	B.S. Concentration
Data Science, Mathematics Concentration		NS	Undergraduate	Main Campus	B.S. Concentration
Data Science, Statistics Concentration		NS	Undergraduate	Main Campus	B.S. Concentration
Design and Merchandising	Design and Merchandising	HS	Graduate	Main Campus	M.S. Plan A
Design and Merchandising, Apparel and Merchandising Specialization	Design and Merchandising	HS	Graduate	Main Campus	M.S. Plan B Specialization
Design and Merchandising, Interior Design Specialization	Design and Merchandising	HS	Graduate	Main Campus	M.S. Plan A Specialization
Design and Merchandising, Interior Design Specialization	Design and Merchandising	HS	Graduate	Main Campus	M.S. Plan B Specialization
Design Thinking	Health and Human Sciences	HS	Undergraduate	Main Campus	Certificate
Early Childhood Education	Human Development and Family Studies	HS	Undergraduate	Main Campus	B.S.
Ecology	Ecology	UW	Graduate	Main Campus	M.S. Plan A and Plan B
Ecology	Ecology	UW	Graduate	Main Campus	Ph.D.
Ecology, Human-Environment Interactions Ph.D. Specialization	Ecology	UW	Graduate	Main Campus	Ph.D. Specialization
Economics	Economics	LA	Graduate	Main Campus	M.A. Plan A
Economics	Economics	LA	Graduate	Main Campus	M.A. Plan B
Economics	Economics	LA	Graduate	Main Campus	Ph.D.
Economics	Economics	LA	Undergraduate	Main Campus, Online	B.A.
Economics Minor	Economics	LA	Undergraduate	Main Campus, Online	Minor
Ecosystem Science and Sustainability	Ecosystem Science and Sustainability	NR	Undergraduate	Main Campus	B.S.
Ecosystem Sustainability	Ecosystem Science and Sustainability	NR	Graduate	Main Campus	M.S. Plan A
Ecosystem Sustainability	Ecosystem Science and Sustainability	NR	Graduate	Main Campus	Ph.D.
Education and Human Resource Studies, Adult Education and Training Specialization	School of Education	HS	Graduate	Main Campus, Online	M.Ed., Plan A Specialization
Education and Human Resource Studies, Adult Education and Training Specialization	School of Education	HS	Graduate	Main Campus, Online	M.Ed., Plan B Specialization
Education and Human Resource Studies, Education Sciences Specialization	School of Education	HS	Graduate	Online	M.Ed. Specialization

Education and Human Resource Studies, Education, Equity, and Transformation Specialization	School of Education	HS	Graduate	Main Campus	Ph.D. Specialization
Education and Human Resource Studies, Higher Education Leadership Ph.D. Specialization	School of Education	HS	Graduate	Main Campus, Online	Ph.D. Specialization
Education and Human Resource Studies, Organizational Learning, Performance, and Change Specialization	School of Education	HS	Graduate	Online	M.Ed. Specialization
Education and Human Resource Studies, Organizational Learning, Performance, and Change Ph.D. Specialization	School of Education	HS	Graduate	Main Campus, Online	Ph.D. Specialization
Education and Human Resource Studies, School Leadership Ph.D. Specialization	School of Education	HS	Graduate	Main Campus	Ph.D. Specialization
Electrical Engineering	Electrical and Computer Engineering	EG	Graduate	Main Campus	M.S. Plan A
Electrical Engineering	Electrical and Computer Engineering	EG	Graduate	Main Campus, Online	M.S. Plan B
Electrical Engineering	Electrical and Computer Engineering	EG	Graduate	Main Campus	Ph.D.
Electrical Engineering	Electrical and Computer Engineering	EG	Undergraduate	Main Campus	B.S.
Electrical Engineering, Electrical Engineering Concentration	Electrical and Computer Engineering	EG	Undergraduate	Main Campus	B.S. Concentration
Electrical Engineering, Lasers and Optical Concentration	Electrical and Computer Engineering	EG	Undergraduate	Main Campus	B.S. Concentration
Embedded Systems	Electrical and Computer Engineering	EG	Graduate	Main Campus, Online	Certificate
Energy Engineering Interdisciplinary Minor	Engineering	UW	Undergraduate	Main Campus	Minor
Engineering Plan C, Biomedical Engineering Specialization		EG	Graduate	Main Campus, Online	M.E., Plan C Specialization
Engineering Plan C, Chemical Engineering Specialization		EG	Graduate	Main Campus	M.E., Plan C Specialization
Engineering Plan C, Civil Engineering Specialization		EG	Graduate	Main Campus, Online	M.E., Plan C Specialization
Engineering Plan C, Computer Engineering Specialization		EG	Graduate	Main Campus, Online	M.E., Plan C Specialization
Engineering Plan C, Electrical Engineering Specialization		EG	Graduate	Main Campus, Online	M.E., Plan C Specialization

Engineering Plan C, Engineering Management Specialization		EG	Graduate	Main Campus, Online	M.E., Plan C Specialization
Engineering Plan C, Mechanical Engineering Specialization		EG	Graduate	Main Campus, Online	M.E., Plan C Specialization
Engineering Plan C, Systems Engineering Specialization		EG	Graduate	Main Campus, Online	M.E., Plan C Specialization
Engineering Science		EG	Undergraduate	Main Campus	B.S.
Engineering Science and Interdisciplinary Liberal Arts		LA	Undergraduate	Main Campus	Dual Degree B.S. and B.A.
Engineering Science and International Studies		EG	Undergraduate	Main Campus	Dual Degree B.S. and B.A.
Engineering Science, Engineering Physics Concentration		EG	Undergraduate	Main Campus	B.S. Concentration
Engineering Science, Space Engineering Concentration		EG	Undergraduate	Main Campus	B.S. Concentration
Engineering Science, Teacher Education Concentration		EG	Undergraduate	Main Campus	B.S. Concentration
English	English	LA	Undergraduate	Main Campus	B.A.
English Minor	English	LA	Undergraduate	Main Campus	Minor
English, English Education Specialization	English	LA	Graduate	Main Campus	M.A. Plan A and Plan B Specialization
English, Literature Specialization	English	LA	Graduate	Main Campus	M.A. Plan A Specialization
English, Literature Specialization	English	LA	Graduate	Main Campus	M.A. Plan B Specialization
English, Writing, Rhetoric, and Social Change Specialization	English	LA	Graduate	Main Campus	M.A. Plan A and Plan B Specialization
English, TESL/TEFL Specialization	English	LA	Graduate	Main Campus	M.A. Plan A Specialization
English, TESL/TEFL Specialization	English	LA	Graduate	Main Campus	M.A. Plan B Specialization
English, Creative Writing Concentration	English	LA	Undergraduate	Main Campus	B.A. Concentration
English, English Education Concentration	English	LA	Undergraduate	Main Campus	B.A. Concentration
English, Language Concentration	English	LA	Undergraduate	Main Campus	B.A. Concentration
English, Literature Concentration	English	LA	Undergraduate	Main Campus	B.A. Concentration
English, Writing, Rhetoric and Literacy Concentration	English	LA	Undergraduate	Main Campus	B.A. Concentration
Entrepreneurship and Innovation Minor	Management	BU	Undergraduate	Main Campus	Minor

Environmental Affairs Interdisciplinary Minor	Political Science	UW	Undergraduate	Main Campus	Minor
Environmental and Natural Resource Economics	Agricultural and Resource Economics	AG	Undergraduate	Main Campus	B.S.
Environmental and Natural Resource Economics Minor	Agricultural and Resource Economics	AG	Undergraduate	Main Campus	Minor
Environmental Engineering	Civil and Environmental Engineering	EG	Undergraduate	Main Campus	B.S.
Environmental Engineering Minor	Civil and Environmental Engineering	EG	Undergraduate	Main Campus	Minor
Environmental Health	Environmental and Radiological Health Sciences	VM	Undergraduate	Main Campus	B.S.
Environmental Health Minor	Environmental and Radiological Health Sciences	VM	Undergraduate	Main Campus	Minor
Environmental Health, Environmental Health and Safety Specialization	Environmental and Radiological Health Sciences	VM	Graduate	Main Campus	M.S. Plan B Specialization
Environmental Health, Epidemiology Ph. D. Specialization	Environmental and Radiological Health Sciences	VM	Graduate	Main Campus	Ph.D. Specialization
Environmental Health, Epidemiology Specialization	Environmental and Radiological Health Sciences	VM	Graduate	Main Campus	M.S. Plan A Specialization
Environmental Health, Epidemiology Specialization	Environmental and Radiological Health Sciences	VM	Graduate	Main Campus	M.S. Plan B Specialization
Environmental Health, Occupational Ergonomics and Safety Specialization	Environmental and Radiological Health Sciences	VM	Graduate	Main Campus	M.S. Plan A Specialization
Environmental Health, Occupational Ergonomics and Safety Ph.D. Specialization	Environmental and Radiological Health Sciences	VM	Graduate	Main Campus	Ph.D. Specialization
Environmental Health, Industrial Hygiene Ph.D. Specialization	Environmental and Radiological Health Sciences	VM	Graduate	Main Campus	Ph.D. Specialization
Environmental Health, Industrial Hygiene Specialization	Environmental and Radiological Health Sciences	VM	Graduate	Main Campus	M.S. Plan A Specialization
Environmental Health, Industrial Hygiene Specialization	Environmental and Radiological Health Sciences	VM	Graduate	Main Campus	M.S. Plan B Specialization
Environmental Horticulture	Horticulture and Landscape Architecture	AG	Undergraduate	Main Campus	B.S.
Environmental Horticulture Minor	Horticulture and Landscape Architecture	AG	Undergraduate	Main Campus	Minor
Environmental Horticulture, Landscape Business Concentration	Horticulture and Landscape Architecture	AG	Undergraduate	Main Campus	B.S. Concentration

Environmental Horticulture, Landscape Design and Contracting Concentration	Horticulture and Landscape Architecture	AG	Undergraduate	Main Campus	B.S. Concentration
Environmental Horticulture, Nursery and Landscape Management Concentration	Horticulture and Landscape Architecture	AG	Undergraduate	Main Campus	B.S. Concentration
Environmental Horticulture, Turf Management Concentration	Horticulture and Landscape Architecture	AG	Undergraduate	Main Campus	B.S. Concentration
Environmental Leadership	Human Dimensions of Natural Resources	NR	Graduate	Main Campus	M.S. Plan A and Plan B
Equine Science	Animal Sciences	AG	Undergraduate	Main Campus	B.S.
Ethics and Society	Philosophy	LA	Undergraduate	Main Campus	Certificate
Ethnic Studies	Ethnic Studies	LA	Graduate	Main Campus	M.A. Plan A
Ethnic Studies	Ethnic Studies	LA	Graduate	Main Campus	M.A. Plan B
Ethnic Studies	Ethnic Studies	LA	Undergraduate	Main Campus	B.A.
Ethnic Studies Minor	Ethnic Studies	LA	Undergraduate	Main Campus	Minor
Ethnic Studies, Social Studies Teaching Concentration	Ethnic Studies	LA	Undergraduate	Main Campus	B.A. Concentration
Evidence-Based Design	Design and Merchandising	HS	Graduate	Main Campus, Online	Certificate
Extension Education		AG	Graduate	Main Campus, Online	M.Ext.Ed., Plan C
Extreme Ultraviolet and Optical Science and Technology Interdisciplinary Studies	Electrical and Computer Engineering	UW	Graduate	Main Campus	Graduate Interdisciplinary Studies Program
Facilitating Adult Learning	School of Education	HS	Graduate	Main Campus, Online	Certificate
Family and Consumer Sciences	School of Education	HS	Undergraduate	Main Campus	B.S.
Family and Consumer Sciences, Family and Consumer Sciences Concentration	School of Education	HS	Undergraduate	Main Campus	B.S. Concentration
Family and Consumer Sciences, Family and Consumer Sciences Education Concentration	School of Education	HS	Undergraduate	Main Campus	B.S. Concentration
Fermentation Science and Technology	Food Science and Human Nutrition	HS	Undergraduate	Main Campus	B.S.
Film Studies Interdisciplinary Minor	Communication Studies	UW	Undergraduate	Main Campus	Minor
Finance	Finance and Real Estate	BU	Graduate	Main Campus	M.F.I.N., Plan C
Finance and Real Estate, Business Administration, Finance Concentration	Finance and Real Estate	BU	Undergraduate	Main Campus	B.S. Concentration
Finance and Real Estate, Business Administration, Financial Planning Concentration	Finance and Real Estate	BU	Undergraduate	Main Campus	B.S. Concentration

Finance and Real Estate, Business Administration, Real Estate Concentration	Finance and Real Estate	BU	Undergraduate	Main Campus	B.S. Concentration
Finance Concentration, Corporate Finance Option	Finance and Real Estate	BU	Undergraduate	Main Campus	B.S. Concentration Option
Finance Concentration, Investment Analysis Option	Finance and Real Estate	BU	Undergraduate	Main Campus	B.S. Concentration Option
Finance Concentration, Real Estate Finance Option	Finance and Real Estate	BU	Undergraduate	Main Campus	B.S. Concentration Option
Financial Accounting and Reporting	Accounting	BU	Undergraduate	Main Campus	Certificate
Fire and Emergency Services Administration	Forest and Rangeland Stewardship	NR	Undergraduate	Online	B.S.
Fish, Wildlife, and Conservation Biology	Fish, Wildlife, and Conservation Biology	NR	Graduate	Main Campus	M.S. Plan A
Fish, Wildlife, and Conservation Biology	Fish, Wildlife, and Conservation Biology	NR	Graduate	Main Campus	M.S. Plan B
Fish, Wildlife, and Conservation Biology	Fish, Wildlife, and Conservation Biology	NR	Graduate	Main Campus, Online	M.F.W.C.B., Plan C
Fish, Wildlife, and Conservation Biology	Fish, Wildlife, and Conservation Biology	NR	Graduate	Main Campus	Ph.D.
Fish, Wildlife, and Conservation Biology	Fish, Wildlife, and Conservation Biology	NR	Undergraduate	Main Campus	B.S.
Fish, Wildlife, and Conservation Biology, Conservation Biology Concentration	Fish, Wildlife, and Conservation Biology	NR	Undergraduate	Main Campus	B.S. Concentration
Fish, Wildlife, and Conservation Biology, Fisheries and Aquatic Sciences Concentration	Fish, Wildlife, and Conservation Biology	NR	Undergraduate	Main Campus	B.S. Concentration
Fish, Wildlife, and Conservation Biology, Wildlife Biology Concentration	Fish, Wildlife, and Conservation Biology	NR	Undergraduate	Main Campus	B.S. Concentration
Fishery Biology Minor	Fish, Wildlife, and Conservation Biology	NR	Undergraduate	Main Campus	Minor
Food Industry Management Interdisciplinary Minor	Agricultural and Resource Economics	AG	Undergraduate	Main Campus	Minor
Food Science and Nutrition, Dietetics Option	Food Science and Human Nutrition	HS	Graduate	Online	M.S. Option
Food Science and Nutrition, Food Science Specialization	Food Science and Human Nutrition	HS	Graduate	Main Campus	M.S. Plan A and Plan B Specialization
Food Science and Nutrition, Food Science Specialization	Food Science and Human Nutrition	HS	Graduate	Main Campus	Ph.D. Specialization
Food Science and Nutrition, Nutrition Specialization	Food Science and Human Nutrition	HS	Graduate	Main Campus	M.S. Plan A and Plan B Specialization

Food Science and Nutrition, Nutrition Specialization	Food Science and Human Nutrition	HS	Graduate	Main Campus	Ph.D. Specialization
Food Science and Safety Interdisciplinary Minor	University-Wide	UW	Undergraduate	Main Campus	Minor
Food Science and Safety Interdisciplinary Studies	University-Wide	UW	Graduate	Main Campus	Graduate Interdisciplinary Studies Program
Forest and Rangeland Stewardship, Ecological Restoration Minor	Forest and Rangeland Stewardship	NR	Undergraduate	Main Campus	Minor
Forest and Rangeland Stewardship, Forest Biology Concentration	Forest and Rangeland Stewardship	NR	Undergraduate	Main Campus	B.S. Concentration
Forest and Rangeland Stewardship, Forest Fire Science Concentration	Forest and Rangeland Stewardship	NR	Undergraduate	Main Campus	B.S. Concentration
Forest and Rangeland Stewardship, Forest Management Concentration	Forest and Rangeland Stewardship	NR	Undergraduate	Main Campus	B.S. Concentration
Forest and Rangeland Stewardship, Forestry Minor	Forest and Rangeland Stewardship	NR	Undergraduate	Main Campus	Minor
Forest and Rangeland Stewardship, Range Ecology Minor	Forest and Rangeland Stewardship	NR	Undergraduate	Main Campus	Minor
Forest and Rangeland Stewardship, Rangeland and Forest Management Concentration	Forest and Rangeland Stewardship	NR	Undergraduate	Main Campus	B.S. Concentration
Forest and Rangeland Stewardship, Rangeland Conservation and Management Concentration	Forest and Rangeland Stewardship	NR	Undergraduate	Main Campus	B.S. Concentration
Forest Sciences	Forest and Rangeland Stewardship	NR	Graduate	Main Campus	M.S. Plan A
Forest Sciences	Forest and Rangeland Stewardship	NR	Graduate	Main Campus	M.S. Plan B
Forest Sciences	Forest and Rangeland Stewardship	NR	Graduate	Main Campus	Ph.D.
French Linguistics and Literary Studies	Languages, Literatures and Cultures	LA	Graduate	Main Campus	Certificate
Gender, Power and Difference	Ethnic Studies	LA	Graduate	Main Campus	Certificate
Geography	Anthropology and Geography	LA	Undergraduate	Main Campus	B.S.
Geography Minor	Anthropology and Geography	LA	Undergraduate	Main Campus	Minor
Geology	Geosciences	NR	Undergraduate	Main Campus	B.S.
Geology Minor	Geosciences	NR	Undergraduate	Main Campus	Minor
Geology, Environmental Geology Concentration	Geosciences	NR	Undergraduate	Main Campus	B.S. Concentration
Geology, Geology Concentration	Geosciences	NR	Undergraduate	Main Campus	B.S. Concentration

Geology, Geophysics Concentration	Geosciences	NR	Undergraduate	Main Campus	B.S. Concentration
Geology, Hydrogeology Concentration	Geosciences	NR	Undergraduate	Main Campus	B.S. Concentration
Geosciences	Geosciences	NR	Graduate	Main Campus	M.S. Plan A
Geosciences	Geosciences	NR	Graduate	Main Campus	M.S. Plan B
Geosciences	Geosciences	NR	Graduate	Main Campus	Ph.D.
Geospatial Information Science for Natural Resources Minor	Warner College of Natural Resources	NR	Undergraduate	Main Campus	Minor
Gerontology Interdisciplinary Minor	Health and Human Sciences	UW	Undergraduate	Main Campus, Online	Minor
Global Environmental Sustainability Interdisciplinary Minor	SoGES	UW	Undergraduate	Main Campus	Minor
Global Studies Interdisciplinary Minor	Liberal Arts	LA	Undergraduate	Main Campus, Online	Minor
Greenhouse Gas Management and Accounting	Ecosystem Science and Sustainability	NR	Graduate	Main Campus	M.G.M.A., Plan C
Health and Exercise Science	Health and Exercise Science	HS	Graduate	Main Campus	M.S. Plan A
Health and Exercise Science	Health and Exercise Science	HS	Undergraduate	Main Campus	B.S.
Health and Exercise Science, Health Promotion Concentration	Health and Exercise Science	HS	Undergraduate	Main Campus	B.S. Concentration
Health and Exercise Science, Sports Medicine Concentration	Health and Exercise Science	HS	Undergraduate	Main Campus	B.S. Concentration
High Impact On-Demand Learning Solutions	School of Education	HS	Graduate	Online	Certificate
History	History	LA	Undergraduate	Main Campus	B.A.
History Minor	History	LA	Undergraduate	Main Campus, Online	Minor
History, General History Concentration	History	LA	Undergraduate	Main Campus	B.A. Concentration
History, Language Concentration	History	LA	Undergraduate	Main Campus	B.A. Concentration
History, Liberal Arts Specialization	History	LA	Graduate	Main Campus	M.A. Plan A Specialization
History, Liberal Arts Specialization	History	LA	Graduate	Main Campus	M.A. Plan B Specialization
History, Public History, Cultural Resource Management Specialization	History	LA	Graduate	Main Campus	M.A. Plan B Specialization
History, Public History, Historic Preservation Specialization	History	LA	Graduate	Main Campus	M.A. Plan B Specialization
History, Public History, Museum Studies Specialization	History	LA	Graduate	Main Campus	M.A. Plan B Specialization
History, Social and Behavioral Sciences Concentration	History	LA	Undergraduate	Main Campus	B.A. Concentration

History, Social Studies Teaching Concentration	History	LA	Undergraduate	Main Campus	B.A. Concentration
Horticulture	Horticulture and Landscape Architecture	AG	Graduate	Main Campus	M.S. Plan A
Horticulture	Horticulture and Landscape Architecture	AG	Graduate	Main Campus	M.S. Plan B
Horticulture	Horticulture and Landscape Architecture	AG	Graduate	Main Campus	Ph.D.
Horticulture	Horticulture and Landscape Architecture	AG	Undergraduate	Main Campus	B.S.
Horticulture Minor	Horticulture and Landscape Architecture	AG	Undergraduate	Main Campus	Minor
Horticulture, Floriculture Concentration	Horticulture and Landscape Architecture	AG	Undergraduate	Main Campus	B.S. Concentration
Horticulture, Horticultural Business Management Concentration	Horticulture and Landscape Architecture	AG	Undergraduate	Main Campus, Online	B.S. Concentration
Horticulture, Horticultural Food Crops Concentration	Horticulture and Landscape Architecture	AG	Undergraduate	Main Campus	B.S. Concentration
Horticulture, Horticultural Food Crops Concentration, Production Option	Horticulture and Landscape Architecture	AG	Undergraduate	Main Campus	B.S. Concentration Option
Horticulture, Horticultural Food Crops Concentration, Seed Science Option	Horticulture and Landscape Architecture	AG	Undergraduate	Main Campus	B.S. Concentration Option
Horticulture, Horticultural Science Concentration	Horticulture and Landscape Architecture	AG	Undergraduate	Main Campus	B.S. Concentration
Horticulture, Horticultural Therapy Concentration	Horticulture and Landscape Architecture	AG	Undergraduate	Main Campus	B.S. Concentration
Horticulture, Viticulture and Enology Concentration	Horticulture and Landscape Architecture	AG	Undergraduate	Main Campus	B.S. Concentration
Hospitality Management	Food Science and Human Nutrition	HS	Undergraduate	Main Campus	B.S.
Human Bioenergetics	Health and Exercise Science	HS	Graduate	Main Campus	Ph.D.
Human Development and Family Studies	Human Development and Family Studies	HS	Undergraduate	Main Campus, Online	B.S.
Human Development and Family Studies, Early Childhood Professions Concentration	Human Development and Family Studies	HS	Undergraduate	Main Campus, Online	B.S. Concentration
Human Development and Family Studies, Human Development and Family Studies Concentration	Human Development and Family Studies	HS	Undergraduate	Main Campus, Online	B.S. Concentration

Human Development and Family Studies, Leadership and Entrepreneurial Professions Concentration	Human Development and Family Studies	HS	Undergraduate	Main Campus, Online	B.S. Concentration
Human Development and Family Studies, Marriage and Family Therapy Specialization	Human Development and Family Studies	HS	Graduate	Main Campus	M.S. Plan A Specialization
Human Development and Family Studies, Pre-Health Professions Concentration	Human Development and Family Studies	HS	Undergraduate	Main Campus, Online	B.S. Concentration
Human Development and Family Studies, Prevention and Intervention Sciences Concentration	Human Development and Family Studies	HS	Undergraduate	Main Campus, Online	B.S. Concentration
Human Development and Family Studies, Prevention Science Specialization	Human Development and Family Studies	HS	Graduate	Main Campus	M.S. Plan A Specialization
Human Dimensions of Natural Resources	Human Dimensions of Natural Resources	NR	Graduate	Main Campus	M.S. Plan A
Human Dimensions of Natural Resources	Human Dimensions of Natural Resources	NR	Graduate	Main Campus	Ph.D.
Human Dimensions of Natural Resources	Human Dimensions of Natural Resources	NR	Undergraduate	Main Campus	B.S.
Information Science and Technology Interdisciplinary Minor	Center for Information Science and Technology	UW	Undergraduate	Main Campus	Minor
Information Technology Project Management	Computer Information Systems	BU	Graduate	Main Campus, Online	Certificate
Integrated Resource Management Interdisciplinary Minor	Western Center for Integrated Resource Management	UW	Undergraduate	Main Campus	Minor
Interdisciplinary Liberal Arts		LA	Undergraduate	Main Campus, Online	B.A.
Interdisciplinary Liberal Arts and Engineering Science		LA	Undergraduate	Main Campus	Dual Degree B.A. and B.S.
Interior Architecture and Design	Design and Merchandising	HS	Undergraduate	Main Campus	B.S.
International Business	Business	BU	Undergraduate	Main Campus	Certificate
International Business, Business Administration, International Business Concentration	Business	BU	Undergraduate	Main Campus	Second Concentration
International Development Interdisciplinary Studies	International Development Board and the Office of International Programs	UW	Graduate	Main Campus	Graduate Interdisciplinary Studies Program
International Development Interdisciplinary Minor	International Development Board and the Office of International Programs	UW	Undergraduate	Main Campus	Minor

International Studies		LA	Undergraduate	Main Campus	B.A.
International Studies and Engineering Science		EG	Undergraduate	Main Campus	Dual Degree B.A. and B.S.
International Studies, Asian Studies Concentration		LA	Undergraduate	Main Campus	B.A. Concentration
International Studies, European Studies Concentration		LA	Undergraduate	Main Campus	B.A. Concentration
International Studies, Latin American Studies Concentration		LA	Undergraduate	Main Campus	B.A. Concentration
International Studies, Middle East and North African Studies Concentration		LA	Undergraduate	Main Campus	B.A. Concentration
Journalism and Media Communication	Journalism and Media Communication	LA	Undergraduate	Main Campus, Online	B.A.
Journalism and Media Communication, Technical and Science Communication Minor	Journalism and Media Communication	LA	Undergraduate	Main Campus	Minor
Landscape Architecture	Horticulture and Landscape Architecture	LA	Graduate	Main Campus	M.L.A., Plan C
Landscape Architecture	Horticulture and Landscape Architecture	AG	Undergraduate	Main Campus	B.S.
Languages, Literatures, and Cultures	Languages, Literatures and Cultures	LA	Undergraduate	Main Campus	B.A.
Languages, Literatures, and Cultures - Arabic Studies Interdisciplinary Minor	Languages, Literatures and Cultures	UW	Undergraduate	Main Campus	Minor
Languages, Literatures, and Cultures - Chinese Minor	Languages, Literatures and Cultures	LA	Undergraduate	Main Campus	Minor
Languages, Literatures, and Cultures - French Concentration	Languages, Literatures and Cultures	LA	Undergraduate	Main Campus	B.A. Concentration
Languages, Literatures, and Cultures - French Minor	Languages, Literatures and Cultures	LA	Undergraduate	Main Campus	Minor
Languages, Literatures, and Cultures - French Specialization, FLLC Option	Languages, Literatures and Cultures	LA	Graduate	Main Campus	M.A. Plan A Specialization Option
Languages, Literatures, and Cultures - French Specialization, FLLC Option	Languages, Literatures and Cultures	LA	Graduate	Main Campus	M.A. Plan B Specialization Option
Languages, Literatures, and Cultures - French Specialization, Interdisciplinary Option	Languages, Literatures and Cultures	LA	Graduate	Main Campus	M.A. Plan A Interdisciplinary Option
Languages, Literatures, and Cultures - French Specialization, Interdisciplinary Option	Languages, Literatures and Cultures	LA	Graduate	Main Campus	M.A. Plan B Interdisciplinary Option

Languages, Literatures, and Cultures - German Concentration	Languages, Literatures and Cultures	LA	Undergraduate	Main Campus	B.A. Concentration
Languages, Literatures, and Cultures - German Minor	Languages, Literatures and Cultures	LA	Undergraduate	Main Campus	Minor
Languages, Literatures, and Cultures - German Specialization, FLLC Option	Languages, Literatures and Cultures	LA	Graduate	Main Campus	M.A. Plan A Specialization Option
Languages, Literatures, and Cultures - German Specialization, FLLC Option	Languages, Literatures and Cultures	LA	Graduate	Main Campus	M.A. Plan B Specialization Option
Languages, Literatures, and Cultures - German Specialization, Interdisciplinary Option	Languages, Literatures and Cultures	LA	Graduate	Main Campus	M.A. Plan A Interdisciplinary Option
Languages, Literatures, and Cultures - German Specialization, Interdisciplinary Option	Languages, Literatures and Cultures	LA	Graduate	Main Campus	M.A. Plan B Interdisciplinary Option
Languages, Literatures, and Cultures - Italian Studies Interdisciplinary Minor	Languages, Literatures and Cultures	UW	Undergraduate	Main Campus	Minor
Languages, Literatures, and Cultures - Japanese Minor	Languages, Literatures and Cultures	LA	Undergraduate	Main Campus	Minor
Languages, Literatures, and Cultures - Russian Studies Interdisciplinary Minor	Languages, Literatures and Cultures	UW	Undergraduate	Main Campus	Minor
Languages, Literatures, and Cultures - Spanish Concentration	Languages, Literatures and Cultures	LA	Undergraduate	Main Campus	B.A. Concentration
Languages, Literatures, and Cultures - Spanish Minor	Languages, Literatures and Cultures	LA	Undergraduate	Main Campus	Minor
Languages, Literatures, and Cultures - Spanish Specialization, FLLC Option	Languages, Literatures and Cultures	LA	Graduate	Main Campus	M.A. Plan A Specialization Option
Languages, Literatures, and Cultures - Spanish Specialization, FLLC Option	Languages, Literatures and Cultures	LA	Graduate	Main Campus	M.A. Plan B Specialization Option
Languages, Literatures, and Cultures - Spanish Specialization, Interdisciplinary Option	Languages, Literatures and Cultures	LA	Graduate	Main Campus	M.A. Plan A Interdisciplinary Option
Languages, Literatures, and Cultures - Spanish Specialization, Interdisciplinary Option	Languages, Literatures and Cultures	LA	Graduate	Main Campus	M.A. Plan B Interdisciplinary Option
Languages, Literatures, and Cultures - Teaching Endorsement	Languages, Literatures and Cultures	LA	Undergraduate	Main Campus	B.A.

Latin American and Caribbean Studies Interdisciplinary Minor	Political Science	UW	Undergraduate	Main Campus	Minor
Leadership Studies Interdisciplinary Minor	SLiCE	UW	Undergraduate	Main Campus	Minor
Legal Studies Interdisciplinary Minor	University-Wide	UW	Undergraduate	Main Campus	Minor
Linguistics and Culture Interdisciplinary Minor	English	UW	Undergraduate	Main Campus	Minor
Management, Business Administration, Human Resource Management Concentration	Management	BU	Undergraduate	Main Campus	B.S. Concentration
Management, Business Administration, Organization and Innovation Management Concentration	Management	BU	Undergraduate	Main Campus	B.S. Concentration
Management, Business Administration, Supply Chain Management Concentration	Management	BU	Undergraduate	Main Campus	B.S. Concentration
Management, Entrepreneurship	Management	BU	Undergraduate	Main Campus	Certificate
Management, Leadership in Organizations	Management	BU	Undergraduate	Main Campus	Certificate
Management, Managing Human Resources	Management	BU	Undergraduate	Main Campus	Certificate
Management, Operations, Logistics and Supply Management	Management	BU	Undergraduate	Main Campus	Certificate
Marketing, Business Administration, Marketing Concentration	Marketing	BU	Undergraduate	Main Campus	B.S. Concentration
Marketing, Business to Business Selling	Marketing	BU	Undergraduate	Main Campus	Certificate
Marketing, Customer Experience Management	Marketing	BU	Undergraduate	Main Campus	Certificate
Marketing, Marketing Communication and Branding	Marketing	BU	Undergraduate	Main Campus	Certificate
Marketing, Market Research and Data Analytics	Marketing	BU	Undergraduate	Main Campus	Certificate
Marketing, Strategic Marketing	Marketing	BU	Undergraduate	Main Campus	Certificate
Marketing Management	Marketing	BU	Graduate	Main Campus, Online	Certificate
Materials Science and Engineering		NS	Graduate	Main Campus	M.S. Plan A
Materials Science and Engineering		NS	Graduate	Main Campus	M.S. Plan B
Materials Science and Engineering		NS	Graduate	Main Campus	Ph.D.

Mathematical Biology Minor	Mathematics	NS	Undergraduate	Main Campus	Minor
Mathematics	Mathematics	NS	Graduate	Main Campus	M.S. Plan A
Mathematics	Mathematics	NS	Graduate	Main Campus	M.S. Plan B
Mathematics	Mathematics	NS	Graduate	Main Campus	Ph.D.
Mathematics	Mathematics	NS	Undergraduate	Main Campus	B.S.
Mathematics Interdisciplinary Studies	Mathematics	UW	Graduate	Main Campus	Graduate Interdisciplinary Studies Program
Mathematics Minor	Mathematics	NS	Undergraduate	Main Campus	Minor
Mathematics, Actuarial Science Concentration	Mathematics	NS	Undergraduate	Main Campus	B.S. Concentration
Mathematics, Applied Mathematics Concentration	Mathematics	NS	Undergraduate	Main Campus	B.S. Concentration
Mathematics, Computational Mathematics Concentration	Mathematics	NS	Undergraduate	Main Campus	B.S. Concentration
Mathematics, General Mathematics Concentration	Mathematics	NS	Undergraduate	Main Campus	B.S. Concentration
Mathematics, Mathematics Education Concentration	Mathematics	NS	Undergraduate	Main Campus	B.S. Concentration
Meat Science	Animal Sciences	AG	Undergraduate	Main Campus	Certificate
Mechanical Engineering	Mechanical Engineering	EG	Graduate	Main Campus	M.S. Plan A
Mechanical Engineering	Mechanical Engineering	EG	Graduate	Main Campus	M.S. Plan B
Mechanical Engineering	Mechanical Engineering	EG	Graduate	Main Campus	Ph.D.
Mechanical Engineering	Mechanical Engineering	EG	Undergraduate	Main Campus	B.S.
Media Studies Minor		LA	Undergraduate	Main Campus	Minor
Microbiology	Microbiology, Immunology, and Pathology	VM	Graduate	Main Campus	M.S. Plan A (https://next.catalog.colostate.edu/general-catalog/colleges/veterinary-medicine-biomedical-sciences/microbiology-immunology-pathology/#graduatetext)
Microbiology	Microbiology, Immunology, and Pathology	VM	Graduate	Main Campus	M.S. Plan B
Microbiology	Microbiology, Immunology, and Pathology	VM	Graduate	Main Campus	Ph.D. (https://next.catalog.colostate.edu/general-catalog/colleges/veterinary-medicine-biomedical-sciences/microbiology-immunology-pathology/#graduatetext)
Microbiology	Microbiology, Immunology, and Pathology	VM	Undergraduate	Main Campus	B.S.
Microbiology Minor	Microbiology, Immunology, and Pathology	VM	Undergraduate	Main Campus	Minor

Military and Veteran Culture	School of Social Work	HS	Graduate	Main Campus, Online	Certificate
Military Science Minor	Army ROTC	UW	Undergraduate	Main Campus	Minor
Molecular, Cellular and Integrative Neurosciences Interdisciplinary Studies	Molecular, Cellular, and Integrative Neuroscience	VM	Graduate	Main Campus	Graduate Interdisciplinary Studies Program
Music	Music, Theatre, and Dance	LA	Undergraduate	Main Campus	B.A.
Music	Music, Theatre, and Dance	LA	Undergraduate	Main Campus	B.M.
Music Minor	Music, Theatre, and Dance	LA	Undergraduate	Main Campus	Minor
Music, Choral Conducting Specialization	Music, Theatre, and Dance	LA	Graduate	Main Campus	M.M. Specialization
Music, Collaborative Piano Specialization	Music, Theatre, and Dance	LA	Graduate	Main Campus	M.M. Specialization
Music, Composition Concentration	Music, Theatre, and Dance	LA	Undergraduate	Main Campus	B.M. Concentration
Music, Instrumental Conducting Specialization	Music, Theatre, and Dance	LA	Graduate	Main Campus	M.M. Specialization
Music, Music Education - Composition Specialization	Music, Theatre, and Dance	LA	Graduate	Main Campus, Online	M.M. Specialization
Music, Music Education Concentration	Music, Theatre, and Dance	LA	Undergraduate	Main Campus	B.M. Concentration
Music, Music Education Concentration, Choral Option	Music, Theatre, and Dance	LA	Undergraduate	Main Campus	B.M. Concentration Option
Music, Music Education Concentration, Instrumental Option	Music, Theatre, and Dance	LA	Undergraduate	Main Campus	B.M. Concentration Option
Music, Music Education - Conducting Specialization	Music, Theatre, and Dance	LA	Graduate	Main Campus, Online	M.M. Specialization
Music, Music Education Specialization	Music, Theatre, and Dance	LA	Graduate	Main Campus, Online	M.M. Specialization
Music, Music Education Specialization - Kodaly Emphasis Option	Music, Theatre, and Dance	LA	Graduate	Main Campus, Online	M.M. Specialization Option
Music, Music Therapy Concentration	Music, Theatre, and Dance	LA	Undergraduate	Main Campus	B.M. Concentration
Music, Music Therapy Plan A Specialization	Music, Theatre, and Dance	LA	Graduate	Main Campus, Online	M.M. Plan A Specialization
Music, Music Therapy Plan B Specialization	Music, Theatre, and Dance	LA	Graduate	Main Campus, Online	M.M. Plan B Specialization
Music, Performance Concentration	Music, Theatre, and Dance	LA	Undergraduate	Main Campus	B.M. Concentration
Music, Performance Concentration, Jazz Studies Option	Music, Theatre, and Dance	LA	Undergraduate	Main Campus	B.M. Concentration Option
Music, Performance Concentration, Orchestral Instrument Option	Music, Theatre, and Dance	LA	Undergraduate	Main Campus	B.M. Concentration Option

Music, Performance Concentration, Organ Option	Music, Theatre, and Dance	LA	Undergraduate	Main Campus	B.M. Concentration Option
Music, Performance Concentration, Piano Option	Music, Theatre, and Dance	LA	Undergraduate	Main Campus	B.M. Concentration Option
Music, Performance Concentration, Piano Pedagogy Option	Music, Theatre, and Dance	LA	Undergraduate	Main Campus	B.M. Concentration Option
Music, Performance Concentration, String Pedagogy Option	Music, Theatre, and Dance	LA	Undergraduate	Main Campus	B.M. Concentration Option
Music, Performance Concentration, Voice Option	Music, Theatre, and Dance	LA	Undergraduate	Main Campus	B.M. Concentration Option
Music, Performance Option	Music, Theatre, and Dance	LA	Graduate	Main Campus	M.M. Option
Music, Stage, and Sports Production Interdisciplinary Minor	University-Wide	UW	Undergraduate	Main Campus	Minor
Natural Resource Tourism	Human Dimensions of Natural Resources	NR	Undergraduate	Main Campus	B.S.
Natural Resource Tourism, Global Tourism Concentration	Human Dimensions of Natural Resources	NR	Undergraduate	Main Campus	B.S. Concentration
Natural Resource Tourism, Natural Resource Tourism Concentration	Human Dimensions of Natural Resources	NR	Undergraduate	Main Campus, Online	B.S. Concentration
Natural Resources Management	Forest and Rangeland Stewardship	NR	Undergraduate	Main Campus	B.S.
Natural Resources Stewardship	Forest and Rangeland Stewardship	NR	Graduate	Main Campus	M.N.R.S., Plan C
Natural Resources Stewardship, Ecological Restoration Specialization	Forest and Rangeland Stewardship	NR	Graduate	Main Campus, Online	M.N.R.S. Specialization
Natural Resources Stewardship, Forest Sciences Specialization	Forest and Rangeland Stewardship	NR	Graduate	Main Campus, Online	M.N.R.S. Specialization
Natural Resources Stewardship, Rangeland Ecology and Management Specializaion	Forest and Rangeland Stewardship	NR	Graduate	Main Campus, Online	M.N.R.S. Specialization
Natural Sciences		NS	Undergraduate	Main Campus	B.S.
Natural Sciences Education		NS	Graduate	Main Campus, Online	M.N.S.E., Plan C
Natural Sciences, Biological Data Analytics Specialization	Biochemistry and Molecular Biology	NS	Graduate	Main Campus	M.P.S.M., Specialization
Natural Sciences, Biology Education Concentration		NS	Undergraduate	Main Campus	B.S. Concentration
Natural Sciences, Chemistry Education Concentration		NS	Undergraduate	Main Campus	B.S. Concentration

Natural Sciences, Geology Education Concentration		NS	Undergraduate	Main Campus	B.S. Concentration
Natural Sciences, Microscope Imaging Technology Specialization	Biochemistry and Molecular Biology	NS	Graduate	Main Campus	M.P.S.M., Specialization
Natural Sciences, Physical Science Concentration		NS	Undergraduate	Main Campus	B.S. Concentration
Natural Sciences, Physics Education Concentration		NS	Undergraduate	Main Campus	B.S. Concentration
Natural Sciences, Zoo, Aquarium, and Animal Shelter Management Specialization		NS	Graduate	Main Campus	M.P.S.M., Specialization
Neuroscience	Biomedical Sciences	VM	Undergraduate	Main Campus	B.S.
Neuroscience, Behavioral and Cognitive Neuroscience Concentration	Biomedical Sciences	VM	Undergraduate	Main Campus	B.S. Concentration
Neuroscience, Cell and Molecular Neuroscience Concentration	Biomedical Sciences	VM	Undergraduate	Main Campus	B.S. Concentration
Nonprofit Administration	School of Social Work	HS	Graduate	Main Campus, Online	Certificate
Nutrition and Food Science	Food Science and Human Nutrition	HS	Undergraduate	Main Campus	B.S.
Nutrition and Food Science, Dietetics and Nutrition Management Concentration	Food Science and Human Nutrition	HS	Undergraduate	Main Campus	B.S. Concentration
Nutrition and Food Science, Dietetics and Nutrition Management Concentration, Accredited Didactic Program Option	Food Science and Human Nutrition	HS	Undergraduate	Main Campus	B.S. Concentration Option
Nutrition and Food Science, Dietetics and Nutrition Management Concentration, Childhood Nutrition Option	Food Science and Human Nutrition	HS	Undergraduate	Main Campus	B.S. Concentration Option
Nutrition and Food Science, Dietetics and Nutrition Management Concentration, Gerontology Nutrition Option	Food Science and Human Nutrition	HS	Undergraduate	Main Campus	B.S. Concentration Option
Nutrition and Food Science, Food Safety and Nutrition Concentration	Food Science and Human Nutrition	HS	Undergraduate	Main Campus	B.S. Concentration
Nutrition and Food Science, Nutrition and Fitness Concentration	Food Science and Human Nutrition	HS	Undergraduate	Main Campus	B.S. Concentration

Nutrition and Food Science, Nutritional Sciences Concentration	Food Science and Human Nutrition	HS	Undergraduate	Main Campus	B.S. Concentration
Nutrition Minor	Food Science and Human Nutrition	HS	Undergraduate	Main Campus	Minor
Nutrition Sciences	Food Science and Human Nutrition	HS	Graduate	Online	Certificate
Occupation and Rehabilitation Science	Occupational Therapy	HS	Graduate	Main Campus	Ph.D.
Occupational Therapy	Occupational Therapy	HS	Graduate	Main Campus	M.S. Plan A
Occupational Therapy	Occupational Therapy	HS	Graduate	Main Campus	M.O.T., Plan C
Organizational Development	Psychology	NS	Graduate	Online	Certificate
Pathology	Microbiology, Immunology, and Pathology	VM	Graduate	Main Campus	Ph.D.
Performance Management	Psychology	NS	Graduate	Online	Certificate
Philosophy	Philosophy	LA	Graduate	Main Campus	M.A. Plan A
Philosophy	Philosophy	LA	Graduate	Main Campus	M.A. Plan B
Philosophy	Philosophy	LA	Undergraduate	Main Campus	B.A.
Philosophy Minor	Philosophy	LA	Undergraduate	Main Campus	Minor
Philosophy, General Philosophy	Philosophy	LA	Undergraduate	Main Campus	B.A. Concentration
Philosophy, Global Philosophies and Religions Concentration	Philosophy	LA	Undergraduate	Main Campus	B.A. Concentration
Philosophy, Philosophy, Science, and Technology Concentration	Philosophy	LA	Undergraduate	Main Campus	B.A. Concentration
Physics	Physics	NS	Graduate	Main Campus	M.S. Plan A
Physics	Physics	NS	Graduate	Main Campus	M.S. Plan B
Physics	Physics	NS	Graduate	Main Campus	Ph.D.
Physics	Physics	NS	Undergraduate	Main Campus	B.S.
Physics Minor	Physics	NS	Undergraduate	Main Campus	Minor
Physics, Applied Physics Concentration	Physics	NS	Undergraduate	Main Campus	B.S. Concentration
Physics, Physics Concentration	Physics	NS	Undergraduate	Main Campus	B.S. Concentration
Political Communication Interdisciplinary Minor	Political Science	UW	Undergraduate	Main Campus	Minor
Political Economy Interdisciplinary Studies	University-Wide	UW	Graduate	Main Campus	Graduate Interdisciplinary Studies Program
Political Science	Political Science	LA	Graduate	Main Campus	M.A. Plan A
Political Science	Political Science	LA	Graduate	Main Campus	M.A. Plan B
Political Science	Political Science	LA	Graduate	Main Campus	Ph.D.
Political Science	Political Science	LA	Undergraduate	Main Campus	B.A.
Political Science Minor	Political Science	LA	Undergraduate	Main Campus, Online	Minor
Political Science, Applied Environmental Policy Analysis Minor	Political Science	LA	Undergraduate	Main Campus	Minor

Political Science, Environmental Politics and Policy Concentration	Political Science	LA	Undergraduate	Main Campus	B.A. Concentration
Political Science, Environmental Politics and Policy Ph.D. Specialization	Political Science	LA	Graduate	Main Campus	Ph.D. Specialization
Political Science, Global Politics and Policy Concentration	Political Science	LA	Undergraduate	Main Campus	B.A. Concentration
Political Science, U.S. Government, Law, and Policy Concentration	Political Science	LA	Undergraduate	Main Campus	B.A. Concentration
Postsecondary Access and Success Programs	School of Education	HS	Graduate	Online	Certificate
Power and Energy	Electrical and Computer Engineering	EG	Graduate	Main Campus, Online	Certificate
PreK-12 School Social Worker	School of Social Work	HS	Graduate	Main Campus, Online	Certificate
Psychology	Psychology	NS	Graduate	Main Campus	M.S. Plan A
Psychology	Psychology	NS	Graduate	Main Campus	M.S. Plan B
Psychology	Psychology	NS	Graduate	Main Campus	Ph.D.
Psychology	Psychology	NS	Undergraduate	Main Campus, Online	B.S.
Psychology, Addiction Counseling	Psychology	NS	Graduate	Main Campus	M.A.C., Plan C
Psychology, Addictions Counseling Concentration	Psychology	NS	Undergraduate	Main Campus	B.S. Concentration
Psychology, Applied Industrial/Organization	Psychology	NS	Graduate	Online	M.A.I.O.P., Plan C
Psychology, Clinical/ Counseling Psychology Concentration	Psychology	NS	Undergraduate	Main Campus	B.S. Concentration
Psychology, General Psychology Concentration	Psychology	NS	Undergraduate	Main Campus	B.S. Concentration
Psychology, Industrial/ Organizational Psychology Concentration	Psychology	NS	Undergraduate	Main Campus	B.S. Concentration
Psychology, Mind, Brain, and Behavior Concentration	Psychology	NS	Undergraduate	Main Campus	B.S. Concentration
Public Communication and Technology	Journalism and Media Communication	LA	Graduate	Main Campus	M.S. Plan A
Public Communication and Technology	Journalism and Media Communication	LA	Graduate	Main Campus	M.S. Plan B
Public Communication and Technology	Journalism and Media Communication	LA	Graduate	Main Campus	Ph.D.
Public Health	Public Health	UW	Graduate	Main Campus	M.P.H., Plan C
Radiological Health Sciences	Environmental and Radiological Health Sciences	VM	Graduate	Main Campus	Ph.D.
Radiological Health Sciences, Health Physics Specialization	Environmental and Radiological Health Sciences	VM	Graduate	Main Campus	M.S. Plan A Specialization

Radiological Health Sciences, Health Physics Specialization	Environmental and Radiological Health Sciences	VM	Graduate	Main Campus	M.S. Plan B Specialization
Rangeland Ecosystem Science	Forest and Rangeland Stewardship	NR	Graduate	Main Campus	M.S. Plan A
Rangeland Ecosystem Science	Forest and Rangeland Stewardship	NR	Graduate	Main Campus	M.S. Plan B
Rangeland Ecosystem Science	Forest and Rangeland Stewardship	NR	Graduate	Main Campus	Ph.D.
Real Estate Minor	Finance and Real Estate	BU	Undergraduate	Main Campus	Minor
Religious Studies Interdisciplinary Minor	History	UW	Undergraduate	Main Campus	Minor
Resilience of Social Ecological Systems Interdisciplinary Studies	Anthropology and Geography	UW	Graduate	Main Campus	Graduate Interdisciplinary Studies Program
Restoration Ecology	Forest and Rangeland Stewardship	NR	Undergraduate	Main Campus	B.S.
Role of Sustainability in Peace and Reconciliation Interdisciplinary Minor	SoGES	UW	Undergraduate	Main Campus	Minor
Ski Area Management	Human Dimensions of Natural Resources	NR	Graduate	Main Campus, Online	Certificate
Social Work	School of Social Work	HS	Graduate	Main Campus, Online	M.S.W.
Social Work	School of Social Work	HS	Graduate	Main Campus	Ph.D.
Social Work	School of Social Work	HS	Undergraduate	Main Campus	B.S.W.
Social Work, Addictions Counseling Concentration	School of Social Work	HS	Undergraduate	Main Campus	B.S.W., Concentration
Sociology	Sociology	LA	Graduate	Main Campus	M.A. Plan A
Sociology	Sociology	LA	Graduate	Main Campus	M.A. Plan B
Sociology	Sociology	LA	Graduate	Main Campus	Ph.D.
Sociology	Sociology	LA	Undergraduate	Main Campus	B.A.
Sociology, Criminology and Criminal Justice Concentration	Sociology	LA	Undergraduate	Main Campus	B.A. Concentration
Sociology, Criminology and Criminal Justice Minor	Sociology	LA	Undergraduate	Main Campus	Minor
Sociology, Environmental Sociology Concentration	Sociology	LA	Undergraduate	Main Campus	B.A. Concentration
Sociology, General Sociology Concentration	Sociology	LA	Undergraduate	Main Campus	B.A. Concentration
Sociology, General Sociology Minor	Sociology	LA	Undergraduate	Main Campus	Minor
Soil and Crop Sciences	Soil and Crop Sciences	AG	Graduate	Main Campus	M.S. Plan A
Soil and Crop Sciences	Soil and Crop Sciences	AG	Graduate	Main Campus	M.S. Plan B
Soil and Crop Sciences	Soil and Crop Sciences	AG	Graduate	Main Campus	Ph.D.
Soil and Crop Sciences	Soil and Crop Sciences	AG	Undergraduate	Main Campus	B.S.
Soil and Crop Sciences, Agronomic Production Management Concentration	Soil and Crop Sciences	AG	Undergraduate	Main Campus	B.S. Concentration

Soil and Crop Sciences, Applied Information Technology Concentration	Soil and Crop Sciences	AG	Undergraduate	Main Campus	B.S. Concentration
Soil and Crop Sciences, International Soil and Crop Sciences Concentration	Soil and Crop Sciences	AG	Undergraduate	Main Campus	B.S. Concentration
Soil and Crop Sciences, Plant Biotechnology, Genetics, and Breeding Concentration	Soil and Crop Sciences	AG	Undergraduate	Main Campus	B.S. Concentration
Soil and Crop Sciences, Soil Ecology Concentration	Soil and Crop Sciences	AG	Undergraduate	Main Campus	B.S. Concentration
Soil and Crop Sciences, Soil Restoration and Conservation Concentration	Soil and Crop Sciences	AG	Undergraduate	Main Campus	B.S. Concentration
Soil Resources and Conservation Minor	Soil and Crop Sciences	AG	Undergraduate	Main Campus	Minor
Soil Science Minor	Soil and Crop Sciences	AG	Undergraduate	Main Campus	Minor
Spanish for Animal Health and Care	Languages, Literatures and Cultures	LA	Undergraduate	Main Campus, Online	Certificate
Spanish Linguistics and Literary Studies	Languages, Literatures and Cultures	LA	Graduate	Main Campus	Certificate
Sports Management Interdisciplinary Minor	University-Wide	UW	Undergraduate	Main Campus	Minor
Statistics	Statistics	NS	Graduate	Main Campus	M.S. Plan A
Statistics	Statistics	NS	Graduate	Main Campus	M.S. Plan B
Statistics	Statistics	NS	Graduate	Main Campus	Ph.D.
Statistics Minor	Statistics	NS	Undergraduate	Main Campus	Minor
Statistics, Applied Statistics Minor	Statistics	NS	Undergraduate	Main Campus	Minor
Statistics, General Concentration	Statistics	NS	Undergraduate	Main Campus	B.S. Concentration
Statistics, Mathematical Concentration	Statistics	NS	Undergraduate	Main Campus	B.S. Concentration
Student Affairs Administration	School of Education	HS	Graduate	Main Campus, Online	Certificate
Student Affairs in Higher Education	School of Education	HS	Graduate	Main Campus, Online	M.S.
Student Affairs Management of Auxiliary Enterprises	School of Education	HS	Graduate	Main Campus, Online	Certificate
Sustainable Energy Interdisciplinary Minor	SoGES	UW	Undergraduate	Main Campus	Minor
Sustainable Military Lands Management	CEMML	NR	Graduate	Online	Certificate
Sustainable Peace and Reconciliation Studies Interdisciplinary Studies	SoGES	UW	Graduate	Main Campus	Graduate Interdisciplinary Studies Program
Sustainable Water Interdisciplinary Minor	SoGES	UW	Undergraduate	Main Campus	Minor
Systems Engineering	Systems Engineering	EG	Graduate	Main Campus, Online	M.S. Plan A and Plan B
Systems Engineering	Systems Engineering	EG	Graduate	Main Campus, Online	Ph.D.
Systems Engineering	Systems Engineering	EG	Graduate	Main Campus, Online	Professional Doctorate

Systems Engineering Interdisciplinary Studies	Engineering	EG	Graduate	Main Campus	Graduate Interdisciplinary Studies Program
Systems Engineering Practice	Systems Engineering	EG	Graduate	Main Campus, Online	Certificate
Teaching in Extension	Agricultural and Resource Economics	AG	Graduate	Main Campus, Online	Certificate
TESOL Education	English	LA	Graduate	Main Campus	Certificate
Theatre, Acting/ Directing Minor	Music, Theatre, and Dance	LA	Undergraduate	Main Campus	Minor
Theatre, Design and Technology Concentration	Music, Theatre, and Dance	LA	Undergraduate	Main Campus	B.A. Concentration
Theatre, Design/ Technical Theatre Minor	Music, Theatre, and Dance	LA	Undergraduate	Main Campus	Minor
Theatre, General Theatre Concentration	Music, Theatre, and Dance	LA	Undergraduate	Main Campus	B.A. Concentration
Theatre, Performance Concentration	Music, Theatre, and Dance	LA	Undergraduate	Main Campus	B.A. Concentration
Theory and Applications of Regression Models	Statistics	NS	Graduate	Main Campus, Online	Certificate
Tourism Management	Human Dimensions of Natural Resources	NR	Graduate	Main Campus, Online	M.T.M., Plan C
Toxicology	Environmental and Radiological Health Sciences	VM	Graduate	Main Campus	M.S. Plan A
Toxicology	Environmental and Radiological Health Sciences	VM	Graduate	Main Campus	M.S. Plan B
Toxicology	Environmental and Radiological Health Sciences	VM	Graduate	Main Campus	Ph.D.
Veterinary Medicine, Doctor	CVMBS	VM	Professional	Main Campus	D.V.M.
Water Resources	Ecosystem Science and Sustainability	NR	Graduate	Online	Certificate
Watershed Science	Ecosystem Science and Sustainability	NR	Graduate	Main Campus	M.S. Plan A (https://next.catalog.colostate.edu/general-catalog/colleges/natural-resources/ecosystem-science-sustainability/#graduatetext)
Watershed Science	Ecosystem Science and Sustainability	NR	Graduate	Main Campus	M.S. Plan B
Watershed Science	Ecosystem Science and Sustainability	NR	Undergraduate	Main Campus	B.S.
Watershed Science	Ecosystem Science and Sustainability	NR	Graduate	Main Campus	Ph.D.
Watershed Science Minor	Ecosystem Science and Sustainability	NR	Undergraduate	Main Campus	Minor
Women's and Gender Studies	Ethnic Studies	LA	Undergraduate	Main Campus	B.A.
Women's Study Interdisciplinary Minor	Ethnic Studies	UW	Undergraduate	Main Campus	Minor
World Philosophies and Religions	Philosophy	LA	Undergraduate	Main Campus	Certificate

Zoology	Biology	NS	Undergraduate	Main Campus	B.S.
Zoology Minor	Biology	NS	Undergraduate	Main Campus	Minor

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* See the College of Business (https://biz.colostate.edu/#grad) for Online Enrollment Information.

COLLEGES AND PROGRAMS

University-Wide Instructional Programs
Agricultural Sciences
Business
Walter Scott, Jr. College of Engineering
Health and Human Sciences
Liberal Arts
Warner College of Natural Resources
Natural Sciences
Veterinary Medicine and Biomedical Sciences

University-Wide Instructional Programs

Many academic programs at Colorado State University have an all-university focus and are not found in one particular college. This catalog section summarizes:

University Interdisciplinary Studies Programs
Division of Armed Forces Services
Environmental Studies Programs
Mentored Research and Artistry Program
University Honors Program

University Interdisciplinary Studies Programs

An interdisciplinary studies program is a series of courses focused upon a particular problem or area of concern. These courses provide insight from a variety of disciplinary perspectives. The program includes a core of required courses, with some selectivity, and also a wide choice of supporting courses.

Completion of the requirements for an interdisciplinary studies program does not lead to a degree. Credits earned in interdisciplinary studies programs can be used in meeting the requirements for a degree. Courses are noted on the student's academic record (transcript). Completion of the interdisciplinary studies program is noted on the student's academic record (transcript) but not on the diploma.

Undergraduate

Interdisciplinary Minors are composed of a sequence of related courses, which provide a student with unique opportunities to complement the major and are only offered at the undergraduate level. A minimum of 21 credits is required for an interdisciplinary minor. A minimum of 12 of the 21 credits must be course work at the upper-division level (300-400).

Interdisciplinary Minors

- Arabic Studies Interdisciplinary Minor
- Biomedical Engineering Interdisciplinary Minor
- Conservation Biology Interdisciplinary Minor
- Energy Engineering Interdisciplinary Minor
- Environmental Affairs Interdisciplinary Minor
- Film Studies Interdisciplinary Minor
- Food Industry Management Interdisciplinary Minor
- Food Science/Safety Interdisciplinary Minor
- Gerontology Interdisciplinary Minor
- Global Environmental Sustainability Interdisciplinary Minor
- Global Studies Interdisciplinary Minor
- Information Science and Technology Interdisciplinary Minor
- Integrated Resource Management Interdisciplinary Minor
- International Development Interdisciplinary Minor
- Italian Studies Interdisciplinary Minor
- Latin American and Caribbean Studies Interdisciplinary Minor
- Leadership Studies Interdisciplinary Minor
- Legal Studies Interdisciplinary Minor
- Linguistics and Culture Interdisciplinary Minor
- Molecular Biology Interdisciplinary Minor
- Music, Stage, and Sports Production Interdisciplinary Minor
- Organic Agriculture Interdisciplinary Minor
- Political Communication Interdisciplinary Minor
- Religious Studies Interdisciplinary Minor
- Role of Sustainability in Peace and Reconciliation Interdisciplinary Minor
- Russian Studies Interdisciplinary Minor
- Sports Management Interdisciplinary Minor
- Sustainable Energy Interdisciplinary Minor
- Sustainable Water Interdisciplinary Minor
- Women's Study Interdisciplinary Minor

Graduate

A **Graduate Certificate** is used to identify the successful completion of a focused area of study deemed important to a student's career objectives. A Graduate Certificate consists of a minimum of 9 specified credits, and not more than 15 credits at the 500 level or above.

CSU offers interdisciplinary **degree programs** at the graduate level (listed below). Interdisciplinary degree programs include a series of courses from a variety of academic disciplines. The result of completing an interdisciplinary degree program is a graduate degree. See individual programs below for more details.

Graduate Interdisciplinary Studies Programs (GISPs) are composed of a series of courses focused on a particular problem or area of concern providing mulit-disciplinary perspectives. No minimum number of credits is specified at the graduate level. Completion of the requirements for an interdisciplinary studies program does not lead to a degree. Credits earned in interdisciplinary studies programs can be used in meeting the requirements for a degree. Courses are noted on the student's academic record (transcript). Completion of the interdisciplinary studies program is noted on the student's academic record (transcript) but not on the diploma.

Certificates

- Graduate Certificate in Applied Global Stability: Agriculture
- Graduate Certificate in Applied Global Stability: Natural Resources
- Graduate Certificate in Applied Global Stability: Water Resources

Degrees

Master's Programs

- Master of Public Health
- Master of Science in Bioengineering
- Master of Science in Cell and Molecular Biology, Plan A*
- Master of Science in Cell and Molecular Biology, Plan B*
- Master of Science in Ecology, Plan A and Plan B
- Master of Science in Ecology, Human-Environment Interactions Specialization (No new students are being admitted to this specialization.)
- Master in Arts Leadership and Cultural Management, Plan C

Ph.D. Programs

- Ph.D. in Bioengineering
- Ph.D in Cell and Molecular Biology
- Ph.D. in Cell and Molecular Biology, Cancer Biology Specialization
- Ph.D. in Ecology
- Ph.D. in Ecology, Human-Environment Interactions Specialization

Graduate Interdisciplinary Studies Programs

- Extreme Ultraviolet and Optical Science and Technology Graduate Interdisciplinary Studies Program
- Food Science/Safety Graduate Interdisciplinary Studies Program
- International Development Graduate Interdisciplinary Studies Program
- Mathematics Graduate Interdisciplinary Studies Program
- Molecular, Cellular and Integrative Neurosciences Graduate Interdisciplinary Studies Program
- Political Economy Graduate Interdisciplinary Studies Program
- Resilience of Social Ecological Systems Graduate Interdisciplinary Studies Program
- Sustainable Peace and Reconciliation Studies Graduate Interdisciplinary Studies Program
- Systems Engineering Graduate Interdisciplinary Studies Program

* Please see department for program of study.

Arabic Studies Interdisciplinary Minor

Office in Andrew G. Clark Building, Room C104
languages.colostate.edu (http://languages.colostate.edu)

Coordinated by the Department of Languages, Literatures and Cultures.

The Arabic Studies Interdisciplinary Minor is designed to give students a comprehensive knowledge of different aspects of Arabic language, culture, history, and artistic expressions, according to the students' interests. The program requires a minimum of 21 credits. Credits from study abroad programs will be properly evaluated as part of the overall program.

Contact the Department of Languages, Literatures and Cultures for details.

Requirements Effective Fall 2016

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

A grade of C or better is required in each course that will count toward the interdisciplinary minor.

Code	Title	Credits
Lower Division Language [1]		8-18
LARA 100	First-Year Arabic I	
LARA 101	First-Year Arabic II	
LARA 200	Second-Year Arabic I (GT-AH4)	
LARA 201	Second-Year Arabic II (GT-AH4)	
Lower Division Electives [1]		0-9
HIST 115	The Islamic World: Late Antiquity to 1500	
PHIL 172	Religions of the East	
LARA 250	Arabic Language, Literature, Culture in Translation (GT-AH2)	
Upper-division Electives		
Select at least 12 credits from at least two subject codes:		12
HIST 303	Hellenistic World: Alexander to Cleopatra	
HIST 308	Ancient Christianity to 500 A.D.	
HIST 421	Africa: Colonialism to Independence	
HIST 422	Modern Africa	
HIST 430	Ancient Near East	
HIST 431	Ancient Israel	
HIST 432	Sacred History in the Bible and the Qur'an	
HIST 433	Muhammad and the Origins of Islam	
HIST 435	Jihad and Reform in Islamic History	
HIST 438	The Modern Middle East	
HIST 469	The Crusades	
LARA 300	Third Year Arabic	
LARA 301	Oral Communication - Arabic	
POLS 449	Middle East Politics	

	PHIL 335	Islam: Cosmology and Practice
	PHIL 379	Mysticism East and West
	PHIL 455	Islamic Philosophy
Program Total Credits:		21

[1] LARA 200 and LARA 201 are required. Students placed out of or directly into LARA 201 need to replace 5-9 lower division credits from the list of lower-division electives. A maximum of 9 lower-division credits may be counted for the minor.

Biomedical Engineering Interdisciplinary Minor

Scott Bioengineering Building, Suite 225
(970) 491-2557
engr.colostate.edu/sbme/undergraduate-programs/bme-minor/ (http://www.engr.colostate.edu/sbme/undergraduate-programs/bme-minor)

The Biomedical Engineering Interdisciplinary Minor offers students an interdisciplinary approach to biomedical engineering education and research. This unique program combines courses in biomedical engineering and life sciences to improve human and animal health and well-being. This 21-credit minimum minor is open to all majors, thus complementing students' major area of study, and BME minor courses may count as electives in a student's major. The program provides a solid foundation in biomedical engineering and strengthens skills in engineering and life sciences.

Effective Fall 2017

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Core Courses		
BIOM 101	Introduction to Biomedical Engineering	3
Choose one course from the following:		4-5
BMS 300	Principles of Human Physiology	
BMS 301	Human Gross Anatomy	
BMS 360	Fundamentals of Physiology	
Electives – Select the appropriate option below based on your major:		13-14
Non-Engineering Majors		
For courses that are included on both Course Lists below, credit may not be double-counted toward both requirements.		
Engineering and Related Courses for Non-Engineering Majors Course List – Select a minimum of 9-11 credits		
Science, Engineering, Animal Research, Bioethics, and Entrepreneurship Course List – Select a minimum of 3-5 credits		
Engineering Majors		
Science, Engineering, Animal Research, Bioethics, and Entrepreneurship Course List – Select a minimum of 13-14 credits		
Program Total Credits:		21

Engineering and Related Courses for Non-Engineering Majors Course List (Non-Engineering majors must select a minimum of 9-11 credits from this list)

Code	Title	Credits
BIOM 300	Problem-Based Learning Biomedical Engr Lab	4
BIOM 421	Transport Phenomena in Biomedical Engineering	3
BIOM 422	Kinetics of Biomolecular and Cellular Systems	3
BIOM 431/ECE 431	Biomedical Signal and Image Processing	3
BIOM 441	Biomechanics and Biomaterials	3
BIOM 525/MECH 525	Cell and Tissue Engineering	3
BIOM 533/CIVE 533	Biomolecular Tools for Engineers	3
BIOM 573/MECH 573	Structure and Function of Biomaterials	3
BIOM 574/MECH 574	Bio-Inspired Surfaces	3
CBE 201	Material and Energy Balances	3
CBE 210	Thermodynamic Process Analysis	3
CBE 320	Chemical and Biological Reactor Design	3
CBE 331	Momentum Transfer and Mechanical Separations	3
CBE 332	Heat and Mass Transfer Fundamentals	3
CBE 406	Introduction to Transport Phenomena	3
CBE 430	Process Control and Instrumentation	3
CIVE 260	Engineering Mechanics-Statics	3
CIVE 261	Engineering Mechanics-Dynamics	3
ECE 202	Circuit Theory Applications	4
ECE 204	Introduction to Electrical Engineering	3
ECE 331	Electronics Principles I	4
ECE 341	Electromagnetic Fields and Devices I	3
MECH 237	Introduction to Thermal Sciences	3
MECH 307	Mechatronics and Measurement Systems	4
MECH 331	Introduction to Engineering Materials	4
MECH 342	Mechanics and Thermodynamics of Flow Processes	3
A maximum of 1 course may be selected from the following non-engineering and independent study/practicum courses; a maximum of 3 credits of BIOM 495 may be counted toward the minor.		
BIOM 476A or BIOM 476B	Biomedical Clinical Practicum I or Biomedical Clinical Practicum II	
BIOM 495	Independent Study	
ECE 303/ STAT 303	Introduction to Communications Principles	
MATH 340	Introduction to Ordinary Differential Equations	
PH 245	Introduction to Electronics	
STAT 315	Statistics for Engineers and Scientists	

Science, Engineering, Animal Research, Bioethics, and Entrepreneurship Course List (Engineering majors must select a minimum of 13-14 credits from this list; Non-Engineering majors must select a minimum of 3-5 credits from this list)

Code	Title	Credits
BC 351	Principles of Biochemistry	4
BIOM 300	Problem-Based Learning Biomedical Engr Lab	4
BIOM 421	Transport Phenomena in Biomedical Engineering	3
BIOM 422	Kinetics of Biomolecular and Cellular Systems	3
BIOM 431/ECE 431	Biomedical Signal and Image Processing	3
BIOM 441	Biomechanics and Biomaterials	3
BIOM 476A	Biomedical Clinical Practicum I	2
or BIOM 476B	Biomedical Clinical Practicum II	
BIOM 495	Independent Study	1-6
BIOM 525/MECH 525	Cell and Tissue Engineering	3
BIOM 533/CIVE 533	Biomolecular Tools for Engineers	3
BIOM 573/MECH 573	Structure and Function of Biomaterials	3
BIOM 574/MECH 574	Bio-Inspired Surfaces	3
BMS 301	Human Gross Anatomy	5
BMS 325	Cellular Neurobiology	3
BMS 345	Functional Neuroanatomy	4
BMS 360	Fundamentals of Physiology	4
BMS 405	Nerve and Muscle-Toxins, Trauma and Disease	3
BMS 420	Cardiopulmonary Physiology	3
BMS 430	Endocrinology	3
BZ 310	Cell Biology	4
CHEM 113	General Chemistry II	3
CHEM 245	Fundamentals of Organic Chemistry	4
CHEM 341	Modern Organic Chemistry I	3
or CHEM 345	Organic Chemistry I	
CHEM 344	Modern Organic Chemistry Laboratory	2
HES 207	Anatomical Kinesiology	3
HES 307	Biomechanical Principles of Human Movement	4
HES 403	Physiology of Exercise	4
HES 420	Electrocardiography and Exercise Management	3
HES 476	Exercise and Chronic Disease	3
LIFE 102	Attributes of Living Systems (GT-SC1)	4
LIFE 103	Biology of Organisms-Animals and Plants	4
LIFE 210	Introductory Eukaryotic Cell Biology	3
MIP 300	General Microbiology	3
OT 215	Medical Terminology	1
PSY 456	Sensation and Perception	3
PSY 457	Sensation and Perception Laboratory	2
A maximum of one course, 3 credits, may be selected from the following non-technical courses:		
BUS 205	Legal and Ethical Issues in Business	
MGT 420	New Venture Creation	
MGT 440	New Venture Management	
PHIL 205	Introduction to Ethics	
PHIL 305E	Philosophical Issues in the Professions: Animal Science	

Conservation Biology Interdisciplinary Minor

Office in Forestry Building, Room 123
(970) 491-6911
http://warnercnr.colostate.edu/frs-undergraduate-study/majors-minors

To declare the interdisciplinary minor in Conservation Biology, visit the Forest and Rangeland Stewardship office in the Forestry Building, Room 123.

Conservation Biology is a scientific discipline and management context that deals with the diversity of life in ecosystems. Humans have tremendous effects on other species and ecosystems on Earth, and Conservation Biology considers these effects, and how our impacts can be altered to sustain diverse and healthy ecosystems.

Conservation Biology encompasses a wide range of biological sciences such as genetics, evolution, and physiology, as well as a wide range of ecological sciences such as biodiversity, competition, predator/prey relations, and long-term dynamics.

This university-wide undergraduate minor addresses contemporary environmental issues that deal with biological diversity and prepares students to play an active role in the maintenance of biological diversity.

The interdisciplinary minor in Conservation Biology in the Warner College of Natural Resources at CSU is a minor that can be included with a wide range of majors to form a strong bachelor's degree program.

Effective Spring 2013

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Core Curriculum		
Select one course from the following: [1]		3-4
BZ 220	Introduction to Evolution	
BZ 350	Molecular and General Genetics	
SOCR 330	Principles of Genetics	
LIFE 320	Ecology	3
NR 300	Biological Diversity	3
SOC 220	Global Environmental Issues (GT-SS3)	3
Select 9-10 credits from the following: [2]		9-10
BZ 349	Tropical Ecology and Evolution	
F 310	Forest and Rangeland Ecogeography	
or RS 310	Rangeland and Forest Ecogeography	
F 311	Forest Ecology	
FW 400	Conservation of Fish in Aquatic Ecosystems	

FW 469	Conservation and Management of Large Mammals
FW 477	Wildlife Habitat Use and Management
HIST 355	American Environmental History
NR 353	Global Change Ecology, Impacts and Mitigation
NR 440	Applications in Conservation Planning
NR 460	Wilderness Management
PHIL 345	Environmental Ethics
POLS 361	U.S. Environmental Politics and Policy
RS 300	Rangeland Conservation and Stewardship
RS 351	Wildland Ecosystems in a Changing World
Program Total Credits:	21

[1] Select one of the courses listed or any other genetics or evolution course.

[2] Select enough credits to bring program total to a minimum of 21 credits, of which 12 must be upper-division.

Energy Engineering Interdisciplinary Minor

Scott Bioengineering Building, Suite 102
(970) 491-6220

The Energy Engineering Interdisciplinary Minor is designed to provide students in engineering and the sciences with an understanding of renewable and non-renewable energy systems; clean energy technologies; basic principles of operation of energy extraction, conversion, storage, and transmission systems; and depth in current and new energy methods and applications (e.g., PV, batteries, biofuels, etc.).

The goal of the program is to empower engineers and scientists to be technological catalysts for sustainable solutions to the grand challenges of energy.

The interdisciplinary minor requires completion of 23-24 credits, with at least 12 credits greater than or equal to 300-level courses. All undergraduates are required to complete 6 credits of core courses and a 3-credit science elective. The remaining 14-15 credits of technical electives are chosen from a select set of engineering courses according to the student¹s major and interests.

Effective Fall 2012

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Core Courses		
ECE 465	Electrical Energy Generation Technologies	3
MECH 303	Energy Engineering	3
Core Science Energy Elective		
Select one course from the following:		3
ATS 150	Science of Global Climate Change	
BZ 353/NR 353	Global Change Ecology, Impacts and Mitigation	
Core Engineering Science Energy Elective		
Select one course from the following:		3-4
CBE 210	Thermodynamic Process Analysis	
ECE 341	Electromagnetic Fields and Devices I	
MECH 237	Introduction to Thermal Sciences	
MECH 337	Thermodynamics	
PH 361	Physical Thermodynamics	
Energy Technical Electives [1]		
Select a minimum of 11 credits from the following:		11
ECE 342	Electromagnetic Fields and Devices II	
ECE 411	Control Systems	
ECE 441	Optical Electronics	
ECE 444	Antennas and Radiation	
ECE 461	Power Systems	
ECE 466	Integrated Lighting Systems	
MECH 417	Control Systems	
MECH 432	Engineering of Nanomaterials	
MECH 437	Internal Combustion Engines	
MECH 463	Building Energy Systems	
MECH 468	Space Propulsion and Power Engineering	
Program Total Credits:		23-24

[1] Select enough credits in consultation with engineering academic advisor to bring program total to a minimum of 23 credits.

Environmental Affairs Interdisciplinary Minor

The Environmental Affairs Interdisciplinary Minor is designed for students with a particular interest in environmental topics, focusing on a core of social sciences and humanities courses that are supplemented with required science courses, as well as environmental electives from six colleges. Courses address domestic and international issues of concern with both current and historical perspectives, and will provide students with a well-rounded program of study. The program is open to all students and designed to complement students' primary majors. This program provides undergraduate students with an opportunity to broaden their education through the wide range of environmental topics available at CSU as they prepare themselves for environmental careers or graduate study.

Program details are available from the Department of Political Science (https://polisci.colostate.edu/environmental-politics-policy) in the College of Liberal Arts. For more information on declaring this interdisciplinary minor, please visit Clark Building, Room C346 or contact **Kate.Sherman@colostate.edu.**

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Effective Fall 2017

Students must earn a minimum grade of C for all courses taken for the interdisciplinary minor.

Code	Title	Credits
Environmental Affairs Core		
Select three courses with three different subject codes from the following:		9
ANTH 330	Human Ecology	
ANTH 414/ ETST 414	Development in Indian Country	
ANTH 415	Indigenous Ecologies and the Modern World	
ANTH 450	Hunter-Gatherer Ecology	
ANTH 453	Impacts on Ancient Environments	
E 339	Literature of the Earth	
E 403	Writing the Environment	
ECON 340/ AREC 340	Introduction-Economics of Natural Resources	
GR 410	Climate Change: Science, Policy, Implications	
HIST 353	U.S.-Mexico Borderlands	
HIST 355	American Environmental History	
HIST 463	Science and Technology in Modern History	
HIST 470	World Environmental History, 1500-Present	
HIST 471	History of Antarctica, 1800-Present	
HIST 476	History of America's National Parks	
JTC 461	Writing About Science, Health, and Environment	
PHIL 320	Ethics of Sustainability	
PHIL 345	Environmental Ethics	
POLS 361	U.S. Environmental Politics and Policy	
POLS 362	Global Environmental Politics	
POLS 462	Globalization, Sustainability, and Justice	
SOC 220	Global Environmental Issues (GT-SS3)	
SOC 321	Soil, Environment, and Society	
SOC 322	Introduction to Environmental Justice	
SOC 460	Society and Environment	
SOC 463	Sociology of Disaster	
SPCM 429	Environmental Discourse	
Environmental Science		
A. Select one course from the following:		3
ERHS 220	Environmental Health	
ESS 210/GR 210	Physical Geography	
F 310/RS 310	Forest and Rangeland Ecogeography	
GEOL 122	The Blue Planet - Geology of Our Environment (GT-SC2) [1]	
GEOL 124	Geology of Natural Resources (GT-SC2) [1]	
LIFE 320	Ecology	
NR 120A	Environmental Conservation (GT-SC2)	
NR 120B	Environmental Conservation	
NR 130	Global Environmental Systems (GT-SC2)	
SOCR 240	Introductory Soil Science	
B. Select a second course from the A list OR select one course from the B list below OR select another science course in consultation with advisor. Courses in B must have a strong environmental focus.		3
AGRI 116/IE 116	Plants and Civilizations (GT-SS3)	
ATS 350 & ATS 351	Introduction to Weather and Climate and Introduction to Weather and Climate Lab	
BSPM 102	Insects, Science, and Society (GT-SC2)	
CIVE 322	Basic Hydrology	
CIVE 413	Environmental River Mechanics	
CIVE 425	Soil and Water Engineering	
ERHS 320	Environmental Health--Water Quality	
F 324	Fire Effects and Adaptations	
FW 104	Wildlife Ecology and Conservation (GT-SC2)	
GR 100	Introduction to Geography (GT-SS2)	
GR 304/WR 304	Sustainable Watersheds	
NR 150	Oceanography (GT-SC2)	
NR 300	Biological Diversity	
NR 326	Forest Vegetation Management	
RS 300	Rangeland Conservation and Stewardship	
RS 478	Ecological Restoration	
SOCR 421	Crop and Soil Management Systems II	
Liberal Arts Electives		
Select one course from the list below OR select a different course with a strong environmental focus with approval of advisor. Course(s) selected here may not also be used to fulfill the Core requirement above.		3
AGRI 562/ SOC 562	Sociology of Food Systems and Agriculture	
ANTH 330	Human Ecology	
ANTH 450	Hunter-Gatherer Ecology	
ANTH 453	Impacts on Ancient Environments	
E 339	Literature of the Earth	
E 403	Writing the Environment	
ECON 240/ AREC 240	Issues in Environmental Economics (GT-SS1)	
ECON 340/ AREC 340	Introduction-Economics of Natural Resources	
ECON 346/ AREC 346	Economics of Outdoor Recreation	
ECON 444/ AREC 444	Economics of Energy Resources	
ETST 414/ ANTH 414	Development in Indian Country	
GR 410	Climate Change: Science, Policy, Implications	
HIST 351	American West to 1900	
HIST 352	American West Since 1900	
HIST 353	U.S.-Mexico Borderlands	
HIST 355	American Environmental History	
HIST 463	Science and Technology in Modern History	
HIST 470	World Environmental History, 1500-Present	
HIST 471	History of Antarctica, 1800-Present	
HIST 476	History of America's National Parks	
HONR 492	Honors Senior Seminar	
JTC 461	Writing About Science, Health, and Environment	
PHIL 320	Ethics of Sustainability	

PHIL 330/ AGRI 330	Agricultural and Food System Ethics
PHIL 345	Environmental Ethics
POLS 361	U.S. Environmental Politics and Policy [1]
POLS 362	Global Environmental Politics [1]
POLS 462	Globalization, Sustainability, and Justice
SOC 220	Global Environmental Issues (GT-SS3)
SOC 320	Population-Natural Resources and Environment
SOC 321	Soil, Environment, and Society
SOC 322	Introduction to Environmental Justice
SOC 364	Food, Agriculture and Global Society
SOC 460	Society and Environment
SOC 461	Water, Society, and Environment
SOC 463	Sociology of Disaster
SOC 564	Environmental Justice

Select from Other Colleges

Select a minimum of three credits from the list below OR select a different course with a strong environmental component with approval from advisor.	3
AGRI 330/ PHIL 330	Agricultural and Food System Ethics
AREC 202	Agricultural and Resource Economics (GT-SS1)
AREC 240/ ECON 240	Issues in Environmental Economics (GT-SS1)
AREC 340/ ECON 340	Introduction-Economics of Natural Resources
AREC 342	Water Law, Policy, and Institutions
AREC 346/ ECON 346	Economics of Outdoor Recreation
AREC 375	Agricultural Law
AREC 460	Ag- and Resource-Based Economic Development
AREC 478	Agricultural Policy
CIVE 438	Environmental Engr Concepts for Civil Engrs
CIVE 439/CBE 439	Environmental Engineering Chemical Concepts
CIVE 440	Nonpoint Source Pollution
CON 450/ INTD 450	Travel Abroad-Sustainable Building
ERHS 410	Environmental Health-Air and Waste Management
ERHS 446	Environmental Toxicology
F 322	Economics of the Forest Environment
F 330	Timber Harvesting and the Environment
GR 320	Cultural Geography
GR 345	Geography of Hazards
HORT 466	Urban and Community Forestry
LAND 110	Introduction to Landscape Architecture
LAND 120	History of the Designed Landscape
NR 320	Natural Resources History and Policy
NR 355	Contemporary Environmental Issues [2]
NR 365	Environmental Education
NRRT 330	Social Aspects of Natural Resource Management
NRRT 462	Environmental Communication-Natural Resources
PSY 316	Environmental Psychology
SOCR 320	Forage and Pasture Management
SOCR 370	Irrigation Principles
SOCR 377	Geographic Information Systems in Agriculture
Program Total Credits:	21

1 GEOL 121 is also recommended.

2 Offered as a telecourse course only.

Extreme Ultraviolet and Optical Science and Technology Graduate Interdisciplinary Studies Program

Coordinated by a Faculty Advisory Board and the Department of Electrical and Computer Engineering in the Walter Scott, Jr. College of Engineering.

The Extreme Ultraviolet and Optical Science and Technology Graduate Interdisciplinary Studies program is designed to serve individuals who are seeking to gain knowledge and experience in the generation and applications of coherent extreme ultraviolet or soft x-ray light. This type of light holds great potential in applications in nanotechnology, nanoelectronics, photochemistry, material science, and biology. While in the past the use of coherent EUV light required a trip to a national facility, new developments in compact sources make it widely available. The objective of the program is to provide scientists or engineers many of the fundamentals required to generate or proficiently make use of this portion of the electromagnetic spectrum.

This interdisciplinary studies program is inherently interdisciplinary, including lasers, optical, plasma, material, chemical and biological sciences, and engineering. With its NSF Center for Extreme Ultraviolet Science and Technology, a partnership with the University of Colorado and the University of California, Berkeley, CSU has unique expertise in this area.

The program is open to graduate students and professionals who hold a B.S. degree in engineering, physics, chemistry, biology, mathematics, or other scientific discipline.

The program requires a total of fifteen credits comprising six core credits and nine electives. The six core credits are two very fundamental courses that any graduate student with a background in hard sciences and engineering could master. This, coupled with the fact that graduate students in any discipline are not held to undergraduate prerequisite courses, make this interdisciplinary studies program widely accessible. Elective credits are tailored to the candidate's interests from the major the student pursues. Within these a course in another discipline outside the major of the candidate must be included.

Requirements
Effective Fall 2008

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Core Courses		
ECE 504	Physical Optics	3
ECE 650	Extreme Ultraviolet and Soft X-Ray Radiation	3
Elective Courses		
Select 9 credits from the following:		9
BC 511	Structural Biology I	
BC 565	Molecular Regulation of Cell Function	
BC 611	Structural Biology II	
CHEM 532	Advanced Chemical Analysis II	
CHEM 563A	Physical Methods in Inorganic Chemistry: Group Theory	
CHEM 571A	Quantum Chemistry: Foundations	
CHEM 571B	Quantum Chemistry: Electronic Structure	
CHEM 773	Atomic and Molecular Spectroscopy	
ECE 503	Ultrafast Optics	
ECE 505	Nanostructures: Fundamentals and Applications	
ECE 506	Optical Interferometry and Laser Metrology	
ECE 507	Plasma Physics and Applications	
ECE 546	Laser Fundamentals and Devices	
MATH 560	Linear Algebra	
PH 451	Introductory Quantum Mechanics I	
PH 452	Introductory Quantum Mechanics II	
PH 521	Introduction to Lasers	
PH 522	Introductory Laser Laboratory	
PH 572	Mathematical Methods for Physics II	
PH 641	Electromagnetism I	
PH 642	Electromagnetism II	
PH 651	Quantum Mechanics I	
PH 652	Quantum Mechanics II	
Program Total Credits:		15

Film Studies Interdisciplinary Minor

Program details are available from the Communications Studies Department.
Contact:
Hye Seung Chung Hye.Chung@colostate.edu
Scott Diffrient Scott.Diffrient@colostate.edu

Film Studies is an interdisciplinary academic discipline that deals with historical, theoretical, and critical approaches to analyzing film. It is concerned with exploring the narrative, artistic, cultural, economic, and political implications of the cinema. The United States' film industry is second worldwide only to India and continues to grow, as does the study of film. A minor in Film Studies will enable students to develop media fluency in film: the ability to analyze, contextualize, and use the medium within the broad context of humanistic studies. This minor will provide students with a solid background in critical thinking and writing, and skills that will serve students well in any career.

Requirements
Effective Spring 2019

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Required Course		
SPCM 350	Evaluating Contemporary Film	3
Selected Courses		
Select a minimum of 18 credits, of which at least 15 must be upper-division (300- to 400-level), from the following list:		18
E 340	Literature and Film Studies	
E 350	The Gothic in Literature and Film	
ETST 320	Ethnicity and Film: Asian-American Experience	
ETST 354	Black Cinema and Media	
ETST 425	Indigenous Film and Video	
ETST 454/ SPCM 454	Chicanx Film and Video	
JTC 456/LB 456	Documentary Film as a Liberal Art	
LCHI 365	Introduction to Chinese Cinema Studies [1]	
LFRE 365	Introduction to French Cinema Studies [1]	
LGEN 465A	Studies in Foreign Film: The Americas	
or LGEN 465B	Studies in Foreign Film: Asia	
or LGEN 465C	Studies in Foreign Film: Europe	
or LGEN 465D	Studies in Foreign Film: Africa	
LGER 365	Introduction to German Cinema Studies [1]	
LITA 365	Studies in Foreign Film-Italian [1]	
LJPN 365	Introduction to Japanese Cinema Studies [1]	
LRUS 365	Introduction to Russian Cinema Studies [1]	
LSPA 365	Introduction to Spanish Cinema [1]	
LSPA 465A	Studies in Foreign Film: Spain [1]	
LSPA 465B	Studies in Foreign Film: Latin America [1]	
SPCM 278C	Communication Skills: Film Festivals	
SPCM 354	History and Appreciation of Film	
SPCM 356	Asians in the U.S. Media	
SPCM 357	Film and Social Change	
SPCM 358	Gender and Genre in Film	
SPCM 455/LB 455	Narrative Fiction Film as a Liberal Art	
Program Total Credits:		21

[1] Course is taught in the respective language.

Food Science/Safety Interdisciplinary Minor

Gifford Building, Room 230
(970) 491-7180
chhs.colostate.edu/fshn (https://www.chhs.colostate.edu/fshn)

Coordinated by a Faculty Advisory Board

Are you interested in the safety and quality of food from "farm to fork"? The Food Science/Safety interdisciplinary studies programs (https://www.chhs.colostate.edu/fshn/programs-and-degrees/food-science-safety-interdisciplinary-minor) provide students with the interdisciplinary background necessary for understanding the roles and responsibilities of growers, producers, processors, retailers, consumers, and others working within the food system to ensure that food is safe and healthful. These programs are a cooperative effort by faculty from several departments and colleges within CSU who share a common interest in food quality and safety, and integrated production and processing. Students enrolling in a program will receive their degree from their home department. Completion of requirements for the interdisciplinary minor will be noted on the transcript.

The programs are available at both the undergraduate and graduate levels. Program details are available from the Office of the Dean in the Colleges of Agricultural Sciences (http://agsci.colostate.edu), Health and Human Sciences (http://www.chhs.colostate.edu), or Veterinary Medicine and Biomedical Sciences (http://csu-cvmbs.colostate.edu/Pages/default.aspx), or from one of the collaborating departments.

The interdisciplinary minor in Food Science/Safety is designed to complement the student's major. It consists of a core of required courses (6 credits), foundation courses in the sciences (6 credits), and a selection of advanced courses (12 credits minimum) taken from at least three of the six collaborating departments: Animal Sciences; Environmental and Radiological Health Sciences; Food Science and Human Nutrition; Horticulture and Landscape Architecture; Microbiology, Immunology, and Pathology; and Soil and Crop Sciences.

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Effective Fall 2019

Code	Title	AUCC	Credits
Required Courses			
Select one from the following:			3
FTEC 400	Food Safety [1]		
MIP 334	Food Microbiology [1]		
Select one from the following:			3
LIFE 205	Microbial Biology		
MIP 300	General Microbiology		
Foundation Courses			
Select a minimum of 6 credits from the following:			6
BC 351	Principles of Biochemistry		
or BC 401	Comprehensive Biochemistry I		
CHEM 245	Fundamentals of Organic Chemistry [2]		
ERHS 320	Environmental Health--Water Quality		
FSHN 150	Survey of Human Nutrition		
FTEC 110	Food-From Farm to Table		
FTEC 447/ANEQ 447	Food Chemistry		
HORT 100	Horticultural Science	3A	
LIFE 206	Microbial Biology Laboratory		
or MIP 302	General Microbiology Laboratory		
MIP 101	Introduction to Human Disease (GT-SC2)	3A	
SOCR 100	General Crops		
SOCR 240	Introductory Soil Science		
Advanced Courses			
Select a minimum of 12 credits, which must include at least three subject codes from the collaborating departments (ANEQ, ERHS, FSHN/FTEC, HORT, MIP, SOCR), from the following:			12
ANEQ 300L	Topics in Animal Sciences: Quality Assurance		
ANEQ 360	Principles of Meat Science		
ANEQ 361	Introduction to Meat Product Evaluation		
ANEQ 460	Meat Safety		
ANEQ 470	Meat Processing Systems		

BTEC 306/BIOM 306	Bioprocess Engineering
ERHS 220	Environmental Health
ERHS 332	Principles of Epidemiology
ERHS 430	Human Disease and the Environment
FSHN 300	Food Principles and Applications
FSHN 350	Human Nutrition
FSHN 496E	Group Study in Dietetics and Nutrition: Food Safety
FTEC 350	Fermentation Microbiology
FTEC 400	Food Safety [1]
FTEC 430	Sensory Evaluation of Fermented Products
FTEC 460	Brewing Science II
HORT 277	Introduction to Enology
HORT 401	Medicinal and Value-Added Uses of Plants
HORT 424/SOCR 424	Topics in Organic Agriculture
HORT 451	Vegetable Crop Management
HORT 453	Principles of Fruit Crop Management
HORT 454	Horticulture Crop Production and Management
HORT 477	Enology-History and Winemaking
MIP 302	General Microbiology Laboratory [3]
MIP 315	Pathology of Human and Animal Disease
MIP 334	Food Microbiology [1]
MIP 335	Food Microbiology Laboratory
SOCR 330	Principles of Genetics
SOCR 430	Applications of Plant Biotechnology
SOCR 460/HORT 460	Plant Breeding
Independent Study/Group Study/Internship [4]	
500-level courses that may be selected as Advanced Courses by high-achieving undergraduates: [5]	
ANEQ 522	Animal Metabolism
ANEQ 565	Interpreting Animal Science Research
ANEQ 567	HACCP Meat Safety
FTEC 570	Food Product Development
FTEC 572	Food Biotechnology
FTEC 574	Current Issues in Food Safety
FTEC 576	Cereal Science
FTEC 578/HORT 578	Phytochemicals and Probiotics for Health
MIP 540	Biosafety in Research Laboratories
VS 570/AGRI 570	Issues in Animal Agriculture
Program Total Credits:	24

1. If both FTEC 400 and MIP 334 are taken, credit for one class may be used for Advanced Courses credit.
2. Or higher level organic chemistry course.
3. Cannot double count as a Foundation course.
4. Maximum of three upper-division (300- or 400-level) credits allowed for Independent Study/Group Study/Internship (must be food related). Select from subject codes ANEQ, ERHS, FSHN, FTEC, HORT, MIP, SOCR.
5. With approval of advisor.

Food Science/Safety Interdisciplinary Studies Program

Food Science/Safety Graduate Interdisciplinary Studies Program (https://www.chhs.colostate.edu/fshn/programs-and-degrees/food-science-safety-interdisciplinary-minor)
Gifford Building, Room 230
(970) 491-7180

Coordinated by a Faculty Advisory Board

Are you interested in the safety and quality of food from "farm to fork"? The Food Science/Safety interdisciplinary studies programs provide students with the interdisciplinary background necessary for understanding the roles and responsibilities of growers, producers, processors, retailers, consumers, and others working within the food system to ensure that food is safe and healthful. These programs are a cooperative effort by faculty from several departments and colleges within CSU who share a common interest in food quality and safety, and integrated production and processing. Students enrolling in a program will receive their degree from their home department. Completion of requirements for the interdisciplinary studies program will be noted on the transcript.

The programs are available at both the undergraduate and graduate levels. Program details are available from the Office of the Dean in the Colleges of Agricultural Sciences, Health and Human Sciences, or Veterinary Medicine and Biomedical Sciences, or from one of the collaborating departments.

The interdisciplinary minor in Food Science/Safety is designed to complement the student's major. It consists of a core of required courses (6 credits), foundation courses in the sciences (6 credits), and a selection of advanced courses (12 credits minimum) taken from at least three of the six collaborating departments: Animal Sciences; Environmental and Radiological Health Sciences; Food Science and Human Nutrition; Horticulture and Landscape Architecture; Microbiology, Immunology, and Pathology; and Soil and Crop Sciences.

The international reputation of the faculty members and their ability to attract strong extramural support for research in the areas of food science and food safety resulted in the creation of the Food Science/Safety graduate interdisciplinary studies program. Focusing on interdisciplinary research and education, this program is a cooperative effort by faculty in seven departments: Animal Sciences; Clinical Sciences; Environmental and Radiological Health Sciences, Food Science and Human Nutrition; Horticulture and Landscape Architecture; Microbiology, Immunology, and Pathology; and Soil and Crop Sciences. Faculty research interests include food microbiology, food safety education, food processing, and integrated production/processing. Students interested in the safety and processing of foods and commodities are encouraged to apply.

Students wishing to pursue the Food Science/Safety Graduate Interdisciplinary Studies Program must declare their intent with the chair of the Faculty Advisory Board. The program is customized to fit the student's interests and long-term objectives. Students are strongly encouraged to interact with faculty from more than one department. Basic training in food science comes from an integrated curriculum featuring core courses in food science, microbiology, nutrition, and commodity production. Opportunities exist for students to rotate through various laboratories. Students also participate in a weekly interdisciplinary group study course that includes papers given by students, participating faculty, and distinguished visiting scientists, and visits to member laboratories. The group study course is designed to enhance interaction and facilitate research opportunities among the food science/safety community, including students, faculty, postdoctoral fellows, and staff. It may be offered by the participating departments on a rotational basis.

Students receive a degree from their home department and an endorsement on their transcript indicating successful completion of the program requirements.

Requirements Effective Fall 2011

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Prerequisite Course		
MIP 334	Food Microbiology	3
Core Courses		
FSHN 696A	Group Study: Food Science	1-2
FTEC 400	Food Safety	3
Thesis or dissertation in home department [1]		6
Supporting Courses		
Select a minimum of 6 credits from the following courses, to include at least two subject codes: [2]		6
AGRI 570/VS 570	Issues in Animal Agriculture	
ANEQ 470	Meat Processing Systems	
ANEQ 567	HACCP Meat Safety	
ANEQ 660	Topics in Meat Safety	
ANEQ 676	Molecular Approaches to Food Safety	
ERHS 532	Epidemiologic Methods	
FTEC 570	Food Product Development	
FTEC 572	Food Biotechnology	
FTEC 574	Current Issues in Food Safety	
FTEC 576	Cereal Science	
FTEC 578	Phytochemicals and Probiotics for Health	
HORT 401	Medicinal and Value-Added Uses of Plants	
HORT 424/ SOCR 424	Topics in Organic Agriculture	
HORT 675	Plant Stress Physiology	
MIP 335	Food Microbiology Laboratory	
MIP 443	Microbial Physiology	
MIP 450	Microbial Genetics	
MIP 540	Biosafety in Research Laboratories	
MIP 550	Microbial and Molecular Genetics Laboratory	
MIP 533/VS 533	Epidemiology of Infectious Diseases/ Zoonoses	
MIP 624	Advanced Topics in Microbial Ecology	
SOCR 755	Advanced Soil Microbiology	
VM 648/VS 648	Food Animal Production and Food Safety	
Program Total Credits:		19-20

A minimum of 19 credits are required to complete this program.

1 Six or more credits, approved by Faculty Advisory Board for the Graduate Interdisciplinary Studies Program in Food Science/Safety.

2 Students may select from additional courses with approval by the Faculty Advisory Board.

Gerontology Interdisciplinary Minor

Office in Behavioral Sciences Building, Room 303
(970) 491-5558

Department of Human Development and Family Studies

The Gerontology Interdisciplinary Minor is a cooperative effort among faculty from different departments and colleges of CSU who share a common interest in gerontology, the study of human aging. The primary purpose of the interdisciplinary minor is to provide students with background academic knowledge and practicum/ internship experience to work effectively with and for older adults in a variety of settings, and to enter professions in which there is a need to combine insight and skills derived from their major with knowledge about older individuals and the aging process.

For further information about the program, please consult with your academic advisor about the Gerontology Interdisciplinary Minor.

Effective Fall 2019

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

A grade of C or better is required in each course that is a core requirement for the interdisciplinary minor.

Code	Title	Credits
Core Requirements		16-18
FSHN 444	Nutrition and Aging	1-3
or FSHN 459	Nutrition in the Life Cycle	
HDFS 201	Perspectives in Gerontology	3
HDFS 312	Adult Development-Middle Age and Aging	3
HES 434	Physical Activity Throughout the Lifespan	3
SOWK 371E	Social Work with Selected Populations: Social Gerontology	3
Select a minimum of 3 credits internship/field placement directly related to aging from the following:		3
AHS 487	Internship in Human Services	
HDFS 488A	Internship: Human Development and Family Studies	
HDFS 488C	Internship: Pre-Health	
HDFS 488D	Internship: Prevention/Intervention Science	
HDFS 488E	Internship: Leadership/Entrepreneurship	
SOWK 488	Field Placement	
Elective Courses		3-5
BMS 300	Principles of Human Physiology	
BZ 433	Behavioral Genetics	
FSHN 450	Medical Nutrition Therapy	
FSHN 451	Community Nutrition	
HDFS 332	Death, Dying, and Grief	
HDFS 402	Couple and Family Studies	
HDFS 403	Families in the Legal Environment	
HDFS 412	Mental and Physical Health in Adulthood	
HES 345	Population Health and Disease Prevention	
LIFE 201A	Introductory Genetics: Applied/Population/ Conservation/Ecological (GT-SC2)	
or LIFE 201B	Introductory Genetics: Molecular/Immunological/ Developmental (GT-SC2)	
MU 241	Introduction to Music Therapy	
OT 355	The Disability Experience in Society	
PHIL 305C	Philosophical Issues in the Professions: Caring Professions	
PHIL 366	Philosophy of Aging	
PSY 296	Group Study	
PSY 320	Abnormal Psychology	
PSY 452	Cognitive Psychology	
PSY 496A	Group Study: Applied Social Psychology	
or PSY 496B	Group Study: Cognitive Psychology	
or PSY 496C	Group Study: Counseling/Clinical Psychology	
or PSY 496D	Group Study: Industrial/Organizational Psychology	
or PSY 496E	Group Study: Perceptual and Brain Sciences	
or PSY 496F	Group Study: Special Topics in Psychology	
SOC 330	Social Inequality	
SOWK 370	Addictions - A Social Work Perspective	
SOWK 371C	Social Work with Selected Populations: Adult Offenders	
SOWK 410	Social Welfare - Policy, Issues, and Advocacy	
Program Total Credits		21-23

Global Environmental Sustainability Interdisciplinary Minor

The School of Global Environmental Sustainability (https://sustainability.colostate.edu) (SoGES) seeks to prepare students to meet today's pressing environmental challenges. Using an interdisciplinary approach within a framework of sustainability, students will be led in innovative research leading to the knowledge and understanding needed to approach and solve problems of the human-environment interaction. SoGES' vision encompasses laying the foundation and defining the principles and practices that will ensure long-term environmental sustainability, while continuing to meet the needs of people around the earth.

Effective Spring 2019

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Required Courses		
GES 101	Foundations of Environmental Sustainability	3
GES 470	Applications of Environmental Sustainability	3
Selected Courses		
Select one course from each Group A, B, and C. At least 3 credits of these courses must be upper-division (300- to 400-level). Courses may not fulfill two categories.		
Group A: Society and Social Processes:		3
AGRI 116/IE 116	Plants and Civilizations (GT-SS3)	
AGRI 330/ PHIL 330	Agricultural and Food System Ethics	
ANTH 200	Cultures and the Global System (GT-SS3)	
ANTH 330	Human Ecology	
ANTH 415	Indigenous Ecologies and the Modern World	
ANTH 453	Impacts on Ancient Environments	
ETST 256	Border Crossings: People/Politics/Culture (GT-SS3)	
GR 100	Introduction to Geography (GT-SS2)	
GR 320	Cultural Geography	
HIST 355	American Environmental History	
HIST 470	World Environmental History, 1500-Present	
HIST 471	History of Antarctica, 1800-Present	
HORT 424/ SOCR 424	Topics in Organic Agriculture	
NR 320	Natural Resources History and Policy	
NR 425	Natural Resource Policy and Sustainability	
PHIL 320	Ethics of Sustainability	
PHIL 345	Environmental Ethics	
POLS 361	U.S. Environmental Politics and Policy	
POLS 362	Global Environmental Politics	
POLS 442	Environmental Politics in Developing World	
PSY 316	Environmental Psychology	
SOC 220	Global Environmental Issues (GT-SS3)	
SOC 320	Population-Natural Resources and Environment	
SOC 322	Introduction to Environmental Justice	
SOC 364	Food, Agriculture and Global Society	
SOC 460	Society and Environment	
SOC 461	Water, Society, and Environment	
SOC 463	Sociology of Disaster	
Group B: Biological and Physical Processes:		3
ANTH 453	Impacts on Ancient Environments	
BSPM 308	Ecology and Management of Weeds	
BZ 348/MATH 348	Theory of Population and Evolutionary Ecology	
BZ 353/NR 353	Global Change Ecology, Impacts and Mitigation	
BZ 471	Stream Biology and Ecology	
ERHS 320	Environmental Health--Water Quality	
ERHS 430	Human Disease and the Environment	
ERHS 448	Environmental Contaminants: Exposure and Fate	
ESS 210/GR 210	Physical Geography	
GEOL 122	The Blue Planet - Geology of Our Environment (GT-SC2)	
GR 100	Introduction to Geography (GT-SS2)	
GR 304/WR 304	Sustainable Watersheds	
GR 410	Climate Change: Science, Policy, Implications	
HORT 171/ SOCR 171	Environmental Issues in Agriculture (GT-SS3)	
LAND 220/ LIFE 220	Fundamentals of Ecology (GT-SC2)	
LAND 364	Design and Nature	
LAND 444	Ecology of Landscapes	
LIFE 320	Ecology	
NR 120A	Environmental Conservation (GT-SC2)	
NR 130	Global Environmental Systems (GT-SC2)	
RS 351	Wildland Ecosystems in a Changing World	
SOCR 341	Microbiology for Sustainable Agriculture	
SOCR 343	Composting Principles and Practices	
SOCR 440	Pedology	
Group C: Economy and Profitability:		3
AREC 202	Agricultural and Resource Economics (GT-SS1)	
AREC 240/ ECON 240	Issues in Environmental Economics (GT-SS1)	
AREC 340/ ECON 340	Introduction-Economics of Natural Resources	
AREC 346/ ECON 346	Economics of Outdoor Recreation	
AREC 415	International Agricultural Trade	
AREC 442	Water Resource Economics	
AREC 460	Ag- and Resource-Based Economic Development	
MGT 360	Social and Sustainable Venturing	
F 322	Economics of the Forest Environment	
NR 425	Natural Resource Policy and Sustainability	
Group D: Skills:		
Select at least one upper-division course (minimum of 3 credits) from category D not taken in another category:		3
AREC 442	Water Resource Economics	
BZ 348/MATH 348	Theory of Population and Evolutionary Ecology	
HORT 344	Organic Greenhouse Production	
HORT 345/ SOCR 345	Diagnosis and Treatment in Organic Fields	
HORT 368/ LAND 368	Landscape Irrigation and Water Conservation	
LAND 364	Design and Nature	
NR 320	Natural Resources History and Policy	
SOC 320	Population-Natural Resources and Environment	
SOC 463	Sociology of Disaster	

SOCR 440	Pedology	
Upper-Division Elective		
Select 3 upper-division credits from categories A-D with a subject code not previously taken:		3
Program Total Credits:		21

Global Studies Interdisciplinary Minor

(970) 491-5421
inst.colostate.edu (http://inst.colostate.edu)

Andrea Duffy, Director

The Global Studies Interdisciplinary Minor is designed to promote awareness, understanding, and appreciation for peoples and cultures around the world. It includes a choice of courses in various disciplines that emphasize international and global history, politics, languages and cultures, economics, and environmental issues. Three required interdisciplinary core courses integrate and expand on these themes. This program provides critical cultural context for students pursuing any major, and it is available to both resident and distance learners. Students enrolled in the International Studies major are not eligible for this minor.

Effective Fall 2018

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Required Courses		
GR 100	Introduction to Geography (GT-SS2)	3
INST 200	Interdisciplinary Approaches to Globalization	3
INST 301	International Studies Research Methods	3
Select a minimum of 12 credits from the three categories listed below, including at least one course from each category. At least 9 credits must be upper-division (300-to 400-level):		12
Program Total Credits:		21

Languages and Cultures

Code	Title	Credits
ANTH 100	Introductory Cultural Anthropology (GT-SS3)	3
ANTH 200	Cultures and the Global System (GT-SS3)	3
ANTH 313	Modernization and Development	3
ANTH 330	Human Ecology	3
ANTH 336	Art and Culture	3
ANTH 338	Gender and Anthropology	3
ANTH 415	Indigenous Ecologies and the Modern World	3
ANTH 416	Gender, Culture, and Health	3
E 238	20th-Century Fiction (GT-AH2)	3
ETST 100	Introduction to Ethnic Studies (GT-SS3)	3
ETST 205	Ethnicity and the Media (GT-SS3)	3
ETST 332	Contemporary Chicanx Issues	3
GR 320	Cultural Geography	3
JTC 316	Multiculturalism and the Media	3
LSPA 300	Reading and Writing for Communication-Spanish	3
LSPA 345	Business Spanish	3

History, Politics and Society

Code	Title	Credits
HIST 100	Western Civilization, Pre-Modern (GT-HI1)	3
HIST 101	Western Civilization, Modern (GT-HI1)	3
HIST 440	Modern South Asia: Colonialism and Nationalism	3
IE 471	Children and Youth in Global Context	3
POLS 232	International Relations (GT-SS1)	3
POLS 241	Comparative Government and Politics (GT-SS1)	3
POLS 345	Russian, Central, and East European Politics	3
POLS 420	History of Political Thought	3
POLS 437	International Security	3
SOC 105	Social Problems (GT-SS3)	3
SOC 332	Comparative Majority-Minority Relations	3
SOC 333	Gender and Society	3

Economy and Environment

Code	Title	Credits
CON 450/INTD 450	Travel Abroad-Sustainable Building	3
ECON 202	Principles of Microeconomics (GT-SS1)	3
ECON 204	Principles of Macroeconomics (GT-SS1)	3
ECON 211	Gender in the Economy (GT-SS1)	3
ECON 240/AREC 240	Issues in Environmental Economics (GT-SS1)	3
ECON 440	Economics of International Trade and Policy	3
ECON 460	Economic Development	3
GES 101	Foundations of Environmental Sustainability	3
SOC 320	Population-Natural Resources and Environment	3
SOC 461	Water, Society, and Environment	3

Information Science and Technology Interdisciplinary Minor

The Information Science and Technology Center (http://istec.colostate.edu)

Dakota Cotner, Coordinator

This Interdisciplinary Minor is sponsored by five departments in different colleges across CSU: Computer Information Systems, Computer Science, Electrical and Computer Engineering, Journalism and Media Communication, and Psychology. The program is designed for students seeking a broad foundation in information technology, but not seeking to major in a specific information technology-related field. The program

requires 21 credits and is open to students majoring in any field other than Computer Science, Computer Information Systems, and Electrical and Computer Engineering.

Effective Fall 2018

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Computer Application Requirement - Before a student is admitted to this program the student must demonstrate mastery of the following skill:

- **Computer applications software - demonstrated by completion of** BUS 150 **or** CS 110**.**

Code	Title	Credits
Required Courses		
Select one of the following courses:		3
JTC 413	New Communication Technologies and Society	
JTC 416	Global Communication Technologies	
Elective Courses		
Select from the following courses: [1]		18
CIS 210	Information Technology in Business	
CIS 240	Application Design and Development	
CIS 340	Advanced Application Design and Development	
CIS 355	Business Database Systems	
CIS 410	Web Application Development	
CO 402	Principles of Digital Rhetoric and Design	
CS 150	Culture and Coding (GT-AH3)	
CS 163	CS1---No Prior Programming Experience	
or CS 164	CS1--Prior Programming Experience	
CT 310	Web Development	
CT 320	Network and System Administration	
JTC 300	Professional and Technical Communication (GT-CO3)	
JTC 335	Digital Photography	
JTC 365	Trends in Digital Communication	
JTC 372	Web Design and Management	
JTC 417	Information Graphics	
Program Total Credits:		21

[1] Nine credits must be from upper-division courses.

Integrated Resource Management Interdisciplinary Minor

Office in University Square, Room 202

The Integrated Resource Management Interdisciplinary Minor offers students from all majors an opportunity for additional specialized course work for training in integrated resource management. The core curriculum consists of courses in the departments of Agricultural and Resource Economics, Animal Sciences, Rangeland Ecology, and Soil and Crop Sciences. The core curriculum is supplemented with several courses focused on integration of the information provided in the disciplinary courses and developing skills in systems analysis. This interdisciplinary program is aimed at providing training for students interested in careers involving the businesses associated with land and animal management.

Effective Spring 2012

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Lower Division		
LAND 220/LIFE 220	Fundamentals of Ecology (GT-SC2)	3
SOCR 240	Introductory Soil Science	3-4
or SOCR 320	Forage and Pasture Management	
Upper-Division		
AGRI 383/NR 383	U.S. Travel-Integrated Resource Management	2
ANEQ 300E	Topics in Animal Sciences: Family Ranching	1
ANEQ 472	Sheep Systems	3
or ANEQ 478	Beef Systems	
AREC 305	Agricultural and Resource Enterprise Analysis	3
AREC 310	Agricultural Marketing	3
AREC 478	Agricultural Policy	3
RS 300	Rangeland Conservation and Stewardship	3
SOC 341	Sociology of Rural Life	3
Program Total Credits:		27-28

International Development Interdisciplinary Minor

Office in Laurel Hall
(970) 491-5917
international-initiatives.colostate.edu/academic_ programs/ (http://international-initiatives.colostate.edu/academic_programs)

Coordinated by the International Development Studies Board and the Office of International Programs

Learn how to think and act as an agent for positive social change.

The International Development Interdisciplinary Minor encourages students to think critically and act responsibly in an interconnected world. The 21-credit program specifically examines the methods and challenges of poverty alleviation and economic development. Coursework is flexible and individualized to meet students' educational needs. The minor emphasizes international and cross-cultural perspectives and offers coursework from multiple disciplines. Students work through diverse ideas of development, poverty, sustainability, and related topics. A required common course critically examines theories and processes of development. The program prepares students for a variety of employment opportunities related to international development, including volunteer work or employment in international and advocacy organizations, or

business, policy and research groups. The minor provides an international perspective that complements any CSU major.

Effective Fall 2019

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Core Courses		
IE 479/ANTH 479	International Development Theory and Practice	3
Select 6 credits from the following:		6
ANTH 200	Cultures and the Global System (GT-SS3)	
ECON 460	Economic Development	
GR 100	Introduction to Geography (GT-SS2)	
IE 270/AGRI 270	World Interdependence-Population and Food (GT-SS3)	
IE 470	Women and Development	
IE 471	Children and Youth in Global Context	
IE 478	Managing International Development Programs	
POLS 232	International Relations (GT-SS1)	
POLS 462	Globalization, Sustainability, and Justice	
Supporting Courses Group A [1]		
Select at least 9 credits from the following courses or from additional upper-division courses approved by the International Development Board and advisor		9
ANTH 310	Peoples and Cultures of Africa	
ANTH 312	Modern Indian Culture and Society	
ANTH 314	Southeast Asian Cultures and Societies	
ANTH 319	Latin American Peasantries	
ANTH 329	Cultural Change	
ANTH 340	Medical Anthropology	
ANTH 413	Indigenous Peoples Today	
ANTH 414/ ETST 414	Development in Indian Country	
ANTH 415	Indigenous Ecologies and the Modern World	
ANTH 441	Method in Cultural Anthropology	
ANTH 449	Community Development from the Ground Up	
AREC 415	International Agricultural Trade	
AREC 460	Ag- and Resource-Based Economic Development	
ECON 332/ POLS 332	International Political Economy	
ECON 370	Comparative Economic Systems	
ECON 440	Economics of International Trade and Policy	
ECON 442	Economics of International Finance and Policy	
FIN 475	International Business Finance	
GR 320	Cultural Geography	
IE 472	Education for Global Peace	
INST 301	International Studies Research Methods	
JTC 412	International Mass Communication	
L*** Foreign languages [2]		
LFRE 433A	Advanced French/Francophone Culture: Representations [3]	
or LFRE 433B	Advanced French/Francophone Culture: Center and Margins	
MGT 475	International Business Management	
MKT 365	International Marketing	
NRRT 320	International Issues-Recreation and Tourism	
PHIL 320	Ethics of Sustainability	
PHIL 345	Environmental Ethics	
POLS 331	Politics and Society Along Mexican Border	
POLS 362	Global Environmental Politics	
POLS 431	International Law	
POLS 433	International Organization	
POLS 442	Environmental Politics in Developing World	
POLS 443	Comparative Social Movements	
POLS 444	Comparative African Politics	
POLS 445	Comparative Asian Politics	
POLS 446	Politics of South America	
POLS 447	Politics in Mexico, Central America, Caribbean	
POLS 449	Middle East Politics	
PSY 327	Psychology of Women	
SOC 320	Population-Natural Resources and Environment	
SOC 341	Sociology of Rural Life	
SOC 364	Food, Agriculture and Global Society	
SOC 366	Peoples and Institutions of Latin America	
SOC 429	Comparative Urban Studies	
SOC 460	Society and Environment	
SOC 461	Water, Society, and Environment	
SOC 474	Social Movements	
SOCR 475	Global Challenges in Plant and Soil Science	
SOWK 450/IE 450	International Social Welfare and Development	
SPCM 434	Intercultural Communication	
Internship		
Supporting Courses Group B [1]		
Select at least 3 credits from the following courses, OR from Core Courses or Supporting Courses Group A not previously taken, OR from additional courses approved by the International Development Board and advisor:		3
IE 116/AGRI 116	Plants and Civilizations (GT-SS3)	
L*** Foreign Languages [4]		
POLS 131	Current World Problems (GT-SS1)	
POLS 241	Comparative Government and Politics (GT-SS1)	
Program Total Credits:		21

1 No more than 6 credits may be taken in any subject code from among all the supporting courses, both Group A and Group B.

2 Select from upper-division (300- to 400-level) language courses.

3 Accepted only when designated "Des Questions de development a travers le cinema africain."

4 Select from any level language courses. A maximum of 6 credits are allowed for foreign language courses.

International Development Interdisciplinary Studies Program

Office in Laurel Hall
(970) 491-5917
international-initiatives.colostate.edu/academic_ programs/ (http://international-initiatives.colostate.edu/academic_programs)

Coordinated by the International Development Studies Board and the Office of International Programs.

The International Development Graduate Interdisciplinary Studies Program focuses on the interconnected process of social, political, economic, cultural and environmental change. Students will learn theories, approaches and practices of international development followed by multi-lateral, bi-lateral, and non-governmental organizations. Students take 12 credits including a common course to learn the history, theories, applications, and impacts of development. Electives challenge students to examine development practices from multiple disciplinary viewpoints and encourage critical thinking. The program prepares students for a variety of employment opportunities related to international development, including volunteer work or employment in international and advocacy organizations, or business, policy and research groups. The program encourages critical thinking and responsible action in an interconnected world. The International Development Graduate Interdisciplinary Studies Program is open to graduate students from all colleges and departments.

Requirements

Additional coursework may be required due to prerequisites.

Effective Fall 2019

Code	Title	Credits
Core Courses		
IE 679/ANTH 679	Applications of International Development	3
Select one course from the following:		3
ANTH 529	Anthropology and Sustainable Development	
AREC 566/ SOC 566	Contemporary Issues in Developing Countries	
AREC 660	Development of Rural Resource-Based Economies	
CIVE 525	Water Engineering: International Development	
IE 470	Women and Development	
IE 471	Children and Youth in Global Context	
IE 478	Managing International Development Programs	
IE 517/PSY 517	Perspectives in Global Health	
IE 550/PHIL 550	Ethics and International Development	
NR 525	World Natural Resources	
POLS 541	Political Economy of Change and Development	
Supporting Courses		
Students will take at least six credits from Supporting Courses or additional courses approved by the International Development Board. Core courses not taken to meet the three-credit core requirement can be used as supportive coursework.		6
ANTH 414/ ETST 414	Development in Indian Country	
ANTH 515	Culture and Environment	
ANTH 505	Resilience, Well-Being, and Social Justice	
ANTH 520	Women, Health, and Culture	
ANTH 532	The Culture of Disaster	
ANTH 535	Globalization and Culture Change	
ANTH 540	Medical Anthropology	
ANTH 571	Anthropology and Global Health	
AREC 415	International Agricultural Trade	
AREC 460	Ag- and Resource-Based Economic Development	
AREC 660	Development of Rural Resource-Based Economies	
AREC 792B	Seminar: International	
BUS 662	International Business	
CIVE 512	Irrigation Systems Design	
CIVE 532	Wells and Pumps	
CIVE 544	Water Resources Planning and Management	
CIVE 575	Sustainable Water and Waste Management	
CIVE 578	Infrastructure and Utility Management	
E 526	Teaching English as a Foreign/Second Language	
E 527	Theories of Foreign/Second Language Learning	
ECON 440	Economics of International Trade and Policy	
ECON 442	Economics of International Finance and Policy	
ECON 460	Economic Development	
ECON 640	International Trade Theory	
ECON 742	International Production and Monetary Theory	
ECON 760	Theories of Economic Development	
FIN 675	International Finance	
FSHN 661	International Nutrition	
FW 573	Travel Abroad-Wildlife Ecology/ Conservation	
IE 471	Children and Youth in Global Context	
JTC 412	International Mass Communication	
L*** Upper-division foreign language		
LFRE 433A	Advanced French/Francophone Culture: Representations [1]	
or LFRE 433B	Advanced French/Francophone Culture: Center and Margins	
MGT 475	International Business Management	

MKT 365	International Marketing
NRRT 550	Ecotourism
POLS 433	International Organization
POLS 444	Comparative African Politics
POLS 445	Comparative Asian Politics
POLS 446	Politics of South America
POLS 447	Politics in Mexico, Central America, Caribbean
POLS 531	International Security Studies
POLS 540	Comparative Politics
POLS 670	Politics of Environment and Sustainability
POLS 739	International Environmental Politics
POLS 749	Comparative Environmental Politics
RS 531	World Grassland Ecogeography
SOC 631	Sociology of Rural Development
SOC 660	Theories of Development and Social Change
SOC 661	Gender and Global Society
SOC 663	Sociology of Sustainable Development
SOC 666	Globalization and Socioeconomic Restructuring
SOC 667	Theories of State, Economy, and Society
SOC 669	Global Inequality and Change
SOCR 475	Global Challenges in Plant and Soil Science
SPCM 634	Communication and Cultural Diversity
WR 510	Watershed Management in Developing Countries
Program Total Credits:	12

A minimum of 12 credits are required to complete this program. A minimum of 9 credits must be at 500-level or above.

1 Accepted only when designated "Des Questions de development a travers le cinema africain."

Italian Studies Interdisciplinary Minor

Office in Andrew G. Clark Building, Room C104
languages.colostate.edu/languages/italian (http://languages.colostate.edu/home/undergraduate-program)

Coordinated by the Department of Languages, Literatures and Cultures

The Italian Studies Interdisciplinary Minor is designed to give students a comprehensive knowledge of different aspects of Italian language, culture, history, and artistic expressions, according to the students' interests. Credits from study abroad programs will be properly evaluated as part of the overall program.

Effective Spring 2015

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

A grade of C or better is required in each course that will count toward the interdisciplinary minor.

Code	Title	Credits
Core Language Courses [1]		
Students must complete LITA 200 and LITA 201 and at least an additional 3 credits, for a minimum total of 9 credits.		
LITA 200	Second-Year Italian I (GT-AH4)	3
LITA 201	Second-Year Italian II (GT-AH4)	3
Choose an additional three credits from the courses below:		3
LITA 101	First-Year Italian II	
LITA 296	Group Study-Italian [2]	
Upper-Division Electives [3]		
Students must select a minimum of four courses from at least three different subject codes for a minimum total of 12 credits from the following:		12
ART 412	History of Renaissance Art	
ART 417	Roman Art	
ART 420	Travel Abroad-Art History in Italy	
E 452	Masterpieces of European Literature	
HIST 301	Roman Republic	
HIST 302	Roman Empire	
HIST 304	Women in Ancient Greece and Rome	
HIST 308	Ancient Christianity to 500 A.D.	
HIST 309	Medieval Christianity, 500-1500	
HIST 310	Medieval Europe	
HIST 312	Women in Medieval Europe	
HIST 317	Renaissance and Reformation Europe	
HIST 320	Women and Gender in Europe, 1450-1789	
HIST 328	Modern Europe, 1815-1914	
HIST 329	Europe in Crisis, 1914-1941	
HIST 333	Contemporary Europe	
HIST 334	European Culture in the 20th Century	
HIST 339	World War II in Europe	
LITA 365	Studies in Foreign Film-Italian	
MU 334	Music History I	
MU 335	Music History II	
Program Total Credits:		21

1 A total of nine credits in Italian language courses may be counted toward the core language requirement. Students must complete Italian language courses or test out through the level of LITA 201 for the interdisciplinary minor. Students testing out or placing at a level higher than LITA 201 should see the minor advisor and department chair to fulfill all 21 credits needed for the minor.

2 Students may select this course with permission of advisor and department chair.

3 Students may petition to include up to 12 credits of upper-division (300- to 400-level) coursework from outside the courses listed here. To count towards the completion of the Interdisciplinary Minor in Italian Studies, 30 percent or more of the class content should focus on Italy. Students must submit a syllabus to the Department of Languages, Literatures and Cultures for each proposed class. If students have already completed the course, they must include a brief description of individual work completed in addition to the syllabus.

Latin American and Caribbean Studies Interdisciplinary Minor

For more information, contact the Political Science Department:
Marcela Velasco
Clark, Room C336
(970) 491-5942

The Latin American and Caribbean Studies Interdisciplinary Minor seeks to broaden understanding of the languages, cultures, institutions, political and economic systems, and the processes of change in Latin America. The program offers courses in a wide variety of disciplines, enabling students to gain a broader and deeper appreciation of the diverse regions of Latin America and the Caribbean. This background prepares students for specialized graduate study focusing on the region and for careers in a variety of areas.

Effective Fall 2015

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Language Courses [1]		
L*** French or Spanish language		6-10
Area Courses [2,3]		
Select 15-20 credits from the following:		15-20
ANTH 319	Latin American Peasantries	
ANTH 446	New Orleans and the Caribbean	
ANTH 451	Andean Archaeology and Ethnohistory	
ART 312	Pre-Columbian Art of Mesoamerica	
ETST 370	Caribbean Identities	
ETST 371	The Modern Caribbean	
HIST 353	U.S.-Mexico Borderlands	
HIST 410	Colonial Latin America	
HIST 411	Latin America Since Independence	
HIST 412	Mexico	
HIST 414	Revolutions in Latin America	
HIST 460	Slavery in the Americas	
JTC 412	International Mass Communication	
LGEN 465A	Studies in Foreign Film: The Americas	
LSPA 335	Issues in Hispanic Culture	
LSPA 435	Caribbean Culture in Hispanic Literature	
LSPA 436	Advanced Latin American Culture	
LSPA 445	Women Writers in the Hispanic World	
LSPA 449	Spanish-American Literary Movements and Periods	
LSPA 452	Genre Studies in Spanish	
LSPA 453	Author Studies in Spanish [4]	
LSPA 465B	Studies in Foreign Film: Latin America	
LSPA 492	Seminar-Spanish Language, Literature, and Society	
POLS 331	Politics and Society Along Mexican Border	
POLS 446	Politics of South America	
POLS 447	Politics in Mexico, Central America, Caribbean	
SOC 366	Peoples and Institutions of Latin America	
SA 482	Study Abroad	
Program Total Credits:		21

1. At least two courses (6-10 credits) are required in Spanish or French. Because language proficiency is required for effective research or work in this region, students are STRONGLY URGED to complete language coursework through the 300-level or above. Language courses may be taken at CSU or transferred from an accredited institution. Independent study courses may not count toward the language requirement.
2. Senior capstone courses having a focus on Latin America or the Caribbean may be used to fulfill program requirements with approval of advisor.
3. For high-achieving students, LSPA 549 may be used as area course with approval of advisor.
4. This course may be used only when a Latin American or Caribbean author is the focus.

Leadership Studies Interdisciplinary Minor

SLiCE Office/President's Leadership Program
(970) 491-1682
plp.colostate.edu (http://plp.colostate.edu)

Coordinated by the President's Leadership Program and Student Leadership, Involvement, and Community Engagement

The Leadership Studies Interdisciplinary Minor prepares students to serve more effectively in formal and informal leadership roles in campus, local, national, and global contexts. The program offers courses to prepare students to advance in diverse and innovative studies of leadership by building on existing theoretical, empirical, and experiential knowledge. The program provides a structure for students to explore pressing social issues and challenge them to become part of the solution as civically-minded leaders within their communities and professions. As a result, both experiences in, and commitments to, civic engagement, and multicultural competence are required. The interdisciplinary minor refines and expands studies done in the President's Leadership Program to create a shared understanding of leadership which then expands to academic disciplines through upper-division capstone coursework and integration with the student's discipline.

Effective Fall 2013

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

The Leadership Studies Interdisciplinary Minor requires admission to the President's Leadership Program.

Code	Title	Credits
Lower Division		
IU 170	A Call to Lead I: Theories and Skills	2
IU 171	A Call to Lead II: Social Change Model	2

IU 270	Leadership Styles I: Personal Application	2
IU 271	Leadership Styles II: Prominent Leaders	2
Upper Division		
IU 470	Effective Leadership I: Success as a Leader	3
IU 471	Effective Leadership II: Vision and Change	3
Select a minimum of 4 credits from the following: [1]		4
IU 486	Practicum for Interdisciplinary Leadership	
IU 487	Internship for Interdisciplinary Leadership	
IU 498	Research for Interdisciplinary Leadership	
AUCC category 4C Requirement [2]		3
Program Total Credits:		21

1 Students may substitute courses from their major department that meets the course objectives (e.g., XXX 486, XXX 487, or XXX 498) with PLP advisor's approval. Students may take up to two consecutive semesters to complete the credits.

2 Students must complete a minimum of 3 credits of AUCC category 4C in order to achieve the 21 credit requirement of the interdisciplinary minor. If the major does not have a 4C course that is 3 credits (either as a stand-alone 4C course or as a 4C course in combination with a 4A and/or 4B course), students should take a 4A or 4B course in their major with PLP advisor approval.

Legal Studies Interdisciplinary Minor

College of Liberal Arts Dean's Office, Clark Building, Room C138
(970) 491-5421

The Legal Studies Interdisciplinary Minor provides a broad-based academic foundation for students interested in legal or law-related fields. This minor is intended for students who plan to attend law school, as well as to those who are interested in a wide range of careers in which some grounding in legal studies is helpful, such as media, business, human resources, communications, government service, and others.

Code	Title	Credits
Core Courses		
LB 205	Contemporary Legal Studies	3
Select one from the following courses:		3
ECON 212	Racial Inequality and Discrimination (GT-SS1)	
ETST 332	Contemporary Chicanx Issues	
ETST 404	Race Formation in the United States	
ETST 405	Ethnicity, Class, and Gender in the U.S.	
SOC 205	Contemporary Race-Ethnic Relations (GT-SS3)	
SOC 333	Gender and Society	
Select one from the following courses:		3
PHIL 110	Logic and Critical Thinking (GT-AH3)	
PHIL 210	Introduction to Formal Logic	
SPCM 200	Public Speaking	
Selected Courses		
Select a minimum of 12 credits from at least two of the following categories:		12
Constitution:		
JTC 415	Communications Law	
POLS 410	American Constitutional Law	
POLS 413	U.S. Civil Rights and Liberties	
SPCM 349	Freedom of Speech	
Economics/Business:		
BUS 205	Legal and Ethical Issues in Business	
ECON 327	Law and Economics	
MGT 350	Employment Relations: The Legal Environment	
REL 367	Real Estate Law	
Environment/Natural Resources:		
AGRI 330/ PHIL 330	Agricultural and Food System Ethics	
or PHIL 345	Environmental Ethics	
AREC 342	Water Law, Policy, and Institutions	
AREC 375	Agricultural Law	
Social/Political/International:		
ANTH 422/ SOC 422	Comparative Legal Systems	
ETST 324	Asian-Pacific Americans and the Law	
ETST 444/ SOC 444	Federal Indian Law and Policy	
HDFS 403	Families in the Legal Environment	
PHIL 312	Philosophy of Law	
POLS 431	International Law	
SOC 455	Sociology of Law	
Program Total Credits:		21

Linguistics and Culture Interdisciplinary Minor

English Department Office in 359 Willard O. Eddy Hall

english.colostate.edu/undergraduate/english-related-minors/ (https://english.colostate.edu/academics/undergraduate/minors)
Gerald.Delahunty@colostate.edu (Gerald.Delahunty@ColoState.EDU)
Sheila.Dargon@colostate.edu

The Linguistics and Culture Interdisciplinary Minor is designed for students with a particular interest in language and its cultural interfaces. Its core is a pair of linguistics and anthropological linguistics courses, which are supported by courses in specific languages, and supplemented by elective courses in English; Anthropology; Languages, Literatures, and Cultures; Philosophy; and Communication Studies. Courses address current and historical descriptive, theoretical, and pedagogical issues in linguistics, cultural anthropology, philosophy of language, non-verbal communication, and the relation between communication, language and thought, providing students with a well-rounded program of study. The program is open to all students and designed to be an addition to the student's major. CSU has linguistic and cultural expertise and this program provides undergraduate students with an opportunity to broaden their education as they prepare themselves for graduate study or careers requiring an analytic understanding of the nature of language and its relations with thought and culture.

Effective Fall 2012

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Core Courses		
ANTH 335	Language and Culture	3
E 320	Introduction to the Study of Language	3
Select two courses from one of the following Language Course Groups:		6-10
Arabic:		
LARA 100	First-Year Arabic I	
LARA 101	First-Year Arabic II	
LARA 200	Second-Year Arabic I (GT-AH4)	
LARA 201	Second-Year Arabic II (GT-AH4)	
Chinese:		
LCHI 100	First-Year Chinese I	
LCHI 101	First-Year Chinese II	
LCHI 200	Second-Year Chinese I (GT-AH4)	
LCHI 201	Second-Year Chinese II (GT-AH4)	
French:		
LFRE 100	First-Year French I	
LFRE 106	First-Year French Review	
LFRE 101	First-Year French II	
LFRE 108	Intensive French I	
LFRE 200	Second-Year French I (GT-AH4)	
LFRE 201	Second-Year French II (GT-AH4)	
LFRE 208	Intensive French II	
German:		
LGER 100	First-Year German I	
LGER 101	First-Year German II	
LGER 108	Intensive German I	
LGER 200	Second-Year German I (GT-AH4)	
LGER 201	Second-Year German II (GT-AH4)	
LGER 208	Intensive German II	
Italian:		
LITA 100	First-Year Italian I	
LITA 101	First-Year Italian II	
LITA 200	Second-Year Italian I (GT-AH4)	
LITA 201	Second-Year Italian II (GT-AH4)	
Japanese:		
LJPN 100	First-Year Japanese I	
LJPN 101	First-Year Japanese II	
LJPN 200	Second-Year Japanese I (GT-AH4)	
LJPN 201	Second-Year Japanese II (GT-AH4)	
Korean:		
LKOR 105	First-Year Korean I	
LKOR 107	First-Year Korean II	
Latin:		
LLAT 100	First Year Latin I	
LLAT 101	First-Year Latin II	
Russian:		
LRUS 100	First-Year Russian I	
LRUS 101	First-Year Russian II	
LRUS 200	Second-Year Russian I (GT-AH4)	
LRUS 201	Second-Year Russian II (GT-AH4)	
American Sign Language:		
LSGN 100	American Sign Language I	
LSGN 101	American Sign Language II	
Spanish:		
LSPA 100	First-Year Spanish I	
LSPA 106	First-Year Spanish Review	
LSPA 101	First-Year Spanish II	
LSPA 108	Intensive Spanish I	
LSPA 200	Second-Year Spanish I (GT-AH4)	
LSPA 201	Second-Year Spanish II (GT-AH4)	
LSPA 208	Intensive Spanish II	
Supporting Courses		
Select 3 courses from the following:		9
ANTH 100	Introductory Cultural Anthropology (GT-SS3)	
E 324	Teaching English as a Second Language	
E 326	Development of the English Language	
E 327	Syntax and Semantics	
E 328	Phonology, Morphology, and Lexis	
E 329	Pragmatics and Discourse Analysis	
LFRE 312	Introduction to French Linguistics	
LFRE 326	French Phonetics	
LGER 326	German Phonetics	
LSPA 312	Introduction to Spanish Linguistics	
LSPA 326	Spanish Phonetics	
PHIL 210	Introduction to Formal Logic	
PHIL 315	Philosophy of Language	
SPCM 331	Nonverbal Communication	
SPCM 431	Communication, Language, and Thought	
Program Total Credits:		21-25

Graduate Degree Program in Ecology

Graduate Degree Program in Ecology
Alan Knapp, Interim Director
Johnson Hall 104
Phone: 970-491-4373
Email: Ecology@colostate.edu
ecology.colostate.edu (http://www.ecology.colostate.edu)

The Graduate Degree Program in Ecology (GDPE) offers outstanding opportunities for graduate studies in basic and applied aspects of ecology. Any graduate student enrolled in a master's or doctoral degree program with a major advisor who is a member of the GDPE faculty may participate in this university-wide, interdisciplinary Ecology program, which offers M.S. and Ph.D. degrees in Ecology. The program is a cooperative effort among over 155 faculty members from 17 departments and 6 colleges of the University who share a common interest in ecology.

The primary goal of the program is to provide basic training in current ecological methods, theories, concepts, controversies, and applications by drawing together individuals and synthesizing knowledge from a wider variety of traditional disciplinary areas of science.

Through the cooperation of the many academic departments and government agencies, the program offers a wide array of facilities, field research sites, equipment, and support services. Because of its location, one of the University's greatest resources is its accessibility to a wide variety of field study sites. Nearby major habitats include: shortgrass steppe and mixed grass prairies; sagebrush steppe; montane and subalpine meadows, forests; southwestern deserts; alpine peaks; river and lake systems; and numerous agroecosystems.

Graduate

Master's Programs

- Master of Science in Ecology, Plan A and Plan B
- Master of Science in Ecology, Ecological Risk Assessment and Management Specialization (No new students are being accepted into this specialization.)
- Master of Science in Ecology, Human-Environment Interactions Specialization (No new students are being accepted into this specialization.)

Ph.D.

- Ph.D in Ecology
- Ph.D in Ecology, Ecological Risk Assessment and Management Specialization (No new students are being accepted into this specialization.)
- Ph.D in Ecology, Human-Environment Interactions Specialization

Courses

ECOL 505 Foundations of Ecology Credits: 3 (2-0-1)
Course Description: Overview of the science of ecology; what questions are asked, how they are answered.
Prerequisite: LAND 220 or LIFE 320 or NR 220 or LIFE 220.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECOL 571 Advanced Topics in Ecology Credits: Var[1-3] (0-0-0)
Course Description: Current research topics presented and analyzed by visiting scientists.
Prerequisite: None.
Registration Information: One course in ecological principles.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECOL 592 Interdisciplinary Seminar in Ecology Credits: Var[1-3] (0-0-0)
Course Description: Concepts and principles of basic and applied ecology in an interdisciplinary context.
Prerequisite: None.
Registration Information: One 300- or 400-level course in ecology.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECOL 600 Community Ecology Credits: 3 (2-0-1)
Course Description: Current theories and tests of the dynamics and regulation of plant and animal communities.
Prerequisite: (STAT 100 to 499 - at least 1 course) and (MATH 141 or MATH 155 to 161 - at least 1 course or MATH 255 to 261 - at least 1 course) and (LAND 220 or LIFE 320 or NR 220 or LIFE 220).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECOL 610 Ecosystem Ecology Credits: 3 (3-0-0)
Course Description: Concepts, methods, issues in ecosystem science: energy and matter cycling; systems perspectives, simulation modeling, sustainability, global change.
Prerequisite: LIFE 320 or ECOL 000 to 9999 - at least 1 course.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECOL 620 Applications in Landscape Ecology Credits: 4 (2-2-1)
Course Description: Spatial patterning of landscape elements and dynamics of ecological systems; spatial heterogeneity. Influence on biotic and abiotic processes.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, laboratory, and recitation. Previous coursework in geographic information systems, ecology, statistics, and mathematics.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECOL 693 Research Seminar Credit: 1 (0-0-1)
Course Description: Critique of research programs, plans, and ecological theory.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ECOL 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECOL 698 Research Credits: Var[1-18] (0-0-0)
Course Description: Non-thesis research in ecology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECOL 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECOL 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Master of Science in Ecology

Graduate Degree Program in Ecology
Alan Knapp, Interim Director
Johnson Hall 104
Phone: 970-491-4373
Email: Ecology@colostate.edu
ecology.colostate.edu (http://www.ecology.colostate.edu)

The Graduate Degree Program in Ecology (GDPE) offers outstanding opportunities for graduate studies in basic and applied aspects of ecology. Any graduate student enrolled in a master's or doctoral degree program with a major advisor who is a member of the GDPE faculty may participate in this university-wide, interdisciplinary Ecology program, which offers M.S. and Ph.D. degrees in Ecology. The program is a cooperative effort among over 155 faculty members from 17 departments and 6 colleges of the University who share a common interest in ecology.

The primary goal of the program is to provide basic training in current ecological methods, theories, concepts, controversies, and applications by drawing together individuals and synthesizing knowledge from a wider variety of traditional disciplinary areas of science.

Through the cooperation of the many academic departments and government agencies, the program offers a wide array of facilities, field research sites, equipment, and support services. Because of its location, one of the University's greatest resources is its accessibility to a wide variety of field study sites. Nearby major habitats include: shortgrass steppe and mixed grass prairies; sagebrush steppe; montane and subalpine meadows, forests; southwestern deserts; alpine peaks; river and lake systems; and numerous agroecosystems.

Plan A
Effective Fall 2019

Code	Title	AUCC	Credits
REQUIRED COURSES			
ECOL 505	Foundations of Ecology		3
ECOL 571	Advanced Topics in Ecology		1
ECOL 592	Interdisciplinary Seminar in Ecology		1
ECOL 693	Research Seminar		1
ECOLOGY FUNDAMENTALS			
Select 6 credits not taken elsewhere in the program from the following:			6
BZ 525	Advanced Conservation & Evolutionary Genomics		
BZ 535	Behavioral Ecology		
BZ 548	Theory of Population and Evolutionary Ecology		
BZ 578/MIP 578	Genetics of Natural Populations		
ECOL 600	Community Ecology		
ECOL 610	Ecosystem Ecology		
ECOL 620	Applications in Landscape Ecology		
ESS 575	Models for Ecological Data		
ESS 660	Biogeochemical Cycling in Ecosystems		
FW 662	Wildlife Population Dynamics		
HORT 576	Advanced Environmental Plant Stress Physiology		
ECOLOGY TOOLS			
Select 3 credits not taken elsewhere in the program from the following:			3
AREC 535/ECON 535	Applied Econometrics		
AREC 635/ECON 635	Econometric Theory I		
AREC 735/ECON 735	Econometric Theory II		
BZ 577/MIP 577	Computer Analysis in Population Genetics		

CIVE 524/WR 524	Modeling Watershed Hydrology
ERHS 544/STAT 544	Biostatistical Methods for Quantitative Data
ESS 565	Niche Models
ESS 575	Models for Ecological Data
FW 551	Design of Fish and Wildlife Studies
FW 552	Applied Sampling for Wildlife/Fish Studies
FW 663	Sampling & Analysis Vertebrate Populations
FW 673/STAT 673	Hierarchical Modeling in Ecology
GR 503/NR 503	Remote Sensing and Image Analysis
MATH 530	Mathematics for Scientists and Engineers
MATH 540	Dynamical Systems
NR 505	Concepts in GIS
NR 506	GIS Methods for Resource Management
NR 512	Spatial Statistical Modeling-Natural Resources
NR 523/STAT 523	Quantitative Spatial Analysis
NR 554/ANTH 554	Ecological and Social Agent-based Modeling
NRRT 765	Applied Multivariate Analysis
SOCR 522	Micrometeorology
SOCR 620	Modeling Ecosystem Biogeochemistry
SOCR 670	Terrestrial Ecosystems Isotope Ecology
STAT 511A	Design and Data Analysis for Researchers I: R Software
STAT 511B	Design and Data Analysis for Researchers I: SAS Software
STAT 512	Design and Data Analysis for Researchers II
STAT 520	Introduction to Probability Theory
STAT 521	Stochastic Processes I
STAT 530	Mathematical Statistics
STAT 540	Data Analysis and Regression
STAT 560	Applied Multivariate Analysis
STAT 675A	Topics in Statistical Methods: Sampling
WR 674	Data Issues in Hydrology
ADDITIONAL ELECTIVES, INDEPENDENT STUDY, RESEARCH, AND THESIS	15
Program Total Credits:	30

A minimum of 30 credits are required to complete this program.

Plan B
Effective Fall 2019

Code	Title	Credits
REQUIRED COURSES		
ECOL 505	Foundations of Ecology	3
ECOL 571	Advanced Topics in Ecology	1
ECOL 592	Interdisciplinary Seminar in Ecology	1
ECOL 693	Research Seminar	1
ECOLOGY FUNDAMENTALS		
Select 6 credits not taken elsewhere in the program from the following:		6
BZ 525	Advanced Conservation & Evolutionary Genomics	
BZ 535	Behavioral Ecology	

BZ 548	Theory of Population and Evolutionary Ecology
BZ 578/MIP 578	Genetics of Natural Populations
ECOL 600	Community Ecology
ECOL 610	Ecosystem Ecology
ECOL 620	Applications in Landscape Ecology
ESS 575	Models for Ecological Data
ESS 660	Biogeochemical Cycling in Ecosystems
FW 662	Wildlife Population Dynamics
HORT 576	Advanced Environmental Plant Stress Physiology
ECOLOGY TOOLS	
Select 3 credits not taken elsewhere in the program from the following:	3
AREC 535/ ECON 535	Applied Econometrics
AREC 635/ ECON 635	Econometric Theory I
AREC 735/ ECON 735	Econometric Theory II
BZ 577/MIP 577	Computer Analysis in Population Genetics
CIVE 524/WR 524	Modeling Watershed Hydrology
ESS 565	Niche Models
ESS 575	Models for Ecological Data
FW 551	Design of Fish and Wildlife Studies
FW 552	Applied Sampling for Wildlife/Fish Studies
FW 663	Sampling & Analysis Vertebrate Populations
FW 673/STAT 673	Hierarchical Modeling in Ecology
GR 503/NR 503	Remote Sensing and Image Analysis
MATH 530	Mathematics for Scientists and Engineers
MATH 540	Dynamical Systems
NR 505	Concepts in GIS
NR 506	GIS Methods for Resource Management
NR 512	Spatial Statistical Modeling-Natural Resources
NR 523/STAT 523	Quantitative Spatial Analysis
NR 554/ANTH 554	Ecological and Social Agent-based Modeling
NRRT 765	Applied Multivariate Analysis
SOCR 522	Micrometeorology
SOCR 620	Modeling Ecosystem Biogeochemistry
SOCR 670	Terrestrial Ecosystems Isotope Ecology
STAT 511A	Design and Data Analysis for Researchers I: R Software
STAT 511B	Design and Data Analysis for Researchers I: SAS Software
STAT 512	Design and Data Analysis for Researchers II
STAT 520	Introduction to Probability Theory
STAT 521	Stochastic Processes I
STAT 530	Mathematical Statistics
STAT 540	Data Analysis and Regression
STAT 544	Biostatistical Methods for Quantitative Data
STAT 560	Applied Multivariate Analysis
STAT 675A	Topics in Statistical Methods: Sampling
WR 674	Data Issues in Hydrology
ADDITIONAL ELECTIVES, AND INDEPENDENT STUDY	15
Program Total Credits:	30

A minimum of 30 credits are required to complete this program.

Mathematics Graduate Interdisciplinary Studies Program

Office in Weber Building, Room 101
m (https://mathematics.colostate.edu)athematics.colostate.edu (https://mathematics.colostate.edu)

Coordinated by the Department of Mathematics

The graduate-level interdisciplinary studies program in Mathematics at CSU is designed for students who seek to enrich their graduate degree by completing an additional program of study in mathematics. The program presumes a background in mathematics that includes sufficient prerequisite material to enter the courses in the program. To be admitted to the program, students must be pursuing a graduate degree in another discipline at CSU.

To be considered for admission to the program, contact the graduate coordinator in the department. Each individual program of study must be submitted to and approved by the Mathematics Graduate Committee.

Effective Fall 2005

Students must complete 12 or more credits of non-reserved number Mathematics courses with at least 9 credits at 500-level and above (excluding MATH 505). Up to 3 credits of 400-level Mathematics courses (excluding MATH 425, MATH 470) may be included. Each program of study must be arranged in consultation with the Mathematics Graduate Committee. A GPA of 3.000 or above in all mathematics courses is required to satisfy the program requirements.

Molecular Biology Interdisciplinary Minor

Molecular and Radiological Biosciences Building, Room 111
(970) 491-5602
bmb.colostate.edu/undergraduates (http://www.bmb.colostate.edu/undergraduates)

Coordinated by a Faculty Advisory Board

Erwin Chargaff referred to molecular biology as “the practice of biochemistry without a license” due to the fact that most early molecular biologists were trained as chemists or physicists. This also serves to emphasize that molecular biology is an interdisciplinary field, primarily the study of macromolecular structure and of the replication and expression of the information in our hereditary material (DNA). Jacques Monod defined molecular biology as “the recognition that the essential properties of living beings could be interpreted in terms of the structures of their macromolecules.”

Molecular biology is becoming increasingly recognized as a significant area of study, particularly for students interested in the rapidly emerging field of biotechnology. The course requirements for this program complement extant life science degree programs on campus. The Molecular Biology Interdisciplinary Minor—noted on the transcript—will provide recognition that the student has completed a body of course work that provides both breadth and depth in this area. This program provides students with a strong, well-balanced background in the biological, physical, and mathematical sciences. It is ideally suited for undergraduates who wish to pursue advanced degrees in biochemistry, microbiology, molecular biology, or related life sciences; for pre-professional students in health-related fields; and for students interested in employment in the biotechnology industry. The program includes study of macromolecular structure and function; cellular biochemistry; metabolism; gene expression, DNA structure, replication, and repair; cell organization, communication, growth, aging, and death. Courses in physics, organic chemistry, statistical measurements, and research methods are required. Independent study, internships, or advanced research-oriented laboratory classes are taken during the junior and senior years to provide opportunities for experiential learning and working closely with an interdisciplinary group of faculty.

Students interested in participating in this program should contact the Department of Biochemistry and Molecular Biology (http://www.bmb.colostate.edu) (in the Molecular and Radiological Biosciences Building, Room 111, (970) 491-5602).

Effective Spring 2013

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Mathematics Core		
MATH 155	Calculus for Biological Scientists I (GT-MA1)	4
or MATH 160	Calculus for Physical Scientists I (GT-MA1)	
STAT 301	Introduction to Statistical Methods	3
or STAT 307	Introduction to Biostatistics	
Physics Core		
Select one group from the following:		10
Group A:		
PH 121 & PH 122	General Physics I (GT-SC1) and General Physics II (GT-SC1)	
Group B:		
PH 141 & PH 142	Physics for Scientists and Engineers I (GT-SC1) and Physics for Scientists and Engineers II (GT-SC1)	
Chemistry Core		
CHEM 111	General Chemistry I (GT-SC2)	4
CHEM 112	General Chemistry Lab I (GT-SC1)	1
CHEM 113	General Chemistry II	3
CHEM 114	General Chemistry Lab II	1
CHEM 345	Organic Chemistry I	4
CHEM 346	Organic Chemistry II	4
Biology Core		
Select one group from the following:		4-5
Group A:		
BZ 310	Cell Biology	
Group B:		
LIFE 210 & LIFE 212	Introductory Eukaryotic Cell Biology and Introductory Cell Biology Laboratory	
LIFE 102	Attributes of Living Systems (GT-SC1)	4
Biochemistry Core		
BC 401	Comprehensive Biochemistry I	3
BC 403	Comprehensive Biochemistry II	3
BC 404	Comprehensive Biochemistry Laboratory	2
Microbiology Core		
MIP 300	General Microbiology	3
MIP 342	Immunology	4
Molecular Genetics Core		
BC 463	Molecular Genetics	3
or MIP 450	Microbial Genetics	
Select one group from the following:		4-6
Group A:		
BZ 350	Molecular and General Genetics	
Group B:		
LIFE 201B & LIFE 203	Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2) and Introductory Genetics Laboratory	
Group C:		
SOCR 330 & SOCR 331	Principles of Genetics and Genetics Laboratory	
Seminar		
BC 493	Senior Seminar	1
Selected Courses		
Select one course from the following:		3-4
BC 465	Molecular Regulation of Cell Function	
BZ 346	Population and Evolutionary Genetics	
BZ 433	Behavioral Genetics	
MIP 420	Medical and Molecular Virology	
MIP 443	Microbial Physiology	
Advanced Laboratory		
Select four credits from the following:		4
BC 475	Mentored Research	
BC 495	Independent Study	
BC 499A	Thesis: Laboratory Research-Based	
BC 499B	Thesis: Literature Based	
BC 499C	Thesis: Literature-based in Health and Med Sci	
BC 499D	Thesis: Literature-based in Pre-Pharmacy	
BZ 495	Independent Study	
MIP 302	General Microbiology Laboratory	
MIP 343	Immunology Laboratory	
MIP 425	Virology and Cell Culture Laboratory	
MIP 495	Independent Study	
Program Total Credits:		72-75

Molecular, Cellular and Integrative Neurosciences Graduate Interdisciplinary Studies Program

Molecular, Cellular and Integrative Neurosciences Special Academic Unit

Office in Physiology Building, Room 109
Carol A. Seger, Director

The Molecular, Cellular and Integrative Neurosciences (MCIN) program is a 1 year graduate Ph.D. student admission and rotation program. During their year in the program, students take a set of core courses and complete three laboratory rotations. At the end of the program they select a faculty mentor and transfer into a participating degree granting department to complete their Ph.D.requirements. The degree-granting departments are Biochemistry and Molecular Biology; Biology; Biomedical Sciences; Chemical and Biological Engineering; Computer Science; Environmental and Radiological Health Sciences; Health and Exercise Science; Human Development and Family Studies; Microbiology, Immunology and Pathology; Occupational Therapy; and Psychology. The program has been named as one of CSU's Programs of Research and Scholarly Excellence.

More information about the program and the MCIN faculty rotation may be found on the Molecular, Cellular and Integrative Neurosciences (MCIN) (http://mcin.colostate.edu) webpage.

Requirements

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Effective Spring 2003

Code	Title	Credits
NB 500	Readings in Cellular Neurobiology	1
NB 501	Cellular and Molecular Neurophysiology	2
NB 502/CM 502	Techniques in Molecular & Cellular Biology	2
NB 503/BMS 503	Developmental Neurobiology	3
NB 505/BMS 505	Neuronal Circuits, Systems and Behavior	3
NB 586	Practicum-Techniques in Neuroscience II	1
NB 793	Neuroscience Seminar [1]	2
NB 795	Independent Study	Var
Select one from the following: [1]		2
NB 796A	Group Study: Ion Channels	
NB 796B	Group Study: Neuronal Growth and Regeneration	
NB 796C	Group Study: Topics in Neuroscience	
NB 796D	Group Study: Seizures and Epilepsy	
NB 796E	Group Study: Neuroendocrine Mechanisms	
Program Total Credits:		16

[1] Two semesters.

Music, Stage, and Sports Production Interdisciplinary Minor

Office in Clark Building, Room C244
(970) 491-6310

journalism.colostate.edu (http://journalism.colostate.edu)

Professor Steve Weiss, Coordinator

The Music, Stage, and Sports Production Interdisciplinary Minor serves students who seek a broad foundation in creating television and audio recordings of events. Students learn theory and get hands-on experience in all aspects of the production process, both in studio and on location. This includes operating television cameras and audio equipment; designing appropriate lighting and audio environments; directing live recordings; and finishing projects through the editing of audio and video. Students can select courses from six departments in the College of Liberal Arts: Dance, Communication Studies, Journalism and Media Communication, Music, and Theatre. The wide range of courses available allows students to focus on specific aspects of the production process or explore the entire spectrum of live and recorded performances. Upon completion of the minor, students will have an electronic production portfolio, which is considered a key requirement for getting a job and succeeding in this growing entertainment arena.

Effective Fall 2018

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Students must complete 24 credits, with a minimum of 3 credits in each of at least four subject codes, with no more than 9 credits from any one subject code.

Code	Title	Credits
Required Course		
LB 386E	Practicum: Arts Production	3
Group I - 3 credits		
Select one course from the following:		3
D 110	Understanding Dance (GT-AH1)	
JTC 100	Media in Society (GT-SS3)	
MU 100	Music Appreciation (GT-AH1)	
MU 111	Music Theory Fundamentals (GT-AH1)	
MU 333	History of Rock and Roll	
Group II - 15 credits		
Select 15 credits from the following:		15
D 120A	Dance Techniques I: Modern	
or D 120B	Dance Techniques I: Ballet	
or D 120C	Dance Techniques I: Jazz	
JTC 340	Digital Video Editing	
JTC 345	Electronic Field Production	
JTC 347	Audio Production and Editing	
JTC 370	Web Programming for Media Producers	
JTC 374	Social Media Management	
JTC 433	Advanced Video Editing	
JTC 440	Advanced Electronic Media Production	
JTC 454A	Study Abroad: International Media Studies—Europe	
JTC 454B	Study Abroad: International Media Studies—Australia and NZ	
LEAP 200	Advocacy in the Visual and Performing Arts	

LEAP 220	Technology and the Arts in the 21st Century
LEAP 300	Arts Outreach and Community Engagement
LEAP 310	Creative Industries Career Management
SPCM 341	Evaluating Contemporary Television
TH 250	Voice and Movement for the Stage
TH 264	Lighting Design for the Theatre I [1]
TH 266	Digital Media Design for Live Performance I
TH 364	Lighting Design for the Theatre II
TH 366	Digital Media Design for Live Performance II

Group III - 3 credits		
Select 3 credits from the following:		3
D 286	Performance Practicum	
D 495	Independent Study	
JTC 203	Television Studio Production	
JTC 204	Radio Operations	
JTC 495A	Independent Study: Electronic Reporting	
JTC 495B	Independent Study: Editing	
JTC 495C	Independent Study: Photojournalism	
JTC 495D	Independent Study: Public Relations	
JTC 495E	Independent Study: Readings	
JTC 495F	Independent Study: Reporting	
JTC 495G	Independent Study: Technical Communication	
LB 386A	Practicum: CTV	
LB 386B	Practicum: KCSU	
LB 495	Independent Study	
LEAP 487	Internship	
MU 495A	Independent Study: Composition and Theory	
MU 495C	Independent Study: Improvisation	
MU 495H	Independent Study: Performance	
TH 186	Theatre Practicum I	
TH 495	Independent Study	
Program Total Credits:		24

[1] Prerequisites for this course may be waived for students enrolled in this minor.

Organic Agriculture Interdisciplinary Minor

Contact information:
organic.agsci.colostate.edu (http://organic.colostate.edu)

Department of Soil and Crop Sciences
Adriane Elliott (Adriane.Elliott@ColoState.EDU), (970) 491-6984, Plant Sciences C110

Department of Horticulture and Landscape Architecture
Dr. Mark Uchanski (Mark.Uchanski@colostate.edu), (970) 491-4885, Shepardson 211

Coordinated by a Faculty Advisory Board

The Organic Agriculture Interdisciplinary Minor is designed for students with an interest in alternative agricultural production approaches, in particular, organic agriculture. The focus of this program is on the science of organic agriculture with additional courses specifically focused on organic agriculture production techniques, business management, marketing, and decision making. Experiential learning is a critical part of this field of study and found in many levels in discussions, laboratories, and, most importantly, internship experiences.

The program is a cooperative effort of four departments: Agricultural and Resource Economics, Bioagricultural Sciences and Pest Management, Horticulture and Landscape Architecture, and Soil and Crop Sciences. Although participating students will take courses from all four departments, they will receive their degree from their home department, and completion of requirements for the interdisciplinary minor will be noted on their transcript.

Program details are available from Adriane Elliott (Adriane.Elliott@ColoState.EDU) and Mark Uchanski (Mark.Uchanski@colostate.edu). For more information, visit our website at organic.agsci.colostate.edu (http://organic.colostate.edu).

Requirements Effective Fall 2019

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Core Courses		
AREC 202	Agricultural and Resource Economics (GT-SS1)	3
AREC 328	Small Agribusiness Management	3
FSHN 150	Survey of Human Nutrition	3
HORT 100	Horticultural Science	4
or SOCR 100	General Crops	
HORT 171/SOCR 171	Environmental Issues in Agriculture (GT-SS3)	3
SOCR 240	Introductory Soil Science	4
SOCR 345/HORT 345	Diagnosis and Treatment in Organic Fields	2
SOCR 350	Soil Fertility Management	3
SOCR 424/HORT 424	Topics in Organic Agriculture	3
SOCR 487	Internship	3
or HORT 487	Internship	
Select two of the following three groups:		6-7
Group A (3-4 credits):		
BSPM 302	Applied and General Entomology	
BSPM 303A	Entomology Laboratory: General	
or BSPM 303B	Entomology Laboratory: Horticultural	
or BSPM 303C	Entomology Laboratory: Agricultural	
Group B (3 credits):		
BSPM 308	Ecology and Management of Weeds	
Group C (3 credits):		
BSPM 361	Elements of Plant Pathology	
Select one course from the following:		3

HORT 451	Vegetable Crop Management	
HORT 453	Principles of Fruit Crop Management	
Select one course from the following:		3
LAND 220/ LIFE 220	Fundamentals of Ecology (GT-SC2)	
LIFE 320	Ecology	
NR 120A	Environmental Conservation (GT-SC2)	
Select four credits from the following:		4
HORT 344	Organic Greenhouse Production	
SOCR 341	Microbiology for Sustainable Agriculture	
SOCR 343	Composting Principles and Practices	
SOCR 344	Crop Development Techniques	
SOCR 415/ BSPM 415	Pollinator Management in Agroecosystems	
Program Total Credits:		47-48

Sustainable Peace and Reconciliation Studies Graduate Interdisciplinary Studies Program

108 Johnson Hall
(970) 492-4215

Coordinated by the School of Global Environmental Sustainability (http://sustainability.colostate.edu).

The Interdisciplinary Program in Sustainable Peace and Reconciliation Studies will be open to all students who want to understand more about the philosophical and educational roots of peace and reconciliation, its expression and potential within various academic disciplines, research, and service, and how these can help address issues of sustainability, i.e., the interrelated health of the environment, society and the economy. Knowing more about the ideas that underlie nonviolent conflict resolution, effective communication, cooperation, and mediation within cross-cultural contexts will help students evaluate how sustainable peace and reconciliation can impact their beliefs, choices and actions. Program details are available from the School of Global Environmental Sustainability.

Requirements

Additional coursework may be required due to prerequisites.

Effective Fall 2016

Code	Title	Credits
Required Courses		
ANTH 679/IE 679	Applications of International Development	3
Select one course from the following:		3
EDUC 696	Group Study [1]	
PHIL 697	Group Study [1]	
Total		6
Core Courses		
Select six credits from the following with at least two subject codes included:		6
ANTH 535	Globalization and Culture Change	
EDUC 629	Communication and Classrooms	
EDUC 635	Educators, Systems and Change	
EDUC 651	Multicultural and Special Populations	
ETST 540/ SPCM 540	Race in Latin America	
HDFS 534	Marriage and Family Therapy	
HDFS 624	Skills and Techniques in Family Therapy	
IE 550/PHIL 550	Ethics and International Development	
JTC 513	Impacts of New Communication Technologies	
PHIL 684	Supervised College Teaching [2]	
POLS 541	Political Economy of Change and Development	
POLS 670	Politics of Environment and Sustainability	
SOC 630	Social Stratification	
SOC 660	Theories of Development and Social Change	
SOC 661	Gender and Global Society	
SOC 663	Sociology of Sustainable Development	
SOC 666	Globalization and Socioeconomic Restructuring	
SOC 669	Global Inequality and Change	
SOWK 551	Fundamentals of Mediation	
SOWK 556	Divorce and Family Mediation	
SPCM 634	Communication and Cultural Diversity	
Total		6
Program Total Credits		12

1. Choice of topic and project requires approval of faculty advisor.
2. To be done in PHIL 240.

Graduate Certificate in Applied Global Stability: Agriculture

This certificate is geared toward non-commissioned officers and company- and field-grade officers in the Special Operations and Civil Affairs communities, as well as Department of Defense, USAID, Peace Corps, and other professionals working to address the United Nations Sustainable Development Goals. The certificate courses focus on global environmental sustainability and agriculture. The certificate may be completed online or on campus and requires the completion of 12 credits. The certificate program is administered by CSU's Office of Defense Engagement through the School of Global Environmental Sustainability.

Effective Spring 2017

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Required:		3
GES 520	Issues in Global Environmental Sustainability [1]	
Select 9 credits from the following:		9
AGRI 500	Advanced Issues in Agriculture	
AGRI 510	Sustainable Agriculture	
AGRI 515/ HORT 515	Urban Horticulture	

AGRI 550	Capacity Building for a Changing Workplace
AGRI 570/VS 570	Issues in Animal Agriculture
AGRI 602	Bioenergy Policy, Economics, and Assessment
AGRI 632	Managing for Ecosystem Sustainability
AGRI 634	Animal Production Systems
FSHN 500	Food Systems, Nutrition, and Food Security
GES 542	Biobased Fuels, Energy, and Chemicals
SOC 562/ AGRI 562	Sociology of Food Systems and Agriculture
Program Total Credits:	12

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

[1] Or a SoGES endorsed graduate course (https://green.colostate.edu/courses) chosen in consultation with certificate advisor if GES 520 has been completed.

Graduate Certificate in Applied Global Stability: Natural Resources

This certificate is geared toward non-commissioned officers and company- and field-grade officers in the Special Operations and Civil Affairs communities, as well as Department of Defense, USAID, Peace Corps, and other professionals working to address the United Nations Sustainable Development Goals. The certificate courses focus on global environmental sustainability and natural resources. The certificate may be completed online or on campus and requires the completion of 12 credits. The certificate program is administered by CSU's Office of Defense Engagement through the School of Global Environmental Sustainability.

Effective Fall 2018

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Required:		3
GES 520	Issues in Global Environmental Sustainability [1]	
Select 9 credits from the following:		9
AREC 506/ ECON 506	Applied Microeconomic Theory	
AREC 540/ ECON 540	Environmental and Natural Resource Economics	
NR 515	Natural Resources Policy and Biodiversity	
NR 535	Action for Sustainable Behavior	
NR 550	Sustainable Military Lands Management	
NR 551	Cultural Resource Management on Military Lands	
NR 552	Ecology of Military Lands	
NR 553	DoD Sustainable Building and Infrastructure	
NR 566	Natural Resource Inventory and Data Analysis	
NR 567	Analysis of Environmental Impact	
NR 568	Economics of Forests, Restoration and Fire	
Program Total Credits:		12

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

[1] Or a SoGES endorsed graduate course (http://sustainability.colostate.edu/education/ges-endorsed-courses) chosen in consultation with certificate advisor if GES 520 has been completed.

Graduate Certificate in Applied Global Stability: Water Resources

This certificate is geared toward non-commissioned officers and company- and field-grade officers in the Special Operations and Civil Affairs communities, as well as Department of Defense, USAID, Peace Corps, and other professionals working to address the United Nations Sustainable Development Goals. The certificate courses focus on global environmental sustainability and water resources. The certificate may be completed online or on campus and requires the completion of 12 credits. The certificate program is administered by CSU's Office of Defense Engagement through the School of Global Environmental Sustainability.

Effective Fall 2018

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Required:		3
GES 520	Issues in Global Environmental Sustainability [1]	
Select 9 credits from the following:		9
AREC 542	Applied Advanced Water Resource Economics	
CIVE 512	Irrigation Systems Design	
CIVE 516		
CIVE 519	Irrigation Water Management	
CIVE 520	Physical Hydrology	
CIVE 522	Engineering Hydrology	
CIVE 532	Wells and Pumps	
CIVE 537	Residuals Management	
CIVE 539	Water and Wastewater Analysis	
CIVE 540	Advanced Biological Wastewater Processing	
CIVE 544	Water Resources Planning and Management	
or WR 511	Water Resource Development	
CIVE 546	Water Resource Systems Analysis	
CIVE 549	Drainage and Wetland Engineering	
CIVE 571	Pipeline Engineering and Hydraulics	
CIVE 573	Urban Stormwater Management	
CIVE 574	Civil Engineering Project Management	
CIVE 575	Sustainable Water and Waste Management	
CIVE 576	Engineering Applications of GIS and GPS	

CIVE 577	GIS in Civil and Environmental Engineering	
CIVE 578	Infrastructure and Utility Management	
CIVE 645	Computer-Aided Water Management and Control	
WR 512	Water Law for Non-Lawyers	
Program Total Credits:		12

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

[1] Or a SoGES endorsed graduate course (http://sustainability.colostate.edu/education/ges-endorsed-courses) chosen in consultation with certificate advisor if GES 520 has been completed.

Role of Sustainability in Peace and Reconciliation Interdisciplinary Minor

108 Johnson Hall
(970) 492-4215

Coordinated by the School of Global Environmental Sustainability (http://sustainability.colostate.edu).

The Role of Sustainability in Peace and Reconciliation Interdisciplinary Minor is open to all students who want to understand more about the philosophical roots of peace and reconciliation and its expression within various academic disciplines, research, and service. Knowing more about the ideas that underlie nonviolent conflict resolution, effective communication, cooperation, and mediation within cross-cultural contexts will help students evaluate how peace and reconciliation can impact their beliefs, choices, and actions. A 21-credit undergraduate minor and 12-credit graduate interdisciplinary studies program are available.

Effective Fall 2018

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Required Core Courses		
GES 101	Foundations of Environmental Sustainability	3
PHIL 240	Philosophies of Peace and Nonviolence	3
IE 479/ANTH 479	International Development Theory and Practice	3
Select one from the following courses:		3
EDUC 496	Group Study	
IE 472	Education for Global Peace	
PHIL 497	Group Study	
Elective Credits: Select 9 credits from ONE of the Aspects lists below:		9
Environmental, Societal, and Economics Aspects		
ANTH 200	Cultures and the Global System (GT-SS3)	
ANTH 415	Indigenous Ecologies and the Modern World	
AREC 240/ ECON 240	Issues in Environmental Economics (GT-SS1)	
AREC 340/ ECON 340	Introduction-Economics of Natural Resources	
AREC 460	Ag- and Resource-Based Economic Development	
ERHS 320	Environmental Health--Water Quality	
ERHS 430	Human Disease and the Environment	
ERHS 448	Environmental Contaminants: Exposure and Fate	
ETST 256	Border Crossings: People/Politics/Culture (GT-SS3)	
GES 192	Global Environmental Sustainability Seminar	
GR 410	Climate Change: Science, Policy, Implications	
HIST 366	African-American History to 1865	
LAND 364	Design and Nature	
MGT 360	Social and Sustainable Venturing	
NR 120A	Environmental Conservation (GT-SC2)	
NR 130	Global Environmental Systems (GT-SC2)	
NR 425	Natural Resource Policy and Sustainability	
SOC 322	Introduction to Environmental Justice	
SOC 463	Sociology of Disaster	
SPCM 334	Co-Cultural Communication	
WR 304/GR 304	Sustainable Watersheds	
Personal, Psychological, Ethical and Legal Aspects		
ANTH 329	Cultural Change	
BUS 260	Social-Ethical-Regulatory Issues in Business	
ETST 430	Latina/o Creative Expression	
ETST 432	Latinx Routes to Empowerment	
ETST 444/ SOC 444	Federal Indian Law and Policy	
HDFS 332	Death, Dying, and Grief	
HIST 250/ ETST 250	African American History (GT-HI1)	
HIST 252/ ETST 252	Asian American History (GT-HI1)	
HIST 346	Reconstruction and the New South	
HIST 360	United States Immigration History	
HIST 414	Revolutions in Latin America	
HONR 192	Honors First Year Seminar [1]	
HONR 193	Honors Seminar [2]	
IE 179	Globalization: Exploring Our Global Village (GT-SS3)	
IE 270/AGRI 270	World Interdependence-Population and Food (GT-SS3)	
IE 550/PHIL 550	Ethics and International Development	
PSY 316	Environmental Psychology	
SPCM 232	Group Communication	
Local, National and International Policy Aspects		

HIST 421	Africa: Colonialism to Independence
HIST 438	The Modern Middle East
HIST 460	Slavery in the Americas
HIST 465	Pacific Wars: Korea and Vietnam
IE 470	Women and Development
IE 471	Children and Youth in Global Context
JTC 411	Media Ethics and Issues
JTC 412	International Mass Communication
NR 440	Applications in Conservation Planning
POLS 331	Politics and Society Along Mexican Border
POLS 405	Race and Ethnicity in U.S. Politics
POLS 413	U.S. Civil Rights and Liberties
POLS 437	International Security
POLS 448	Comparative Racial/Ethnic Politics
POLS 449	Middle East Politics
PSY 330	Clinical and Counseling Psychology
PSY 437	Psychology of Gender
SOC 320	Population-Natural Resources and Environment
SOC 362	Social Change
SOC 431	Community Dynamics and Development
SOWK 330	Dismantling Privilege and Oppression
SPCM 436	Conflict Management and Communication
SOWK 450/IE 450	International Social Welfare and Development
SPCM 434	Intercultural Communication
Program Total Credits:	21

[1] Titled “Peacemaking.” Must be enrolled in University Honors program.

[2] Titled “Exploring Sustainable Solutions.” Must be enrolled in University Honors program.

Cell and Molecular Biology

Office in the Student Services Building, Room 220
(970) 491-0241
cmb@colostate.edu
cmb.colostate.edu (http://cmb.colostate.edu)

Carol Wilusz, Director
Tai Montgomery, Associate Director
Charlene Spencer, Coordinator

The graduate program in Cell and Molecular Biology is an interdisciplinary degree-granting program that involves over 100 faculty members from 15 departments and 5 colleges who share common interests in cell and molecular biology. The program offers training leading to the M.S. and Ph.D. degrees in Cell and Molecular Biology; in addition, there is a Cancer Biology Specialization. The program includes a core of lecture courses in advanced molecular genetics and cell biology, laboratory research techniques, and ethical conduct of science. Elective courses cover specialized areas, including grant writing. The program also has a graduate seminar series in which students present their research, and a weekly seminar series for presentations by CSU faculty and nationally prominent scientists each year. Core courses are typically completed during the first year. On average, the M.S. degree is completed within two years and the Ph.D. degree within five years. Current focus areas of research include, but are not limited to: Cancer Biology; Genome Structure, Evolution & Repair; Infectious Disease; Metabolism & Physiology; Microbiomes; Plant Molecular Biology; Prions & Neurobiology; Stem Cells, Reproduction & Development; Synthetic Biology. Students are encouraged to complete coursework in computational/quantitative approaches.

Students interested in this graduate program should refer to the Cell and Molecular Biology (http://www.cmb.colostate.edu) website for further details.

Graduate
Master's Programs

- Master of Science in Cell and Molecular Biology, Plan A
- Master of Science in Cell and Molecular Biology, Plan B

Ph.D.

- Ph.D. in Cell and Molecular Biology
- Ph.D. in Cell and Molecular Biology, Cancer Biology Specialization

Master of Science in Cell and Molecular Biology

The graduate program in Cell and Molecular Biology is an interdisciplinary degree-granting program that comprises over 100 faculty members from 15 departments and 5 colleges who share common interests in cell and molecular biology. The MS program includes a core of lecture courses in advanced molecular genetics and cell biology,laboratory research techniques, science communication and ethical conduct of science. Students may also select additional courses in areas related to their interests. Each year, students also participate in a student seminar series in which they present on a topic connected to cell or molecular biology, and a weekly seminar series with presentations by CSU faculty and nationally prominent scientists.

Core courses can typically be completed during the first year. The Plan A M.S. Degree can be completed within two years. The Plan B M.S. degree can be completed within 3 semesters.

Current focus areas of research include, but are not limited to: Cancer Biology; Genome Structure, Evolution, & Repair; Infectious Disease; Metabolism & Physiology; Microbiomes; Plant Molecular Biology, Prions & Neurobiology; Stem Cells, Reproduction & Development; Synthetic Biology. Students are encouraged to complete coursework in computational/quantitative approaches.

Students interested in this graduate program should refer to the Cell and Molecular Biology website for further details.

Plan A
Effective Fall 2019

Code	Title	Credits
BC 563	Molecular Genetics	4
BC 565	Molecular Regulation of Cell Function	4
CM 510	Introduction to Cell and Molecular Biology	1
CM 595	Independent Study [1]	1-3
CM 699	Thesis [1]	1-4
CM 792	Cell and Molecular Biology Seminar [2]	1-2

CM 793	Seminar [2]	1-2
GRAD 550	STEM Communication	1
MIP 611	Advanced Microbiological Research Methods	4
Ethics Elective (see list below)		1-3
Electives [3]		4-11
Program Total Credits:		30

Ethics Electives

Code	Title	Credits
Select at least one course from the following:		
BC 601	Responsible Conduct in Biochemistry	1
CM 601	Responsible Conduct of Research in CMB	1
CM 666/PHIL 666	Science and Ethics	3
GRAD 544	Ethical Conduct of Research	1
MIP 654	Research Policies and Regulations	1
NSCI 575	Ethical Issues in Big Data Research	1

A minimum of 30 credits are required to complete this program.

1. Minimum 1 credit for each CM 595 and CM 699, with additional credits as needed to bring degree total to 30 credits, with approval of their graduate advisory committee.
2. Student must take this course each year in spring or fall semester.
3. At least 4 credits in regular graduate-level courses, with approval of their graduate advisory committee.

Plan B
Effective Fall 2019

Code	Title	Credits
BC 563	Molecular Genetics	4
BC 565	Molecular Regulation of Cell Function	4
CM 510	Introduction to Cell and Molecular Biology	1
CM 595	Independent Study [1]	1-4
CM 792	Cell and Molecular Biology Seminar [2]	1-2
CM 793	Seminar [2]	1-2
GRAD 550	STEM Communication	1
MIP 611	Advanced Microbiological Research Methods	4
Ethics Elective (see list below)		1-3
Electives [3]		4-12
Program Total Credits:		30

Ethics Electives

Code	Title	Credits
Select at least one course from the following:		
BC 601	Responsible Conduct in Biochemistry	1
CM 601	Responsible Conduct of Research in CMB	1
CM 666/PHIL 666	Science and Ethics	3
GRAD 544	Ethical Conduct of Research	1
MIP 654	Research Policies and Regulations	1
NSCI 575	Ethical Issues in Big Data Research	1

A minimum of 30 credits are required to complete this program.

1. Minimum 1 credit for CM 595, with additional credits as needed to bring degree total to 30 credits, with approval of the graduate advisory committee.
2. Students must take this course each year in spring or fall semester.
3. At least 4 credits in regular graduate level courses relevant to Cell & Molecular Biology, with approval of their graduate advisory committee.

Ph.D. in Cell and Molecular Biology

The graduate program in Cell and Molecular Biology is an interdisciplinary degree-granting program that involves over 100 faculty members from 15 departments and 5 colleges who share common interests in cell and molecular biology. The program offers training leading to the M.S. and Ph.D. degrees in Cell and Molecular Biology; there also is a Cancer Biology specialization. The program includes a core of lecture courses in advanced molecular genetics and cell biology, in laboratory research techniques, and in ethical conduct of science, as well as elective courses in specialized areas and in grant writing, a graduate seminar series in which students present their research, and a weekly seminar series for presentations by CSU faculty and nationally prominent scientists each year. Core courses typically are completed during the first year. On average, the M.S. degree is completed within two years and the Ph.D. degree within five years.

Current focus areas of research include, but are not limited to: Cancer Biology; Genome Structure, Evolution, & Repair; Infectious Disease; Metabolism & Physiology; Microbiomes; Plant Molecular Biology; Prions & Neurobiology; Stem Cells, Reproduction & Development; Synthetic Biology. Students are encouraged to complete coursework in computational/quantitative approaches.

Students interested in this graduate program should refer to the Cell and Molecular Biology website for further details.

Requirements
Effective Fall 2019

Code	Title	Credits
BC 563	Molecular Genetics	4
BC 565	Molecular Regulation of Cell Function	4
CM 510	Introduction to Cell and Molecular Biology	1
CM 792	Cell and Molecular Biology Seminar [1, 2]	4-10
CM 793	Seminar [1, 2]	4-10
GRAD 550	STEM Communication	1
MIP 611	Advanced Microbiological Research Methods	4
Independent Study and Dissertation (select a minimum of 6 credits from the following):		6
CM 795	Independent Study [2]	
CM 799	Dissertation [2]	
Electives must contain at least one course from each section list: [2]		44
Ethics Elective (see list below)		1-3
Statistics Elective (see list below)		3-4
Topics Elective (see list below)		2
Writing Elective (see list below)		1-3

Master's Degree Credit (a maximum of 30 credits may be accepted from a master's degree)	30
Program Total Credits:	72

Ethics Electives

Code	Title	Credits
Select at least one course from the following:		
BC 601	Responsible Conduct in Biochemistry	1
CM 601	Responsible Conduct of Research in CMB	1
CM 666/PHIL 666	Science and Ethics	3
GRAD 544	Ethical Conduct of Research	1
MIP 654	Research Policies and Regulations	1
NSCI 575	Ethical Issues in Big Data Research	1

Statistics Electives

Code	Title	Credits
Select at least one course from the following:		
STAT 511A	Design and Data Analysis for Researchers I: R Software	4
STAT 511B	Design and Data Analysis for Researchers I: SAS Software	4
STAT 512	Design and Data Analysis for Researchers II	4
STAT 540	Data Analysis and Regression	3
VS 562	Applied Data Analysis	3
VS 733	Advanced Veterinary Epidemiology	4

Topics Electives

Topics Electives provide guided practice in reading, interpreting, and critiquing scientific literature relevant to the field of Cell & Molecular Biology.

Code	Title	Credits
Preferred course, to be taken two semesters, 2 credits total:		
CM 700	Critical Analysis of Scientific Literature	2
Courses that could substitute for CM 700 in consultation with advisor.		
BSPM 502B	Topics in Plant Pathology: Plant Bacteriology	1
BMS 796A/NB 796C	Group Study: Topics in Neuroscience	1-4
BMS 796B	Group Study: Cardiopulmonary Physiology	1-18
BMS 796C	Group Study: Reproductive Physiology	1-18
CHEM 651B	Special Topics in Chemistry: Inorganic Chemistry	1-4
FSHN 650A	Recent Developments in Human Nutrition: Protein, Vitamins, and Minerals	2
FSHN 650B	Recent Developments in Human Nutrition: Carbohydrates, Lipids, and Energy	2
FSHN 650C	Recent Developments in Human Nutrition: Genomic, Proteomics, and Metabolomics	2
MIP 700	Topics in Microbiology	1
SOCR 730	Topics in Plant Breeding and Genetics	1

Writing Electives

Code	Title	Credits
Select at least one course from the following:		
BC 701	Grant Proposal Writing and Reviewing	1
BSPM 530/SOCR 530	Scientific Writing	1
BZ 544	Presenting Research in Biology	2
CM 640	Creative Science Writing	3
HES 700	Professional Skills in Bioenergetics	3
MIP 643	Grant Writing for Microbiology/Pathology	1
MIP 666	Writing Scientific Manuscripts	3
NB 771	Writing, Submitting, and Reviewing Grants	1

A minimum of 72 credits are required to complete this program.

1 CM 792 and CM 793 must be taken each year in spring or fall semester.

2 Students must complete at least one credit from each CM 795 and CM 799, and select enough independent study, dissertation, seminar, and other elective course credits to bring the program total to a minimum of 72 credits, with approval of graduate advisory committee.

Ph.D. in Cell and Molecular Biology, Cancer Biology Specialization

The Cancer Biology specialization is a focus area within the Cell and Molecular Biology Graduate Program that includes over two dozen faculty members from six departments in three colleges who share a strong interest and a broad expertise in molecular and clinical aspects of the development and treatment of cancer. The basic science and translational research activities of the focus area are closely linked with the clinical research and clinical trials programs of the **Robert H. and Mary G. Flint Animal Cancer Center**. (https://www.csuanimalcancercenter.org)

Clinical cancer treatment of pet animals is a major strength of the Cancer Biology curriculum. The Cancer Biology specialization combines nationally recognized research training, focused on cutting edge approaches to cancer diagnosis and treatment, with innovative clinical trials. Students who choose the Cancer Biology specialization complete all of the requirements of the Cell and Molecular Biology Graduate Program, including the three laboratory rotations, during their first year.

Requirements Effective Fall 2019

A maximum of 30 credits at the master's degree level may be accepted toward the Ph.D. A professional post baccalaureate degree in Medicine, Veterinary Medicine, Dentistry, or Pharmacy may be accepted for a maximum of 30 credits.

Code	Title	Credits
Required Courses		
BC 563	Molecular Genetics	4
BC 565	Molecular Regulation of Cell Function	4
CM 510	Introduction to Cell and Molecular Biology	1
CM 792	Cell and Molecular Biology Seminar [1, 2]	4-10
CM 793	Seminar [1, 2]	4-10

GRAD 550	STEM Communication	1
MIP 611	Advanced Microbiological Research Methods	4
Select a minimum of five credits from the following:		5
ERHS 510/VS 510	Cancer Biology	
ERHS 611	Cancer Genetics	
ERHS 733	Environmental Carcinogenesis	
VS 718	Cancer Biology Clinical Practicum	
Independent Study and Dissertation (select a minimum of 6 credits from the following):		6
CM 795	Independent Study [2]	
CM 799	Dissertation [2]	
Electives must contain at least one course from each section list: [2]		39
Ethics Electives (See list below)		1-3
Statistics Electives (See list below)		3-4
Topics Electives (See list below)		2
Writing Electives (See list below)		1-3
Master's Degree Credit (a maximum of 30 credits may be accepted from a master's degree)		30
Program Total Credits:		72

Ethics Electives

Code	Title	Credits
Select at least one course from the following:		
BC 601	Responsible Conduct in Biochemistry	1
CM 601	Responsible Conduct of Research in CMB	1
CM 666/PHIL 666	Science and Ethics	3
GRAD 544	Ethical Conduct of Research	1
MIP 654	Research Policies and Regulations	1
NSCI 575	Ethical Issues in Big Data Research	1

Statistics Electives

Code	Title	Credits
Select at least one course from the following:		
STAT 511A	Design and Data Analysis for Researchers I: R Software	4
STAT 511B	Design and Data Analysis for Researchers I: SAS Software	4
STAT 512	Design and Data Analysis for Researchers II	4
STAT 540	Data Analysis and Regression	3
VS 562	Applied Data Analysis	3
VS 733	Advanced Veterinary Epidemiology	4

Topics Electives

Topics Electives provide guided practice in reading, interpreting, and critiquing scientific literature relevant to the field of Cell & Molecular Biology.

Code	Title	Credits
Preferred course, to be taken two semesters, 2 credits total:		
CM 700	Critical Analysis of Scientific Literature	2
Courses that could substitute for CM 700 in consultation with advisor:		
FSHN 650A	Recent Developments in Human Nutrition: Protein, Vitamins, and Minerals	2
FSHN 650B	Recent Developments in Human Nutrition: Carbohydrates, Lipids, and Energy	2
FSHN 650C	Recent Developments in Human Nutrition: Genomic, Proteomics, and Metabolomics	2
MIP 700	Topics in Microbiology	1

Writing Electives

Code	Title	Credits
Select at least one course from the following:		
BC 701	Grant Proposal Writing and Reviewing	1
BZ 544	Presenting Research in Biology	2
CM 640	Creative Science Writing	3
HES 700	Professional Skills in Bioenergetics	3
MIP 643	Grant Writing for Microbiology/Pathology	1
MIP 666	Writing Scientific Manuscripts	3
NB 771	Writing, Submitting, and Reviewing Grants	1

A minimum of 72 credits are required to complete this program.

1 CM 792 and CM 793 must be taken each year in spring or fall semester.

2 Students must complete at least one credit from each CM 795 and CM 799, and select enough independent study, dissertation, seminar, and other elective course credits to bring the program total to a minimum of 72 credits, with approval of graduate advisory committee.

Ph.D. in Ecology

Graduate Degree Program in Ecology
Alan Knapp, Interim Director
Johnson Hall 104
Phone: 970-491-4373
Email: Ecology@colostate.edu
ecology.colostate.edu (http://www.ecology.colostate.edu)

Requirements Effective Fall 2019

Code	Title	Credits
REQUIRED COURSES		
ECOL 505	Foundations of Ecology	3
ECOL 571	Advanced Topics in Ecology	2
ECOL 592	Interdisciplinary Seminar in Ecology [1]	2
ECOL 693	Research Seminar	1
ECOLOGY FUNDAMENTALS		
Select 6 credits not taken elsewhere in the program from the following:		6
BZ 525	Advanced Conservation & Evolutionary Genomics	
BZ 535	Behavioral Ecology	
BZ 548	Theory of Population and Evolutionary Ecology	
BZ 578/MIP 578	Genetics of Natural Populations	
ECOL 600	Community Ecology	

ECOL 610	Ecosystem Ecology
ECOL 620	Applications in Landscape Ecology
ESS 575	Models for Ecological Data
ESS 660	Biogeochemical Cycling in Ecosystems
FW 662	Wildlife Population Dynamics
HORT 576	Advanced Environmental Plant Stress Physiology

ECOLOGY TOOLS		
Select 3 credits not taken elsewhere in the program from the following:		3
AREC 535/ ECON 535	Applied Econometrics	
AREC 635/ ECON 635	Econometric Theory I	
AREC 735/ ECON 735	Econometric Theory II	
BZ 577/MIP 577	Computer Analysis in Population Genetics	
CIVE 524/WR 524	Modeling Watershed Hydrology	
ERHS 544/ STAT 544	Biostatistical Methods for Quantitative Data	
ESS 565	Niche Models	
ESS 575	Models for Ecological Data	
FW 551	Design of Fish and Wildlife Studies	
FW 552	Applied Sampling for Wildlife/Fish Studies	
FW 663	Sampling & Analysis Vertebrate Populations	
FW 673/STAT 673	Hierarchical Modeling in Ecology	
GR 503/NR 503	Remote Sensing and Image Analysis	
MATH 530	Mathematics for Scientists and Engineers	
MATH 540	Dynamical Systems	
NR 505	Concepts in GIS	
NR 506	GIS Methods for Resource Management	
NR 512	Spatial Statistical Modeling-Natural Resources	
NR 523/STAT 523	Quantitative Spatial Analysis	
NR 554/ANTH 554	Ecological and Social Agent-based Modeling	
NRRT 765	Applied Multivariate Analysis	
SOCR 522	Micrometeorology	
SOCR 620	Modeling Ecosystem Biogeochemistry	
SOCR 670	Terrestrial Ecosystems Isotope Ecology	
STAT 511A	Design and Data Analysis for Researchers I: R Software	
STAT 511B	Design and Data Analysis for Researchers I: SAS Software	
STAT 512	Design and Data Analysis for Researchers II	
STAT 520	Introduction to Probability Theory	
STAT 521	Stochastic Processes I	
STAT 530	Mathematical Statistics	
STAT 540	Data Analysis and Regression	
STAT 560	Applied Multivariate Analysis	
STAT 675A	Topics in Statistical Methods: Sampling	
WR 674	Data Issues in Hydrology	

ADDITIONAL ELECTIVES, INDEPENDENT STUDY, RESEARCH, AND DISSERTATION	55
Program Total Credits:	72

A minimum of 72 credits are required to complete this program.

[1] Take two semesters; minimum 2 credits total to graduate.

Ph.D. in Ecology, Human-Environment Interactions Specialization

Graduate Degree Program in Ecology
Alan Knapp, Interim Director
Johnson Hall 104
Phone: 970-491-4373
Email: Ecology@colostate.edu
ecology.colostate.edu (http://www.ecology.colostate.edu)

Requirements Effective Fall 2019

Code	Title	Credits
REQUIRED COURSES		
ANTH 530	Human-Environment Interactions	3
ECOL 505	Foundations of Ecology	3
ECOL 571	Advanced Topics in Ecology	2
ECOL 592	Interdisciplinary Seminar in Ecology	2
ECOL 693	Research Seminar	1
Ecology Fundamentals (Select a minimum of 6 credits.) [1]		6
BZ 525	Advanced Conservation & Evolutionary Genomics	
BZ 526/BSPM 526	Evolutionary Ecology	
BZ 535	Behavioral Ecology	
BZ 548	Theory of Population and Evolutionary Ecology	
BZ 555	Reproductive Biology of Higher Plants	
BZ 578/MIP 578	Genetics of Natural Populations	
ECOL 600	Community Ecology	
ECOL 610	Ecosystem Ecology	
ECOL 620	Applications in Landscape Ecology	
ESS 575	Models for Ecological Data	
ESS 660	Biogeochemical Cycling in Ecosystems	
FW 662	Wildlife Population Dynamics	
HORT 576	Advanced Environmental Plant Stress Physiology	
Human-Environment Interactions Fundamentals (Select a minimum of 3 credits) [1]		3
ANTH 515	Culture and Environment	
ANTH 529	Anthropology and Sustainable Development	
ANTH 535	Globalization and Culture Change	
ANTH 540	Medical Anthropology	
ANTH 545	Global Mental Health--Theory and Method	
ANTH 555	Paleoindian Archaeology	

ANTH 571	Anthropology and Global Health	
ANTH 572	Human Origins	
NR 625	Community-Based Natural Resource Management	
POLS 739	International Environmental Politics	
SOC 668	Environmental Sociology	
Quantitative Ecology Tools (Select a minimum of 3 credits) [1]		3
GR 503/NR 503	Remote Sensing and Image Analysis	
NR 523/STAT 523	Quantitative Spatial Analysis	
NRRT 765	Applied Multivariate Analysis	
STAT 511A	Design and Data Analysis for Researchers I: R Software	
or STAT 511B	Design and Data Analysis for Researchers I: SAS Software	
STAT 512	Design and Data Analysis for Researchers II	
STAT 544	Biostatistical Methods for Quantitative Data	
Quantitative Ecology Tools (Select a minimum of 3 credits) [1]		3
EDRM 704	Qualitative Research	
EDRM 706	Analysis of Variance--Education Research	
NRRT 665	Survey Research and Analysis	
POLS 621	Qualitative Methods in Political Science	
SOC 610	Seminar in Methods of Qualitative Analysis	
Additional Electives, Independent Study, Research, and Dissertation		46
Program Total Credits:		72

[1] This is a recommended subset. Refer to the regular GDPE Curriculum for a complete list.

Political Communication Interdisciplinary Minor

Office in Clark Building, Room C346
(970) 491-5156
polisci.colostate.edu (http://polisci.colostate.edu)

The Political Communication Interdisciplinary Minor is designed for students interested in the way ideas are communicated and shape the political process. It emphasizes the knowledge and abilities relevant to participation in political environments. The minor is particularly relevant for students interested in communication, law, politics, public administration, public deliberation, public policy, and other professions that deal with issues in public settings.

Coordinated by the Department of Political Science.

Effective Fall 2015

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
REQUIRED COURSES		
POLS 101	American Government and Politics (GT-SS1)	3
SPCM 420	Political Communication	3
POLITICAL SCIENCE		
Select 6-9 credits from the following: [1]		6-9
POLS 302	U.S. Political Parties and Elections	
POLS 303	Politics of Organized Interests	
POLS 304	Legislative Politics	
POLS 306	Executive Politics	
POLS 361	U.S. Environmental Politics and Policy	
POLS 362	Global Environmental Politics	
POLS 413	U.S. Civil Rights and Liberties	
POLS 422	Democratic Theory	
POLS 443	Comparative Social Movements	
POLS 460	Public Policy Process	
POLS 462	Globalization, Sustainability, and Justice	
COMMUNICATION STUDIES		
Select 6-9 credits from the following: [1]		6-9
SPCM 349	Freedom of Speech	
SPCM 357	Film and Social Change	
SPCM 401	Rhetoric in Social Movements	
SPCM 407	Public Deliberation	
SPCM 408	Applied Deliberative Techniques	
SPCM 433	Communication in Organizations	
SPCM 434	Intercultural Communication	
SPCM 437	Studies in Persuasion	
Program Total Credits:		21

[1] Students must complete 6 credits of required courses and a minimum total of 15 credits from the two course selection lists, as shown.

Political Economy Graduate Interdisciplinary Studies Program

Office in Clark, Room C346
colostate.edu/Depts/PoliSci/pec (http://www.colostate.edu/Depts/PoliSci/pec)

Coordinated by a Faculty Advisory Board.

Political economy is central to all the social sciences. The objective of this program is to offer graduate students the opportunity to study political economy across disciplines. This will enrich their disciplinary training and is necessary for more holistic research. Finally, the completion of the program can be useful in seeking employment, as a specialization in political economy is frequently a central or important component of positions across the social sciences.

Requirements

Program Requirements

1. A minimum of fifteen (15) credits from among the approved courses.
2. A minimum of nine (9) credits from the list of core courses. These must be from three (3) different departments.
3. A maximum of six (6) credits from the list of elective courses
4. A maximum of three (3) upper-division undergraduate credits.
5. A GPA of at least 3.0 in the program courses.

Effective Fall 2004

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Core Courses		
A minimum of nine (9) credits from three (3) different departments must be used towards the program. Additional core credits can be used to satisfy program requirements.		9
ANTH 528	Economic Anthropology	
ANTH 535	Globalization and Culture Change	
ECON 505	History of Economic Thought	
ECON 760	Theories of Economic Development	
POLS 532	Governance of the World Political Economy	
POLS 541	Political Economy of Change and Development	
SOC 666	Globalization and Socioeconomic Restructuring	
SOC 667	Theories of State, Economy, and Society	
Elective Courses		
A maximum of six (6) credits can be used to satisfy the requirements of the program. A maximum of three (3) upper-division undergraduate credits can be used to satisfy the program requirements.		6
ANTH 319	Latin American Peasantries	
ANTH 413	Indigenous Peoples Today	
ANTH 414/ ETST 414	Development in Indian Country	
ANTH 529	Anthropology and Sustainable Development	
ANTH 530	Human-Environment Interactions	
ECON 332/ POLS 332	International Political Economy	
ECON 370	Comparative Economic Systems	
ECON 376	Marxist Economic Thought	
ECON 379/ HIST 379	Economic History of the United States	
ECON 474	Recent Economic Thought	
ECON 570	Evolution of Economic Thought	
ECON 705	Heterodox Approaches to Economics	
ECON 742	International Production and Monetary Theory	
ECON 770	Economic Thought and Systems	
ECON 772	Marxian Political Economy	
HIST 321	Industrial Society in Europe, 1600-1871	
HIST 322	Industrial Society in Europe, 1871-1989	
HIST 333	Contemporary Europe	
HIST 346	Reconstruction and the New South	
HIST 348	United States, 1917-1945	
HIST 350	United States Foreign Relations Since 1914	
HIST 414	Revolutions in Latin America	
HIST 422	Modern Africa	
JTC 412	International Mass Communication	
POLS 431	International Law	
POLS 433	International Organization	
POLS 670	Politics of Environment and Sustainability	
POLS 739	International Environmental Politics	
SOC 366	Peoples and Institutions of Latin America	
SOC 502	Foundations of Theoretical Sociology	
SOC 660	Theories of Development and Social Change	
SOC 669	Global Inequality and Change	
Program Total Credits:		15

A minimum of 15 credits are required to complete this program.

Public Health

Sage Hall
(970) 491-5800
publichealth.colostate.edu (http://publichealth.colostate.edu)

Dr. Tracy Nelson, Director
Kendra Bigsby (kendra.bigsby@colostate.edu), Assistant Director

The Master of Public Health (MPH) degree is the primary professional degree in the field of public health. The MPH degree is intended for students who plan careers as practitioners and leaders in the field of public health. Core academic public health areas include biostatistics, epidemiology, environmental health, health services administration, and community and behavioral health.

The program is operated as one component of the Colorado School of Public Health (http://www.ucdenver.edu/academics/colleges/PublicHealth/Pages/default.aspx) (ColoradoSPH) which is a cooperative program between the University of Colorado (CU) Anschutz Medical Campus, CSU, and the University of Northern Colorado (UNC). The ColoradoSPH is accredited by the Council on Education in Public Health. The program is an interdisciplinary Special Academic Unit at Colorado State University.

Areas of study at CSU include: animals, people, and the environment; epidemiology; global health and health disparities; health communication; physical activity and healthy lifestyles; and public health nutrition. Dual degree programs are available in veterinary medicine (DVM/MPH (http://csu-cvmbs.colostate.edu/dvm-program/Pages/DVM-MPH.aspx)) and social work (MSW/MPH (http://publichealth.colostate.edu/dual-degree/mph-msw)). The Certificate in Public Health Science (https://publichealth.colostate.edu/certificate/certificate-in-public-health-sciences) is also offered at the CSU campus of the ColoradoSPH.

Please note that individuals wishing to apply (http://www.ucdenver.edu/academics/colleges/PublicHealth/admissionsandaid/howtoapply/Pages/MPHReqs.aspx) to the Colorado School of Public Health at CSU do not apply to the CSU Graduate School. Applications are submitted

through SOPHAS, an online application portal for accredited programs and schools of public health.

More information on the Colorado School of Public Health, admissions requirements, and the degree options available at all three campuses can be found here. (http://www.ucdenver.edu/academics/colleges/PublicHealth/Academics/degreesandprograms/Pages/mph.aspx)

Detailed information about all of the academic options in the ColoradoSPH at the CSU campus can be found here (https://publichealth.colostate.edu/academics).

Religious Studies Interdisciplinary Minor

Office in Clark, Room B-356
(970) 491-6335

Coordinated by a Faculty Advisory Board and the Department of History.

The Religious Studies Interdisciplinary Minor permits students to use electives to complete 21 credits from a list of approved courses from at least three different subject codes.

The program encompasses the major religious traditions of humankind. It enables students to integrate a field of special interest from offerings in religious studies and related areas. Students can study religion as viewed by different disciplines, e.g., philosophy, history, psychology, sociology, and anthropology. In addition, the program encourages students to view religious phenomena in their cultural context through the media of music and the arts.

Effective Fall 2019

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

- **21 credits in at least three disciplines are required: PHIL 171, PHIL 172, and at least two subject codes besides PHIL from the Additional Course list.**
- **A minimum grade point average of 2.000 is required in courses selected for the program.**

Code	Title	Credits
Required Courses		
Two required courses designed to survey the religions of the world, and to introduce students to methods of studying and understanding religion:		
PHIL 171	Religions of the West	3
PHIL 172	Religions of the East	3
Additional Courses		
In consultation with a Religious Studies adviser, select 15 credits from the Additional Courses list. At least 12 credits must be upper-division (300- or 400-level). At least two subject codes besides PHIL are required.		15
ANTH 312	Modern Indian Culture and Society	
ANTH 322	The Anthropology of Religion	
ANTH 340	Medical Anthropology	
ANTH 423	Cultural Psychiatry	
ART 411	History of Medieval Art	
E 337	Western Mythology	
E 460	Chaucer	
E 463	Milton	
HIST 115	The Islamic World: Late Antiquity to 1500	
HIST 116	The Islamic World Since 1500	
HIST 120	Asian Civilizations I (GT-HI1)	
HIST 308	Ancient Christianity to 500 A.D.	
HIST 309	Medieval Christianity, 500-1500	
HIST 310	Medieval Europe	
HIST 317	Renaissance and Reformation Europe	
HIST 323	Russia Before 1700	
HIST 338	The Holocaust in Historical Perspective	
HIST 431	Ancient Israel	
HIST 432	Sacred History in the Bible and the Qur'an	
HIST 433	Muhammad and the Origins of Islam	
HIST 435	Jihad and Reform in Islamic History	
HIST 436	The Land of Israel-Past and Present	
HIST 438	The Modern Middle East	
HIST 450	Ancient China	
HIST 451	Medieval China and Central Asia	
HIST 452	China in the Modern World, 1600-Present	
HIST 455	Tokugawa and Modern Japan, 1600-Present	
HIST 467	Modern Jewish History	
HIST 469	The Crusades	
LB 170	World Literatures to 1500 (GT-AH2)	
MU 432	Hymnology	
MU 433	Music and Rites of Christian Liturgy	
MU 434	Psalms in Music and Liturgy	
MU 435	Contemporary Liturgical Music in America	
PHIL 170	World Philosophies (GT-AH3)	
PHIL 173	Philosophy of Traditional Judaism	
PHIL 174	World Religions	
PHIL 270	Issues in the Study of Religion	
PHIL 303	Medieval Philosophy	
PHIL 335	Islam: Cosmology and Practice	
PHIL 349	Philosophies of East Asia	
PHIL 355	Philosophy of Religion	
PHIL 359	Philosophy of Human Nature	
PHIL 360	Topics in Asian Philosophy	
PHIL 370	Contemporary Western Religious Thought	
PHIL 371	Contemporary Eastern Religious Thought	
PHIL 372	Meaning and Truth in Religion	
PHIL 375	Science and Religion	
PHIL 379	Mysticism East and West	
PHIL 455	Islamic Philosophy	
PHIL 463	Seminar in Religious Studies	
PHIL 479	Topics in Comparative Religions	
PSY 305	Psychology of Religion	

SOC 375	Sociology of Religion

Program Total Credits: 21

Resilience of Social Ecological Systems Graduate Interdisciplinary Studies Program

Coordinated by the Department of Anthropology.

Requirements

In addition to the required course, students must select one course from each of the four Groups below, A, B, C, and D, for a minimum total of 15 credits. A minimum of 9 credits must be taken at the 500-level or above. At least two courses must be from outside the student's discipline or sub-discipline. A minimum total of 15 credits is required.

Effective Spring 2013

Code	Title	Credits
Required Course		
ANTH 530	Human-Environment Interactions	3
Group A: Concepts of Cultural and Social Systems in Environment Context		3
AGRI 330/ PHIL 330	Agricultural and Food System Ethics	
ANTH 329	Cultural Change	
ANTH 330	Human Ecology	
ANTH 376	Evolution of Human Adaptation	
ANTH 415	Indigenous Ecologies and the Modern World	
ANTH 446	New Orleans and the Caribbean	
ANTH 529	Anthropology and Sustainable Development	
GR 320	Cultural Geography	
HIST 470	World Environmental History, 1500-Present	
POLS 670	Politics of Environment and Sustainability	
SOC 667	Theories of State, Economy, and Society	
SOC 668	Environmental Sociology	
Group B: Concepts and Methods of Ecology and People		3
AGRI 500	Advanced Issues in Agriculture	
AGRI 562/ SOC 562	Sociology of Food Systems and Agriculture	
ANTH 330/ PHIL 330	Human Ecology	
ANTH 453	Impacts on Ancient Environments	
ANTH 515	Culture and Environment	
ANTH 572	Human Origins	
ANTH 573	Paleoclimate and Human Evolution	
BZ 353/NR 353	Global Change Ecology, Impacts and Mitigation	
RS 351	Wildland Ecosystems in a Changing World	
Group C: Concepts and Methods of Governance and Economy		3
ANTH 529	Anthropology and Sustainable Development	
AREC 340/ ECON 340	Introduction-Economics of Natural Resources	
AREC 460	Ag- and Resource-Based Economic Development	
AREC 478	Agricultural Policy	
AREC 540/ ECON 540	Environmental and Natural Resource Economics	
AREC 541/ ECON 541	Environmental Economics	
NR 320	Natural Resources History and Policy	
NR 625	Community-Based Natural Resource Management	
POLS 362	Global Environmental Politics	
POLS 532	Governance of the World Political Economy	
POLS 670	Politics of Environment and Sustainability	
POLS 739	International Environmental Politics	
Group D: Skills and Methods		3
ANTH 352	Geoarchaeology	
ANTH 441	Method in Cultural Anthropology	
ANTH 443	Ethnographic Field Methods	
ANTH 461	Anthropological Report Preparation	
ANTH 544	From Death to Discovery	
ESS 575	Models for Ecological Data	
GR 323/NR 323	Remote Sensing and Image Interpretation	
GR 410	Climate Change: Science, Policy, Implications	
GR 420	Spatial Analysis with GIS	
GR 503/NR 503	Remote Sensing and Image Analysis	

Program Total Credits: 15

A minimum of 15 credits are required to complete this program.

Russian Studies Interdisciplinary Minor

Office in Andrew G. Clark Building, Room C104
(970) 491-6141

Coordinated by the Department of Languages, Literatures and Cultures

The Russian Studies Interdisciplinary Minor is designed to give students in-depth knowledge of various aspects of Russian language, literature, culture, history and artistic expression, definable by the students' own interests. Credits from study abroad programs will be appropriately evaluated and may be included as a valuable part of the overall program.

Contact the Department of Languages, Literatures and Cultures (http://languages.colostate.edu) for details.

Effective Spring 2014

Of the 21 minimum credits required for the interdisciplinary minor, at least 15 must be upper-division (300- to 400-level). At least 12 credits must be from the subject code LRUS.

Additional coursework may be required due to prerequisites.

A minimum grade of C is required for each course counted toward the interdisciplinary minor.

Code	Title	Credits
Core Language Courses		
Select a minimum of 12 credits from the following courses. A minimum of 6 credits must be upper-division (300- to 400-level).		12
LRUS 101	First-Year Russian II	
LRUS 100	First-Year Russian I	
LRUS 200	Second-Year Russian I (GT-AH4)	
LRUS 201	Second-Year Russian II (GT-AH4)	
LRUS 250	Russian Language, Literature, Culture in Translation (GT-AH2)	
LRUS 296	Group Study--Russian [1]	
LRUS 304	Third-Year Russian I	
LRUS 305	Third-Year Russian II	
LRUS 350	Russian Culture	
LRUS 365	Introduction to Russian Cinema Studies	
LRUS 495	Independent Study-Russian	
LRUS 496	Group Study-Russian	
Upper-Division Selected Courses		
Select a minimum of 9 credits from the following:		9
E 452	Masterpieces of European Literature	
E 455	European Literature after 1900	
ECON 376	Marxist Economic Thought	
HIST 324	Imperial Russia	
HIST 329	Europe in Crisis, 1914-1941	
LGEN 465C	Studies in Foreign Film: Europe	
POLS 345	Russian, Central, and East European Politics	
Program Total Credits:		21

[1] Course may count toward the interdisciplinary minor with approval of minor advisor.

Students may petition to include up to 12 credits of coursework from outside the courses listed here. Courses must be from at least three different subject codes. To count toward the interdisciplinary minor, 30 percent or more of the course content should focus on Russia. Students must submit a syllabus for each course being petitioned to the Department of Languages, Literatures and Cultures and a brief description of individual work completed by the student for each proposed course. Courses from study abroad programs will be evaluated as part of the overall program.

Sports Management Interdisciplinary Minor

The Denver Broncos Sports Management Institute

Interdisciplinary Minor Coordinator/Instructor
Albert Bimper
217 Eddy Hall
Office: 970-491-1179
albert.bimper@colostate.edu
The Denver Broncos Sports Management Institute (https://broncosinstitute.colostate.edu)

The Sports Management Interdisciplinary Minor will provide undergraduate students with an overview of the sports industry from an interdisciplinary perspective. Students in this minor will acquire skills in various aspects of the sports industry, including public relations, turf management, facilities and event planning, management and marketing, hospitality services, diversity and leadership. Students selected for the competitive minor track will have hands-on experiences through internships and practicum opportunities with regional professional sports franchises, including the Denver Broncos.

Effective Fall 2016

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Required Courses		
ETST 314	Inclusive Sports Organizations	3
IU 140	Foundations of Sport Management	2
IU 271	Leadership Styles II: Prominent Leaders	2
IU 486	Practicum for Interdisciplinary Leadership [1]	3
IU 487	Internship for Interdisciplinary Leadership [1]	3
Select the appropriate course from the following:		3
Non-Business Majors and Minors:		
MKT 307	Fundamentals of Sports Marketing	
Business Majors and Minors:		
MKT 367	Sports Marketing	
Electives [2]		5
Program Total Credits:		21

Code	Title	Credits
Electives List		
AREC 202	Agricultural and Resource Economics (GT-SS1)	3
or ECON 202	Principles of Microeconomics (GT-SS1)	
AREC 346/ECON 346	Economics of Outdoor Recreation	3
CON 101	Introduction to Construction Management	3
CON 462	Financial Management for Construction	3
CON 571	Facility Planning and Management	3
ECON 101	Economics of Social Issues (GT-SS1)	3
FIN 305	Fundamentals of Finance	3
FIN 342	Risk Management and Insurance	3
HDFS 101	Individual and Family Development (GT-SS3)	3
HDFS 311	Adolescent/Early Adult Development in Context	3
HDFS 312	Adult Development-Middle Age and Aging	3
HES 309	Methods of Coaching	2
HES 379	Psychology and Sport	3
HORT 341	Turfgrass Management	3
HORT 441	Turfgrass Science	3
JTC 350	Public Relations	3
JTC 373	Digital Promotion Management	3
MKT 366	Services Marketing	3

PSY 100	General Psychology (GT-SS3)	3
RRM 312	Hospitality Human Resource Management	3
RRM 460	Event and Conference Planning	3
SOC 342	Leisure and Society	3
SOC 343	Sport and Society	3
SPCM 130	Relational and Organizational Communication (GT-SS3)	3
SPCM 200	Public Speaking	3
SPCM 278E	Communication Skills: Intercultural Competence	1
SPCM 278H	Communication Skills: Organizational Training	1
SPCM 436	Conflict Management and Communication	3

1 Registration for IU 486 and IU 487 depends on selection through a competitive application process. Consult the minor advisor. If student is not able to obtain a practicum or internship, they must take additional upper-division (300- to 400-level) credits from the Electives list.

2 Select enough credits from the Electives list to bring the program total to a minimum of 21 credits.

Sustainable Energy Interdisciplinary Minor

108 Johnson Hall
(970) 492-4215
Coordinated by the School of Global Environmental Sustainability (http://sustainability.colostate.edu).

The Sustainable Energy Interdisciplinary Minor offers undergraduate students, regardless of their major, an opportunity to gain a deeper knowledge of the many dimensions of sustainable energy. Students will complete 21 credits (at least 12 upper-division credits) in core and elective courses that are relevant to the technical, environmental, and social science issues as we transition to a sustainable energy future.

Effective Fall 2017

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Required Core Courses		
GES 101	Foundations of Environmental Sustainability	3
GES 141	Introduction to Sustainable Energy	3
GES 441	Analysis of Sustainable Energy Solutions	3
Social and Economic Issues Course List (3-6 credits must be upper-division – see list below) [1]		6
Science and Technology Course List (3-6 credits must be upper-division – see list below) [1]		6
Program Total Credits:		21

Social and Economic Issues Course List [1]

Code	Title	Credits
Lower Division:		
AREC 202	Agricultural and Resource Economics (GT-SS1)	3
or ECON 202	Principles of Microeconomics (GT-SS1)	
AREC 240/ECON 240	Issues in Environmental Economics (GT-SS1)	3
POLS 101	American Government and Politics (GT-SS1)	3
Upper Division:		
ECON 444/AREC 444	Economics of Energy Resources	3
ESS 542	Greenhouse Gas Policies	2
NR 320	Natural Resources History and Policy	3
POLS 364	Air, Climate, and Energy Policy Analysis	3

Science and Technology Course List [1]

Code	Title	Credits
Lower Division:		
ATS 150	Science of Global Climate Change	3
May select one option from the following:		
BZ 104 & BZ 105	Basic Concepts of Plant Life (GT-SC2) and Basic Concepts of Plant Life Laboratory (GT-SC1)	
BZ 120	Principles of Plant Biology (GT-SC1)	
LIFE 102	Attributes of Living Systems (GT-SC1)	
CBE 210	Thermodynamic Process Analysis	3
CHEM 103	Chemistry in Context (GT-SC2)	3
May select one course from the following:		
CHEM 107	Fundamentals of Chemistry (GT-SC2)	
CHEM 111	General Chemistry I (GT-SC2)	
CHEM 117	General Chemistry I for Chemistry Majors	
ESS 210/GR 210	Physical Geography	3
May select one course from the following:		
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)	
GEOL 122	The Blue Planet - Geology of Our Environment (GT-SC2)	
GEOL 150	Physical Geology for Scientists and Engineers	
May select one course from the following:		
PH 110	Physics of Everyday Phenomena (GT-SC2)	
PH 121	General Physics I (GT-SC1)	
PH 141	Physics for Scientists and Engineers I (GT-SC1)	
Upper Division:		
ATS 350	Introduction to Weather and Climate	2
ATS 351	Introduction to Weather and Climate Lab	1
ATS 555	Air Pollution	3
BZ 332	Introductory Phycology	4
BZ 353/NR 353	Global Change Ecology, Impacts and Mitigation	3
BZ 440	Plant Physiology	3
CIVE 424/GEOL 424	Modern Gas and Oil	3

CON 476	Sustainable Practice-Design and Construction	3
ECE 465	Electrical Energy Generation Technologies	3
ENGR 501	Foundations of Systems Engineering	3
ENGR 530	Overview of Systems Engineering Processes	3
ESS 311	Ecosystem Ecology	3
ESS 524	Foundations for Carbon/Greenhouse Gas Mgmt	3
LIFE 320	Ecology	3
MECH 303	Energy Engineering	3
MECH 337	Thermodynamics	4
MECH 463	Building Energy Systems	3
MECH 575	Solar and Alternative Energies	3
PH 361	Physical Thermodynamics	3

[1] At least 9 of the 12 credits required between the two Course Lists must be upper-division (300- to 400- level) credits.

Sustainable Water Interdisciplinary Minor

Office in Johnson Hall, Room 119
watercenter.colostate.edu (http://watercenter.colostate.edu)

Coordinated by the Colorado Water Center in partnership with the School of Global Environmental Sustainability.

Water is a complex, interdisciplinary topic that is critical to our economic, societal, and environmental well-being. Issues surrounding water supply, water quality, and ecological relationships have become increasingly important in Colorado, the American West, and internationally as water demands increase. The complexity of these issues and competition among various water users demands that students interested in pursuing careers in water gain a broad introduction to the issues while specializing in a particular discipline.

CSU has developed considerable water resources expertise in many academic fields over the past century. The Sustainable Water Interdisciplinary Minor (SWIM) requires 21 credits and a minimum of 12 upper-division (300- 400-level) courses which allow undergraduates to take advantage of this expertise and broaden their backgrounds regarding water resources in order to prepare for employment or graduate-level work.

Effective Fall 2019

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Core Courses (12 credits)		
AREC 240/ECON 240	Issues in Environmental Economics (GT-SS1)	3
AREC 342	Water Law, Policy, and Institutions	3
GES 120	Water Sustainability in the Western US	3
GR 304/WR 304	Sustainable Watersheds	3
Foundations of Water (3 credits)		
Select a minimum of 3 credits from the following Foundation course groups:		3
Select no more than one course from the following:		
BZ 104	Basic Concepts of Plant Life (GT-SC2)	
BZ 110	Principles of Animal Biology (GT-SC2)	
BZ 120	Principles of Plant Biology (GT-SC1)	
FW 204	Introduction to Fishery Biology	
LIFE 103	Biology of Organisms-Animals and Plants	
Select no more than one course from the following:		
CHEM 103	Chemistry in Context (GT-SC2)	
CHEM 107	Fundamentals of Chemistry (GT-SC2)	
CHEM 113	General Chemistry II	
Select no more than one course from the following:		
ESS 210/GR 210	Physical Geography	
GR 100	Introduction to Geography (GT-SS2)	
Select no more than one course from the following:		
ESS 211	Foundations in Ecosystem Science	
ESS 311	Ecosystem Ecology	
LAND 220/ LIFE 220	Fundamentals of Ecology (GT-SC2)	
LIFE 320	Ecology	
Select no more than one course from the following:		
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)	
GEOL 122	The Blue Planet - Geology of Our Environment (GT-SC2)	
GEOL 124	Geology of Natural Resources (GT-SC2)	
GEOL 150	Physical Geology for Scientists and Engineers	
Select no more than one course from the following:		
PH 110	Physics of Everyday Phenomena (GT-SC2)	
PH 121	General Physics I (GT-SC1)	
PH 141	Physics for Scientists and Engineers I (GT-SC1)	
Contexts of Water (6 credits)		
Select a minimum of 6 credits from the following courses (No more than 4 credits per subject code):		6
Sociological-Economic Context		
AGRI 270/IE 270	World Interdependence-Population and Food (GT-SS3)	
AREC 341	Environmental Economics	
CON 476	Sustainable Practice-Design and Construction [1]	
E 339	Literature of the Earth	
GES 101	Foundations of Environmental Sustainability	
JTC 461	Writing About Science, Health, and Environment	
NR 320	Natural Resources History and Policy	
PHIL 320	Ethics of Sustainability	
PHIL 345	Environmental Ethics	
POLS 361	U.S. Environmental Politics and Policy	
SOC 323	Soc. of Environmental Cooperation & Conflict	

SOC 461	Water, Society, and Environment
Ecological-Biological Context	
BZ 415	Marine Biology
BZ 471	Stream Biology and Ecology
BZ 474/ESS 474	Limnology
ERHS 320	Environmental Health--Water Quality
FW 300	Biology and Diversity of Fishes
FW 400	Conservation of Fish in Aquatic Ecosystems
HORT 368/ LAND 368	Landscape Irrigation and Water Conservation
Physical Context	
ATS 150	Science of Global Climate Change
CIVE 322	Basic Hydrology
CIVE 330	Ecological Engineering
CIVE 413	Environmental River Mechanics
CIVE 423	Groundwater Engineering
CIVE 440	Nonpoint Source Pollution
GEOL 452	Hydrogeology
SOCR 370	Irrigation Principles
SOCR 371	Irrigation of Field Crops
WR 406	Seasonal Snow Environments
WR 416	Land Use Hydrology
WR 418	Land Use and Water Quality
WR 474	Snow Hydrology
Program Total Credits:	21

[1] Enrollment in CON 476 is limited to Construction Management majors only.

Systems Engineering Graduate Interdisciplinary Studies Program

Office in Engineering Building, Room AR 202

Coordinated by a Faculty Advisory Board and the College of Engineering

The Systems Engineering Interdisciplinary Studies Program is designed to address the current trend toward increasingly complex systems that exists across a variety of disciplines, including aerospace, energy, environment, and biosciences. The objective of the program is to expose engineers and industry professionals to a disciplined development process in order to manage complex engineered systems and produce quality and reasonably priced products.

The program is open to graduate students and professionals who hold a B.S. degree. Coursework in calculus and statistics (or the ability to apply statistical methods) is also required.

Requirements
Effective Spring 2015

Code	Title	Credits
Core Courses		
Select one from the following:		3
CIS 600	Information Technology and Project Management	
CIS 670	Advanced IT Project Management	
ENGR 502	Engineering Project and Program Management	
ENGR 501	Foundations of Systems Engineering	3
ENGR 530	Overview of Systems Engineering Processes	3
ENGR 531	Engineering Risk Analysis	3
Program Total Credits:		12

Women's Study Interdisciplinary Minor

Clark A basement, Room 019
(970) 491-6182
womensstudies.colostate.edu

Coordinated by Dr. Caridad Souza, Director, Center for Women's Studies and Gender Research

The world is complex, interconnected, and interdependent, which complicates how we understand and relate to one another. That's why a Women's Study Interdisciplinary Minor is important. By exploring the way gender intersects with sexuality, race, ethnicity, class, ability, religion, and nationality, our students come to better understand personal and political identities, a critical component to understanding how power and privilege play out in work, politics, and culture. Through classes in anthropology, art, economics, English, ethnic studies, psychology, sociology, and other related fields that specifically focus on women and gender dynamics, students will:

1) explore academic disciplines from a feminist and gender studies perspective;

2) develop an appreciation of the historic and contemporary contributions of women and gender in all cultures;

3) understand the ideological assumptions regarding women and gender implicit in social institutions;

4) recognize how multiple systems of power and privilege intersect in our everyday lives; and

5) acquire knowledge and skills necessary for physical, social, and emotional well-being.

The Women's Study Interdisciplinary Minor prepares individuals for the needs and opportunities of a changing world by building awareness of the range of human experience, potential, and accomplishment that place women and gender at the center of inquiry. Women's Studies transform disciplinary assumptions and theories, create innovative models for teaching and research, and develop practices for challenging systems of power and privilege. Students interested in pursuing the Women's Study Interdisciplinary Minor should contact the Center for Women's Studies and Gender Research (http://womensstudies.colostate.edu). Completion of requirements will be noted on the student's permanent record.

Effective Spring 2015

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Students enrolled in the undergraduate Women's Study Interdisciplinary Minor are required to earn a grade of C (2.000) or better in each course completed for undergraduate minor credit.

Code	Title	Credits
Core Courses		
ETST 405	Ethnicity, Class, and Gender in the U.S.	3
WS 200	Introduction to Women's Studies	3
WS 472	Seminar in Multiracial & Decolonial Feminisms	3
Intersectionality of Race, Sexuality and Gender [1]		
Select one of the following courses:		3
ANTH 338	Gender and Anthropology	
ETST 254	La Chicana in Society	
ETST 300	Queer Studies and Women of Color	
ETST 352/ SOWK 352	Indigenous Women, Children, and Tribes	
ETST 411	Black Feminism(s)	
ETST 413	Queer Creative Expressions	
Elective Courses [1]		
Select 9 credits from the following courses:		9
AM 550	Appearance, Self, and Society	
ANTH 338	Gender and Anthropology	
ANTH 520	Women, Health, and Culture	
E 330	Gender in World Literature	
E 331	Early Women Writers	
E 332	Modern Women Writers	
ECON 211	Gender in the Economy (GT-SS1)	
ETST 254	La Chicana in Society	
ETST 300	Queer Studies and Women of Color	
ETST 352/ SOWK 352	Indigenous Women, Children, and Tribes	
ETST 411	Black Feminism(s)	
ETST 413	Queer Creative Expressions	
HIST 320	Women and Gender in Europe, 1450-1789	
HIST 358	American Women's History to 1800	
HIST 359	American Women's History Since 1800	
IE 470	Women and Development	
PHIL 353	Feminist Philosophies	
PSY 327	Psychology of Women	
PSY 437	Psychology of Gender	
SOC 450		
SPCM 335	Gender and Communication	
WS 397	Group Study	
WS 495	Independent Study	
Program Total Credits:		21

[1] Courses may not be used to satisfy both the "Intersectionality of Race, Sexuality, and Gender" and the "Elective Courses" categories. At least 6 of the 12 credits required for these course selections must be upper-division (300- to 400-level).

Division of Armed Forces Services

Department of Aerospace Studies
Department of Military Science

Reserve Officers' Training Corps (ROTC)

History

An Act of Congress dated July 2, 1862, provided for military science and tactics instruction in federal land-grant colleges. Such instruction has been given at Colorado State University since its establishment.

In 1919, the Department of Military Science and Tactics of the institution was included in the Reserve Officers' Training Corps under the provisions of the First National Defense Act, July 3, 1916. The ROTC Vitalization Act of 1964 provides for a two-year ROTC program in addition to the traditional four-year program and authorizes ROTC scholarships.

General Information

The Army and Air Force four-year programs complement the four college years and include one summer encampment. Students satisfactorily completing Army or Air Force departmental requirements will be commissioned as second lieutenants in the Army or Air Force.

Additionally, the Army offers a two-year program whereby a student may earn a commission after completing two years of ROTC training during the junior and senior undergraduate years or during a two-year graduate degree program. This program is designed for transfer students or students unable to take ROTC training during their freshman and sophomore years. The minimum time needed in Air Force ROTC is three years.

Each student entering the junior year (freshman or sophomore year if a scholarship recipient) of ROTC enlists in the Army or Air Force Reserve and signs a contract. This contract includes a military service commitment and obligates the student to complete the junior and senior year ROTC courses, and to accept a commission as a second lieutenant. Army contracted cadets receive a tax-free stipend of $420 per month. Air Force contracted cadets receive a monthly stipend amount based on the AS class level: Freshman $300, Sophomore $350, Junior $450, and Senior $500. The Aerospace Studies Air force ROTC book stipend is now $900.

Some graduates defer active duty until the attainment of graduate degrees. Opportunities also exist for graduate study while on active duty. Active duty officers may be selected for enrollment at civilian universities in graduate degree programs. When selected, such study is accomplished with full pay and allowances for an officer.

Purpose

The purpose of the Army and Air Force ROTC courses is to develop leadership capabilities, to provide expertise in organizational skills, and to qualify students for duty as officers with the Armed Forces of the United States. The courses are designed to develop self-confidence, initiative, leadership skills, critical thinking skills, and a sense of duty and honor as a citizen and potential future officer.

College Scholarship Program

Scholarships are available to qualifying students entering or enrolled in the University Air Force or Army ROTC programs. Scholarship consideration is predicated on student ability, performance, and potential. In order to accept the scholarship, if offered, the student must enroll in

ROTC, be medically qualified for military service, pass a physical fitness test, and take an oath to defend the constitution of the United States. These ROTC scholarships may provide payment of up to full tuition (resident and non-resident), laboratory expenses, mandatory fees, a textbook allowance of $600 (Air Force) and $1,200 (Army) per year, and a tax free stipend of $420 per month.

Details of the scholarship program may be obtained online through the Air Force (http://afrotc.com) and Army (http://www.goarmy.com/rotc/ways-to-attend.html), and from the ROTC department concerned. Refer to the department listings for names of persons who can supply additional information.

Department of Aerospace Studies

Office in Military Science Building, Room 204
(970) 491-6476
airforce.colostate.edu (http://airforce.colostate.edu)
afrotc.com (http://afrotc.com)

Colonel Timothy W. Childress, USAF, Professor of Aerospace Studies

Air Force ROTC

The mission of the Air Force ROTC program is to develop and produce quality leaders for the Air Force. Enrollment is open to any student attending the University on a full-time basis. The curriculum provides the individual with a firm understanding of the concepts of aerospace power and the Air Force mission, organization, and operation.

Enrollment in AFROTC is voluntary and accomplished through the fall and spring registration periods. Scholarships are available in many academic disciplines on a competitive basis. Approximately one-half of the students hold scholarships. Depending on the semester, approximately one-quarter of the cadet corps consists of women. Almost all Air Force career fields are open to women, including pilot positions.

General Program

The four-year program consists of the General Military Course (GMC) during the freshman and sophomore years and the Professional Officer Course (POC) for the remaining two years of college. Enrolled students are referred to as cadets. Compressed options may be available for students starting after their freshman year. Four-year cadets participate in a two-week field training period during the summer between their sophomore and junior years. Students may enroll in the Aerospace Studies courses for credit or to earn a minor; however, they are not considered members of Air Force ROTC.

Scholarships

Air Force ROTC offers college students scholarships to pay for up to $18,000 tuition, most fees, and $900 per year for books. In addition, all cadets on scholarship receive a nontaxable monthly allowance during the academic year. Currently, the monthly amount is $300 for freshmen increasing each year up to $500 for seniors. The program is open to college freshmen and sophomores in any major.

Summer Programs

Air Force ROTC offers many summer programs to take advantage of. Before completing the ROTC program all cadets must complete field training, which is a rigorous two-week program involving physical conditioning, weapons training, and survival training. But more than that field training is an opportunity to develop your skills as both a leader and team member. In addition to field training, cadets may choose to participate in other experiences and you will be able to tell your friends that you did something truly amazing. These summer programs include: freefall parachuting, advanced engineering, NASA research, nurse orientation, cultural and language immersion programs, and several others. In addition to the experience of a lifetime, you will receive travel to and from the location, room and board, and daily training pay.

Active Duty Obligation

There is no active duty obligation for enrolling in either the freshman or sophomore AFROTC courses. Cadets who complete the Air Force ROTC program and receive a commission incur a minimum four-year, active duty commitment. Pilots, Combat System Operators, and Air Battle Managers serve additional commitments from the time they complete their training.

Requirements
Minor in Aerospace Studies

The minor in Aerospace Studies is offered to any student completing the course of study listed below. In addition to studying Air Force organizations, missions, and operations, the student will gain a broad perspective of the military in general by studying the history of all Department of Defense Services and completing at least one Army ROTC course, thus emphasizing our country's focus on "joint" military operations.

Additional coursework may be required due to prerequisites.

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Code	Title	Credits
Lower Division		
AS 101	Heritage and Values of the US Air Force I	1
AS 102	Heritage and Values of the US Air Force II	1
AS 201	Air Force Team & Leadership Fundamentals I	1
AS 202	Air Force Team & Leadership Fundamentals II	1
Select one course from the following:		2-3
MLSC 101	Introduction to the Army	
MLSC 102	Foundations of Agile and Adaptive Leadership	
MLSC 201	Leadership and Decision Making	
MLSC 202	Army Doctrine and Team Development	
Upper Division		
AS 301	Leading People and Effective Communication I	3
AS 302	Leading People and Effective Communication II	3
AS 333	Operational Air Force Writing	2
AS 401	National Security Affairs/Active Duty I	3
AS 402	National Security Affairs/Active Duty II	3
MLSC 357/HIST 357	The American Military Experience	3
Program Total Credits:		23-24

Department of Military Science

Military Science Building, Room 101
(970) 491-1640
armyrotc.colostate.edu (http://armyrotc.colostate.edu)

Mr. Peter Bleich, Recruiting Operations Officer

Army ROTC

The Army ROTC program provides professional education and leadership training to those students who desire to serve our country as officers in the U.S. Army upon graduation. Successful completion of the program qualifies ROTC cadets for both a commission as a second lieutenant in the Army and an opportunity to serve at least four years on active duty or at least six years in the reserve component (Army Reserve or Army National Guard).

The successful ROTC cadet may choose one of the 17 diverse and exciting career fields in which to serve as an Army officer. A list of these career fields may be obtained from the Department of Military Science.

General Program

The Military Science program is subdivided into two levels. The Basic Course is aligned with the freshman and sophomore years and consists of the fundamentals of leadership and management, critical thinking, land navigation, small unit operations, and rappelling. The Advanced Course is aligned with the junior and senior years and covers leadership assessment, military history, ethics, and the Army as a profession. It also includes leadership skills that prepare the cadet for entry into active or reserve duty as a commissioned officer. Participation in leadership laboratories is open to all students who are enrolled in a military science class.

Two-Year and Graduate Degree Programs

A two-year program is available for students who have not taken the first two years of ROTC, or for those who have completed an undergraduate degree and are seeking a two-year graduate program. This program requires the student to attend a summer course at Fort Knox, Kentucky. The four-week summer course, taken between the sophomore and junior years or prior to starting a graduate degree program, consists of basic military training and allows the student to enter the Advanced Course upon return to campus. The completion of basic training during prior enlisted service will also serve as qualification to enter the two year Advanced Course.

Another option to attain an officer's commission is through the Simultaneous Membership Program (SMP). This program allows a cadet who is a member of an Army Reserve or Army National Guard unit to be in the Advanced Course of ROTC, be paid at the cadet drill pay rate (equivalent to E-5 pay), work as an officer trainee in their unit, and compete for an Army Reserve component or active duty commission. Students can also receive the GI Bill and tuition assistance benefits while in Army ROTC.

The Military Science curriculum is intended to enrich and supplement baccalaureate or postgraduate studies in all fields. The Army recognizes the need for officers with varied academic credentials and will award a commission to students who successfully complete ROTC.

Flight Training

After commissioning, flight training is available, although competitive, to those officers who have taken and passed the flight physical and flight aptitude test and have been selected for service within the Aviation Branch. The flight aptitude test is normally administered during the MS III or junior year of ROTC. Training will be rotary wing (helicopter) training.

Scholarships

CSU Army ROTC cadets may be awarded scholarships that pay full tuition (in-state or out-of-state), mandatory fees, $1,200 per year for books and a stipend (living allowance) of $420 per month. Applications for the four-year scholarship can be requested by applying online (http://www.goarmy.com/rotc/scholarships.html). Two- and three-year scholarships, for sophomores and freshmen respectively, may be applied for throughout the school year directly through the on-campus Army ROTC Program.

Financial Assistance Opportunities

In addition to two-, three-, and four-year scholarships, Army ROTC has the Simultaneous Membership Program (SMP), which provides additional experience and financial assistance from two sources: a National Guard or Reserve unit and Army ROTC. SMP students may also qualify for GI Bill benefits, loan repayment money, and up to 100% tuition assistance, based on available funding and service time.

Requirements
Effective Fall 2017

Additional coursework may be required due to prerequisites.

Students must satisfactorily complete 21 of the total credits offered for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

To receive a minor in Military Science, students must commission as 2nd Lieutenants in the U.S. Army upon graduation from CSU.

Code	Title	Credits
Lower Division		
Choose 2 to 8 credits from the list below:		2-8
MLSC 101	Introduction to the Army	
MLSC 102	Foundations of Agile and Adaptive Leadership	
MLSC 201	Leadership and Decision Making	
MLSC 202	Army Doctrine and Team Development	
MLSC 250	Basic Camp Leader Internship [1]	
Credit awarded for prior military service [2]		
Upper-Division		
Choose 13-19 credits from the list below:		13-19
MLSC 301	Adaptive Tactical Leadership	
MLSC 302	Applied Leadership in Small Unit Operations	
MLSC 357/ HIST 357	The American Military Experience	
MLSC 396	Military Science Group Study V	
MLSC 397	Military Science Group Study VI	
MLSC 401	The Army Officer	

MLSC 402	Company Grade Leadership	
MLSC 496	Military Science Group Study VII	
MLSC 497	Military Science Group Study VIII	
Program Total Credits:		21

1 MLSC 250 requires attendance at the five-week basic camp and can be applied toward lower division credits.

2 Students may be given transfer credit for prior military service that can be applied to lower division credits.

Environmental Studies

The broad spectrum of environmental studies at CSU is uniquely dispersed in 100 majors and concentrations housed in departments throughout CSU. As a land-grant institution, a key component of CSU's mission is to provide education in environmental management, science, and policy. It is difficult to find a degree or department that does not directly address environmental issues at local, national, and international scales. Campus-wide participation in environmental science and management is a result of fundamental linkages between basic science and management of critical environmental issues. Consequently, a unique strength of CSU is a tradition of interdisciplinary research, teaching, and service, which is essential in understanding the environmental issues of today's world.

Programs engaged in environmental studies at CSU have goals that include:

- Understanding that scientific knowledge, policy considerations, and ethical issues are necessarily joined;
- Comprehending the interrelationships among the environment, natural resources, and human society.
- Perceiving the need to integrate diverse social, political, legal, institutional, and scientific considerations inherent in attaining environmental goals;
- Educating students to be articulate, sensitive, and knowledgeable about the complexity of environmental issues facing society;
- Providing a balanced understanding of the natural and social processes as they relate to the environment.

Some examples of the many areas in environmental studies at CSU are: agricultural business; air pollution assessment and management; air quality; biological control and pest management; global climate change; biodiversity and conservation biology; biomedical engineering; ecology and ecosystem management; ecotourism; ecotoxicology; environmental communication; environmental engineering; environmental ethics; environmental history and policy analysis; environmental horticulture; environmental soil science; environmental geology, land ethics, and stewardship; environmental sociology; natural resource economics; natural resources and environmental management; natural resource tourism; occupational health and workplace management/control; park and protected areas management; pesticide management; pollution control; reproductive and environmental risk factors; risk assessment and management; solid and hazardous waste management; sustainable building design and construction; and water chemistry, quality, and management.

The programs at CSU that engage in environmental studies are incorporated within existing majors in the following colleges (departments): *College of Agricultural Sciences* (Agricultural and Resource Economics; Bioagricultural Sciences and Pest Management) (graduate only); Horticulture and Landscape Architecture; Soil and Crop Sciences; *College of Health and Human Sciences* (Construction Management); *College of Engineering* (Atmospheric Science) (graduate only); Chemical and Biological Engineering; Civil and Environmental Engineering; Mechanical Engineering; *College of Liberal Arts* (Anthropology; English; History; Philosophy; Political Science; Sociology); *Warner College of Natural Resources* (Fish, Wildlife, and Conservation Biology; Ecosystem Science and Sustainability; Forest and Rangeland Stewardship; Geosciences; Human Dimension of Natural Resources; Natural Resource Ecology Laboratory); *College of Natural Sciences* (Biology; Biochemistry and Molecular Biology; Chemistry; Physics; Psychology); *College of Veterinary Medicine and Biomedical Sciences* (Biomedical Sciences; Environmental and Radiological Health Sciences; Microbiology, Immunology, and Pathology). In addition, CSU offers an Environmental Affairs Interdisciplinary Studies Program and an Undeclared Environmental/Natural Resource Interest for students who first wish to explore options with environmental studies campus-wide before selecting a major (contact the Warner College of Natural Resources for more information on the undeclared option). For further information about specific environmental studies-focused majors, please contact the respective college/department and see their program descriptions within this catalog.

School of Global Environmental Sustainability (SoGES)

Office in Johnson Hall, Room 108
(970) 491-4070

The School of Global Environmental Sustainability (http://sustainability.colostate.edu) (SoGES) seeks to prepare students to meet today's pressing environmental challenges. Using an interdisciplinary approach within a framework of sustainability, students will be led in innovative research leading to the knowledge and understanding needed to approach and solve problems of the human-environment interaction. SoGES' vision encompasses laying the foundation and defining the principles and practices that will ensure long-term environmental sustainability, while continuing to meet the needs of people around the earth.

Mentored Research and Artistry Program

Office in the TILT Office for Undergraduate Research and Artistry
(970) 491-1566
tilt.colostate.edu/oura (http://tilt.colostate.edu/oura)

Mark A. Brown, Director

Program Background

The faculty, staff, and students at CSU are actively engaged in a wide range of scholarly activities that both anticipate and respond to the interests and needs of the people of Colorado, the nation, and the world. In these endeavors, we are recognized as one of the most highly rated public research universities in the United States. Faculty, staff, and students at CSU are pioneers in a variety of disciplines that help shape our global environment. The Mentored Research and Artistry Program provides a structure for undergraduate students to engage in these activities. Whether investigating infectious disease or the benefits of music therapy, international economics, or regional climate change, every

undergraduate is encouraged to contribute to the scholarly output of CSU.

Program Philosophy

Aristotle noted, "For the things we have to learn before we can do them, we learn by doing them." The development and application of new knowledge plays an essential role at research-intensive universities, enhancing both learning and teaching. The Mentored Research and Artistry Program allows students to initiate a learning experience under the close guidance of a faculty mentor. Research and artistry, as an extension of the learning experience beyond the classroom, leads to the acquisition of skills and unique mindsets necessary to create new ideas and expand human knowledge. Through inquiry, students become their own teachers pursuing answers to unresolved questions and enriching their educational experience. For example, a student may use techniques learned in a chemical engineering laboratory to explore alternatives for clean energy. Another student might expand the technical repertoire of acrylic painting in the context of experimenting on canvas. In all cases, each student's path to new knowledge is enhanced with the guidance and experience of a mentor. The role of faculty mentors in undergraduate inquiry is to provide input, feedback, and support while guiding students in the responsible and ethical pursuit of new knowledge and experiences.

Main Features

The Mentored Research and Artistry Program is designed to enhance and recognize the learning experiences of undergraduates who are engaged in research, artistry, or other forms of creative work. The experience allows students to distinguish themselves as undergraduate scholars in their disciplines. This opportunity is open to all undergraduate students in good academic standing who have at least two full semesters remaining before graduation. The criteria for completion of the program are rigorous, ensuring that only the most dedicated students receive the distinction of Mentored Research and Artistry Program on their transcript. Students earn the right to wear the Mentored Research and Artistry Program's Silver Ribbon with their graduation regalia and of listing this distinction among their academic achievements.

Requirements

To complete the program, the following requirements must be satisfied.

1. Inquiry projects must be conducted under the guidance of a faculty, staff, or industry mentor for a minimum duration of two semesters. Approval of projects by the Office for Undergraduate Research and Artistry is required. Forms and guidelines for program registration are available at TILT (http://tilt.colostate.edu/oura).
2. Participating students must complete a workshop on the Responsible Conduct of Research (https://vpr.colostate.edu/ricro/rcr) (RCR), provided regularly by the Office for Undergraduate Research and Artistry. Upon completion of the RCR workshop, participants are required to complete the online RCR training and examination module available at RCR (https://vpr.colostate.edu/ricro/rcr). Students must register and actively participate in a student organization related to their discipline and approved by the Office for Undergraduate Research and Artistry. Students will be required to submit a letter from the organization's Faculty/Graduate advisor verifying the student's active involvement for at least two semesters.
3. Students must complete a research methods course with a grade of C or higher. The course must be approved by the Office for Undergraduate Research and Artistry.
4. Inquiry projects must be presented at CSU's annual Celebrate Undergraduate Research and Creativity (CURC) Showcase or another venue approved by the Office for Undergraduate Research and Artistry, such as a regional or national conference. A program highlighting the participant's project or a letter of verification from the faculty mentor must be included with the final report.
5. Projects must be submitted for publication in the CSU's *Journal of Undergraduate Research and Scholarly Excellence* or in another peer-reviewed journal, approved by the Office for Undergraduate Research and Artistry. A copy of the published manuscript or correspondence from an editor of the journal to which a manuscript has been submitted indicating the manuscript is under review should be included with the participant's final report.

Upon completion of a project, participants must submit a final report including a summary of the project, its outcomes, and a detailed reflection of the experience along with a letter from the mentor (report forms and guidelines are available at TILT (http://tilt.colostate.edu/oura)). The Office for Undergraduate Research and Artistry will generate an electronic file for each participant. Upon submission of the final report, the Office for Undergraduate Research and Artistry will review the file and confirm the student's successful completion of the program notifying the CSU Registrar's Office for transcription of the Mentored Research and Artistry Program.

University Honors Program

Office in Academic Village, B 102
(970) 491-5679
honors.colostate.edu (http://honors.colostate.edu)

Program Philosophy

The University Honors Program, established in 1957, is a special learning community that offers extraordinary students a wide range of enriching educational experiences. Hallmarks of the program include small classes and interdisciplinary seminars taught by some of the University's finest teachers, individualized academic advising, faculty-mentored research and other creative activities, an optional residential learning community in the Academic Village, early registration for classes, co-curricular activities, a scholarship for students who enter the program in the freshman year, and assistance with applications for prestigious post-graduate awards. Approximately 1,650 students participate in the program where they receive a world class education, enjoy the personalized attention typically found at a small college, and benefit from the resources and diversity of a nationally acclaimed research university.

Main Features

University Honors Core Curriculum. Two curricular options provide enriched educational experiences for high achieving students in all majors. The Track 1 curriculum, designed for entering first-year students is composed of five Honors seminars, two Honors courses in the major, and a faculty-mentored senior year creative activity (thesis). Completing Track 1 fulfills five of the categories in Colorado State University's All University Core Curriculum, as well as the oral communications requirement in most majors that require a speech class. Participating in the Honors program provides for a more enriched and rewarding education without extending the time to graduation.

The Track 2 curriculum, designed for continuing or transfer students, is composed of one to two honors seminars, five or six Honors courses (15-18 credits) in the major and a faculty-mentored senior year creative

activity (thesis). Students who have completed 15+ credits at college level and have a 3.5 cumulative grade point average are eligible to apply. Entering first-year students who transfer 30+ credits that already satisfy many AUCC categories through AP, IB, or college courses are eligible for Track 2.

Graduating as a University Honors Scholar. Students who complete the Honors requirements and achieve at least a 3.5 cumulative grade point average earn the prestigious designation of University Honors Scholar. Scholars are recognized at graduation, and the University Honors Scholar designation appears on their diplomas and transcripts. For more information on graduation as a University Honors Scholar, see the section on Scholastic Standards.

Admission to the Program. The application and selection process, which targets high school seniors and transfer students, is designed to attract an Honors class that represents high academic achievement, diversity of life experiences, and great promise for contributing to the Honors and University communities. Typically, about 500 first-year students enroll in the Honors Program each year. Currently enrolled CSU students may also apply to the University Honors Program after their first semester of college, and high-achieving transfer students are invited to apply.

The Honors Residential Learning Community. The optional Honors Residential Learning Community (HRLC) is located in the Academic Village and in Edwards Residence Hall. It links in-class and out-of-class student learning through residence life experiences and special programs. Students, especially first-year students, are encouraged to take advantage of this special opportunity. The HRLC is home to the Honors Office and classrooms that are used for seminars, special lectures, study sessions, and a wide variety of co-curricular activities. The 24/7 Fireside Lounge is located near the Program Office in the Academic Village.

The Honors Merit Scholarship. All new first-year students who have been admitted to, confirm to the program, and participate in the University Honors program receive a renewable scholarship. Students who remain in good standing with the University Honors Program and meet the minimum GPA requirement for continuation of the honors merit scholarship will receive the scholarship for four years. Students entering their senior year are also invited to apply for additional donor-funded scholarships, and all honors students are encouraged to apply for Honors Enrichment Awards and Thesis Improvement Grants to supplement their educational activities.

Requirements

Honors Entering Student Pathway (Option 1)

Honors Entering Student Pathway (Option 2)

Honors Continuing/Transfer Student Pathway

University Honors Core Curricula

The Honors program of study provides exceptional academic studies that include breadth and perspectives, in-depth studies, a senior year creative activity, and Honors elective courses. Two curricular pathways provide enriched educational experiences for high ability students in all majors. The Entering Student Pathway curriculum fulfills nearly half of the All-University Core Curriculum (AUCC) requirements, allowing Honors students to graduate on schedule and without additional cost. The Continuing/Transfer Student Pathway curriculum satisfies Honors requirements by taking Honors courses in their majors and departments. Students who complete either curriculum and graduate with a cumulative 3.5 GPA or greater receive "University Honors Scholar" designation on their diploma and transcripts.

The Honors courses enroll between 18 and 22 students and are taught by some of the University's finest teachers.

Honors Entering Student Pathway (2 Options) Effective Fall 2018

Option 1

		AUCC	Credits
Freshman			
HONR 192	Honors First Year Seminar		4
HONR 193	Honors Seminar	1A	3
	Total Credits		7
Sophomore			
Select one course from the following:			3
HONR 292A	Honors Seminar: Knowing in the Sciences	3A	
HONR 292B	Honors Seminar: Knowing in Arts and Humanities (GT-AH2)	3B	
HONR 292C	Honors Seminar: Knowing Across Cultures (GT-SS3)	3E	
Honors course[1]			3
	Total Credits		6
Junior			
HONR 392	Honors Seminar	3B	3
HONR 399	Pre-thesis		1
Honors course[2]			3
	Total Credits		7

Senior

HONR 492	Honors Senior Seminar	3C	3
HONR 499	Senior Honors Thesis		3
	Total Credits		6
	Program Total Credits:		26

1 Sophomore-level Honors course in the student's major, department, and/or college.

2 Upper-division Honors course in the student's major, department, and/or college.

Students completing the Honors Core Curriculum will fulfill the All-University Core Curriculum (AUCC) core competency requirements in the following categories: 1A – Intermediate Writing; three credits of the six required for 3B – Arts and Humanities; 3C – Social and Behavioral Sciences; 3D – Historical Perspectives; 3E – Global and Cultural Awareness. Students completing some, but not all, of the program will fulfill some of the AUCC core competencies. Complete details are available from the Honors Program office.

Option 2

Option 2 is available only to entering students with >30 transfer credits.

Freshman

		AUCC	Credits
HONR 192	Honors First Year Seminar		4
	Total Credits		4

Sophomore

Select one course from the following:			3
HONR 292A	Honors Seminar: Knowing in the Sciences	3A	
HONR 292B	Honors Seminar: Knowing in Arts and Humanities (GT-AH2)	3B	
HONR 292C	Honors Seminar: Knowing Across Cultures (GT-SS3)	3E	
	Total Credits		3

Junior

HONR 399	Pre-thesis		1
Honors courses in the major[1]			9
	Total Credits		10

Senior

HONR 499	Senior Honors Thesis		3
Honors courses in the major[1]			6
	Total Credits		9
	Program Total Credits:		26

Students may take an Honors course in the major and/or enroll in elective Honors courses in their first year on campus.

1 Fifteen honors credits (sophomore, upper-division [300- to 400-level], graduate level, etc.) in the major or discipline; not more than 3 credits at the sophomore level; not more than 3 credits may be outside of major or discipline.

Honors Continuing/Transfer Student Pathway

Effective Fall 2018

The Continuing/Transfer Student Pathway is available only to students with >15 college credits taken after admission to CSU.

Junior

		AUCC	Credits
Select one course from the following:			3
HONR 292A	Honors Seminar: Knowing in the Sciences	3A	
HONR 292B	Honors Seminar: Knowing in Arts and Humanities (GT-AH2)	3B	
HONR 292C	Honors Seminar: Knowing Across Cultures (GT-SS3)	3E	

HONR 399	Pre-thesis	1
Honors courses in the major[1]		9
	Total Credits	13

Senior

HONR 499	Senior Honors Thesis	3
Honors courses in the major[1]		9
	Total Credits	12
	Program Total Credits:	25

Students may take an Honors course in the major and/or enroll in elective Honors courses in their first year on campus.

[1] Eighteen honors credits (sophomore [200-level], upper-division [300- to 400-level], graduate [500-level], etc.) in the major or discipline; not more than 3 credits at the sophomore level; not more than 3 credits may be outside of major or discipline.

College of Agricultural Sciences

Office in Shepardson Building, Room 121
(970) 491-6274
agsci.colostate.edu (http://agsci.colostate.edu)

Professor Ajay Menon, Dean
Professor James Pritchett, Executive Associate Dean
Professor Ken Barbarick, Associate Dean of Academic Programs
Professor Jan Leach, Associate Dean of Research
Matt Camper, Assistant Dean of Teaching Practice and Academic Programs
Addy Elliott, Associate Dean of Academic Advising and Student Success

Undergraduate Majors

Agricultural Business
Agricultural Education
Animal Science
Environmental and Natural Resource Economics
Environmental Horticulture
Equine Science
Horticulture
Landscape Architecture
Soil and Crop Sciences

Undergraduate Minors

Agricultural Business
Agricultural Literacy
Entomology
Environmental and Natural Resource Economics
Environmental Horticulture
Horticulture
Plant Health
Soil Resources and Conservation
Soil Science

Interdepartmental Minor

Interdisciplinary Minor in Organic Agriculture

For a complete list of departmental program offerings (including certificates), see individual department catalog pages.

College-Wide Graduate Programs

Master's Programs

Master of Agriculture in Agricultural Sciences, Plan A
Master of Agriculture in Agricultural Sciences, Plan B
Master of Agriculture in Agricultural Sciences, Integrated Resource Management Specialization
Master of Agriculture in Agricultural Sciences, Plan A, Teacher Development Specialization
Master of Agriculture in Agricultural Sciences, Plan B, Teacher Development Specialization
Master of Extension Education, Plan C (M.Ext.Ed.) *previously titled Master of Agricultural Extension Education (M.A.E.E.)*

Agriculture was the first science . . . the progenitor of sciences . . . and it remains the science that supports human life. It is a science concerned with improving the quality of life and maintaining a productive, safe, and sustainable environment. Agricultural programs integrate biological, physical, and social sciences with agricultural sciences. Students may look forward to careers in basic and applied research; production and utilization of food and related products; resource use and conservation; industry and business; education and public service; technical and professional services; professional, scientific, and technical communication; and governmental policy and regulations of our agricultural systems.

College Programs

Undergraduate Majors

Undergraduate programs lead to a Bachelor of Science degree which requires a minimum of 120 credits with a minimum of 42 credits in upper-

division courses. Most departments have a 12-credit limit for independent study and/or internship courses in fulfillment of the 120 credits (specific limits may be obtained from the individual department). Information on interdepartmental and departmental majors, the various concentrations available, and career opportunities are described on individual program pages. Students may consider simultaneously completing the requirements for a second major. Information about Second Major Requirements can be found in the section on Undergraduate Degrees.

Internships

Students are encouraged to select an internship with an approved cooperator. The student's department determines the number of allowable credits. Internships are available each term including the summer term. Internships normally require 45 hours of contact per academic credit and do allow a stipend to be provided, though many are unpaid. Application should be made to the department at least 30 days before the term of the internship.

Education Abroad

Education Abroad programs are available to students in the College of Agricultural Sciences to become global citizens; the knowledge of other cultures is valuable in understanding our own. Students are encouraged to study outside the United States as part of their overall program at CSU. There are active programs in Australia, New Zealand, France, Costa Rica, Spain, and Mexico, in addition to other countries. Students interested in education abroad should plan in advance by visiting the College of Agricultural Sciences (http://agsci.colostate.edu) and discussing opportunities with their academic advisor, the Associate Dean of Academic Programs, and/or by visiting the Office of International Programs (http://international.colostate.edu) in Laurel Hall.

Transfer of Credits from Other Institutions

Students who expect to transfer to the College of Agricultural Sciences are advised to plan carefully and in advance of their planned transfer to ensure that transfer credits meet required courses in their chosen major. Transfer evaluations are generally determined by the Registrar's Office, although departments determine transfer of courses required by the department. Students planning to transfer to CSU are encouraged to access Transferology (https://www.transferology.com/login.htm)™ to determine if courses they are taking at another institution will transfer to CSU. If a course is not listed, they should contact the Office of the Registrar (https://registrar.colostate.edu/transfer-credit/agreements-guarantees) on campus. (Note: Credits from two-year colleges are not accepted for 300 and above level courses at CSU.) The College of Agricultural Sciences welcomes transfer students from both two- and four-year colleges and encourages potential transfer students to work closely with the University to minimize transfer issues.

Currently the College of Agricultural Sciences is the only institution that has the ability to grant a four-year baccalaureate in agriculture. For that reason, the College works hard to collaborate with community and four-year colleges across Colorado; collaboratively with the state-wide organization entitled CACTA (Colorado Association of Colleges and Teachers of Agriculture); to develop state-wide articulation agreements as well as transfer arrangements. This information can be found at the Office of the Registrar. (http://registrar.colostate.edu/transfer-guides)Because of a mutual general education core, students that take courses for a major listed on a state-wide agreement are guaranteed to graduate in an additional 60 credits if they follow course recommendations.

Master of Agriculture in Agricultural Sciences, Plan A

Effective Spring 2015

Code	Title	Credits
Required Courses		
AGRI 500	Advanced Issues in Agriculture	3
AGRI 550	Capacity Building for a Changing Workplace	3
Select at least one from the following: [1,2]		Var.
AGRI 587A	Internship: Domestic	
or AGRI 587B	Internship: International	
AGRI 692	Seminar	1
EDRM 600	Introduction to Research Methods	3
Electives [3]		14-19
Thesis		
AGRI 699	Thesis	Var.
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

1 Maximum of 3 credits allowed.

2 A maximum of 5 credits allowed for AGRI 587A, AGRI 587B, AGRI 695, and AGRI 698 collectively.

3 A maximum of 6 credit hours are permitted at the 400-level. The remainder must be at the 500-level or above.

Master of Agriculture in Agricultural Sciences, Plan B

Requirements
Effective Spring 2015

Code	Title	Credits
Required Courses		
AGRI 500	Advanced Issues in Agriculture	3
AGRI 550	Capacity Building for a Changing Workplace	3
Select at least one of the following: [1, 2]		Var.
AGRI 587A	Internship: Domestic	
or AGRI 587B	Internship: International	
AGRI 692	Seminar	1
EDRM 600	Introduction to Research Methods	3
Electives [3]		14-19
Scholarly Paper		
Scholarly Paper		0
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

1 Maximum of 3 credits allowed.

2 A maximum of 5 credits allowed for AGRI 587A, AGRI 587B, AGRI 695, and AGRI 698 collectively.

[3] A maximum of 6 credit hours are permitted at the 400-level. The remainder must be at the 500-level or above.

Master of Extension Education, Plan C (M.Ext.Ed)

The Master of Extension Education (M.Ext.Ed.) is designed to train specialists to work in the broad field of Extension or a related outreach field. The program will include course work on the principles and programming of Extension as well as training on evaluation and teaching strategies in Extension settings. Students in the program will also be expected to complete an internship experience in Extension. The goal of the program is to develop the skill sets necessary to become a qualified Extension specialist.

Prior to Fall 2017, the title of this program was the Master of Agricultural Extension Education (M.A.E.E.).

Requirements Effective Fall 2017

Code	Title	Credits
Required Courses		
AGED 510	American Agricultural Values and Ideology	3
AGED 525	Agricultural and Extension Teaching	3
AGED 587	Internship in Extension	2
AGED 600	Evaluation and Applied Research in Extension	3
AGRI 546	Principles of Cooperative Extension	3
AGRI 547	Delivery of Cooperative Extension Programs	4
Education Course Electives		
Select a minimum of 9 credits from AGED, AGRI, EDAE, HDFS, JTC, and SOWK courses at the 500-level or above with approval of the student's graduate advisor. [1]		9
Select a minimum of 9 credits discplinary course work at the 500-level or above with approval of the student's graduate advisor. [1]		9
Program Total Credits:		36

A minimum of 36 credits are required to complete this program. Of the 36 minimum credits required for this program, at least 24 credits must be earned at CSU. No independent study, research, supervised college teaching, or practicum credits may apply toward the degree.

[1] A minimum of 21 credits must be earned at the 500-level or above in the student's area of study approved by the student's graduate advisor.

Master of Agriculture in Agricultural Sciences, Integrated Resource Management Specialization

http://www.online.colostate.edu/degrees/irm

Students are provided an interdisciplinary training in animal science, business, range science, ecology, wildlife, policy, and human resources. This fusion of topics allows students to understand how agricultural resource systems work together in a comprehensive way, and how to apply them in an agricultural management setting.

The purpose of the program is to provide students with an understanding of the land resource system and how to manage land-based enterprises. The program is designed to empower students to effectively utilize and care for land resources while addressing a broad range of private and social objectives.

Requirements Effective Spring 2013

Fall		Credits
AGRI 630	Integrated Decision Making/Management Skills	3
AGRI 631	Building the Business	3
AGRI 632	Managing for Ecosystem Sustainability	3
AGRI 633	Understanding and Managing Animal Resources	3
AGRI 634	Animal Production Systems	3
	Total Credits	15
Spring		
AGRI 635	Integrated Forage Management	3
AGRI 636	Analyzing and Managing the Business	3
AGRI 637	Understanding Policy and Emerging Issues	3
AGRI 639	Products to Profit	3
AGRI 640	Integrated Resource Management Plan	3
	Total Credits	15
	Program Total Credits:	30

A minimum of 30 credits are required to complete this program.

Master of Agriculture in Agricultural Sciences, Plan A, Teacher Development Specialization

Effective Spring 2015

Code	Title	Credits
Core Courses		
EDCT 590	Workshop	4
EDRM 600	Introduction to Research Methods	3
Select one of the following tracks:		
Track 1 - Teacher Professional Development		
AGED 540	Ag Ed Laboratory Management and Safety	2
Track 2 - Teacher Development - Teacher Licensure		

AGED 420	Developing School-Based Ag Education Programs	3
EDCT 425	Methods/Materials in Agricultural Education	4
EDUC 450	Instruction II-Standards and Assessment	4
Electives		
Electives [1]		9-18
Thesis		
AGRI 699	Thesis	3
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

1 Select enough 500-level or above elective credits with approval of advisor and graduate committee to bring program total to a minimum of 30 credits.

Master of Agriculture in Agricultural Sciences, Plan B, Teacher Development Specialization

Effective Spring 2015

Code	Title	Credits
Core Courses		
EDCT 590	Workshop	4
EDRM 600	Introduction to Research Methods	3
Select one of the following tracks:		
Track 1 - Teacher Professional Development		
AGED 540	Ag Ed Laboratory Management and Safety	2
Track 2 - Teacher Development - Teacher Licensure		
AGED 420	Developing School-Based Ag Education Programs	3
EDCT 425	Methods/Materials in Agricultural Education	4
EDUC 450	Instruction II-Standards and Assessment	4
Electives		
Electives [1]		11-20
Scholarly Paper		
AGRI 698	Research [2]	1
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

1 Select enough 500-level or above elective credits with approval of advisor and graduate committee to bring program total to a minimum of 30 credits.

2 Students must write a scholarly paper to be reviewed by advisor and graduate committee.

Department of Agricultural and Resource Economics

Office in Clark Building, Room B320
(970) 491-6325
dare.agsci.colostate.edu (http://dare.agsci.colostate.edu)

Professor Hayley Chouinard, Head
Professor Marshall Frasier, Chair of Undergraduate Program
Professor Christopher Goemans, Chair of Graduate Program

Undergraduate Majors

- Agricultural Business
  - Agricultural Economics Concentration
  - Farm and Ranch Management Concentration
- Agricultural Education
  - Teacher Development Concentration
  - Agricultural Literacy Concentration
- Environmental and Natural Resource Economics

Minors

- Agricultural Business
- Agricultural Literacy
- Environmental and Natural Resource Economics
- Food Industry Management Interdisciplinary Minor

Graduate

Graduate Programs in Agricultural and Resource Economics

The department offers graduate programs leading to Master of Science and Doctor of Philosophy degrees. A description of these programs may be found in the Graduate and Professional Bulletin or on the department's website (http://dare.agsci.colostate.edu).

Certificate

- Teaching in Extension

Master's Programs

- Master of Science in Agricultural and Resource Economics, Plan A
- Master of Science in Agricultural and Resource Economics, Plan B
- Master of Agribusiness and Food Innovation Management, Plan C

Ph.D.

- Ph.D. in Agricultural and Resource Economics

Courses

Subjects in this department include: Agricultural and Resource Economics (AREC) and Agricultural Education (AGED).

Agricultural and Resource Economics (AREC)

AREC 202 Agricultural and Resource Economics (GT-SS1) Credits: 3 (3-0-0)
Course Description: Introduction to decision-making by consumers, firms, and government and the resulting allocation of resources through markets.
Prerequisite: MATH 117, may be taken concurrently or MATH 118 or MATH 124 or MATH 125 or MATH 126 or MATH 141 or MATH 155 or MATH 159 or MATH 160.
Registration Information: Sections may be offered: Online. Credit not allowed for both AREC 202 and ECON 202.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

AREC 224 Introduction to Agribusiness Entrepreneurship Credit: 1 (0-0-1)
Course Description: Introductory exposure to entrepreneurship for agribusinesses through presentations by industry professionals.
Prerequisite: AREC 202, may be taken concurrently or ECON 202, may be taken concurrently.
Registration Information: Required field trips. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 240 Issues in Environmental Economics (GT-SS1) Credits: 3 (3-0-0)
Also Offered As: ECON 240.
Course Description: Discussion and economic analysis of current environmental issues with special emphasis on the impact of economic growth.
Prerequisite: None.
Registration Information: Credit not allowed for both AREC 240 and ECON 240.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

AREC 305 Agricultural and Resource Enterprise Analysis Credits: 3 (2-2-0)
Course Description: Use of records in agricultural and resource enterprise management; analytical methods, budgets, and planning techniques for improved decision making.
Prerequisite: (CIS 120 or BUS 150 or CS 110) and (AREC 202 or ECON 202).
Registration Information: Sections may be offered: Online. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 310 Agricultural Marketing Credits: 3 (3-0-0)
Course Description: Market structure, behavior, and performance including futures market and market games theory.
Prerequisite: AREC 202 or ECON 202.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 311 Agricultural and Resource Product Marketing Credits: 3 (3-0-0)
Course Description: Theory and practice of marketing-differentiated agricultural products and natural resource amenities with focus on strategies and market trends.
Prerequisite: AREC 202 or ECON 202.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 325 Personnel Management in Agriculture Credits: 3 (3-0-0)
Course Description: Human resource issues for agribusiness firms. Managing employees, legal issues, negotiation methods, and benefits packages. Workplace professionalism.
Prerequisite: AREC 202 or ECON 202.
Restriction: .
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 328 Small Agribusiness Management Credits: 3 (3-0-0)
Course Description: Apply business principles to small food enterprises, agribusinesses and cooperatives.
Prerequisite: AREC 202 or ECON 202.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 335 Introduction to Econometrics Credits: 3 (3-0-0)
Also Offered As: ECON 335.
Course Description: Estimating statistical regression models of economic relationships; treatment of special problems that may arise in analysis of economic data.
Prerequisite: (ECON 204) and (STAT 201 or STAT 204 or STAT 301 or STAT 307 or STAT 311 or STAT 315) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Credit not allowed for both ECON 335 and AREC 335. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 340 Introduction-Economics of Natural Resources Credits: 3 (3-0-0)
Also Offered As: ECON 340.
Course Description: Concepts, theories, institutions; analytical methods for economic evaluation of alternative resource use patterns and land use plans.
Prerequisite: AREC 202 or ECON 202.
Registration Information: Sections may be offered: Online. Credit not allowed for both AREC 340 and ECON 340.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 341 Environmental Economics Credits: 3 (3-0-0)
Course Description: Economic theories and analytic frameworks are developed and applied to contemporary problems of the use and protection of the natural environment.
Prerequisite: AREC 202 or ECON 202.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 342 Water Law, Policy, and Institutions Credits: 3 (3-0-0)
Course Description: Legal water issues within the context of historical, social and economic development with emphasis on the southwestern United States.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 346 Economics of Outdoor Recreation Credits: 3 (3-0-0)
Also Offered As: ECON 346.
Course Description: Benefit cost framework in public planning for outdoor recreation, pricing problems, projecting demand, and regional economic development.
Prerequisite: AREC 202 or ECON 202.
Registration Information: Credit not allowed for both AREC 346 and ECON 346.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 375 Agricultural Law Credits: 3 (3-0-0)
Course Description: Laws, regulations, case decisions affecting ranching and farming in the Rocky Mountain area.
Prerequisite: None.
Restriction: Must be a: Junior.
Registration Information: Junior standing. Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 381 Introduction to Environmental Economics Credits: 3 (3-0-0)
Course Description: Design and measurement of economic values and environmental policy; how the theory can be used to construct solutions to real-world problems.
Prerequisite: (AREC 202 or ECON 202) and (MATH 118 or MATH 124 or MATH 125 or MATH 126 or MATH 141 or MATH 155 or MATH 160).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 405 Agricultural Production Management Credits: 3 (2-2-0)
Course Description: Economic principles of agricultural production decisions with linear programming analysis of production choices and farm planning.
Prerequisite: AREC 305.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 408 Agricultural Finance Credits: 3 (3-0-0)
Course Description: Monetary affairs of agribusiness and agricultural production emphasizing credit institutions and procurement, investment, and management.
Prerequisite: AREC 305.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 412 Agricultural Commodities Marketing Credits: 3 (3-0-0)
Course Description: Agricultural marketing and agribusiness principles applied to current marketing problems relating to livestock and field and horticultural crops.
Prerequisite: AREC 310.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AREC 415 International Agricultural Trade Credits: 3 (3-0-0)
Course Description: Agricultural trade patterns and institutions; trade theory with applications to agriculture. Current issues in agricultural trade.
Prerequisite: AREC 310 and ECON 204.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 428 Agricultural Business Management Credits: 3 (3-0-0)
Course Description: Economic analysis, organization, and management practices of agriculture and food industries studied through simulation, case study, computer labs.
Prerequisite: (AREC 305) and (AREC 310 or AREC 311).
Registration Information: Senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 440 Advanced Environmental and Resource Economics Credits: 3 (3-0-0)
Course Description: Microeconomic techniques to rigorously explore economic decision-making and policy as they apply to environmental and natural resource problems.
Prerequisite: (AREC 340 or ECON 340) and (AREC 341 and ECON 306).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 442 Water Resource Economics Credits: 3 (3-0-0)
Course Description: An in-depth exploration of the role of economics in water resource planning.
Prerequisite: AREC 342 and ECON 306, may be taken concurrently.
Registration Information: Credit not allowed for both AREC 442 and AREC 542.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 444 Economics of Energy Resources Credits: 3 (3-0-0)
Also Offered As: ECON 444.
Course Description: Supply, consumption trends, and projected demand for alternative energy resources in domestic and world perspective; economics of public energy policies.
Prerequisite: ECON 306.
Registration Information: Junior standing. Written consent of instructor. Credit allowed for only one of the following: AREC 444, ECON 344, or ECON 444.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 454 Real Estate Appraisal Credits: 3 (3-0-0)
Also Offered As: REL 454.
Course Description: Theoretical principles that underlie real estate appraisal methods. Procedures and practices used in real estate appraisal.
Prerequisite: (AREC 202 or ECON 202) and (AREC 305 or REL 360).
Registration Information: Sections may be offered: Online. Credit allowed for only one of the following: AREC 453, AREC 454, REL 453, or REL 454.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 460 Ag- and Resource-Based Economic Development Credits: 3 (3-0-0)
Course Description: Indicators, tools and approaches for agriculture- and natural resource-based economic development in resource dependent countries and communities.
Prerequisite: ECON 306.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 478 Agricultural Policy Credits: 3 (3-0-0)
Course Description: Formulation and administration of public policies affecting agricultural industries and rural areas in the United States.
Prerequisite: AREC 202 or ECON 202 or AREC 240 or ECON 240.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 482A Study Abroad-Environmental Economics in Italy: Managing a Sustainable Global Environment Credits: 3 (0-0-3)
Course Description: The economics of managing environmental assets in a sustainable manner. Presents a theoretical basis for different resource management systems including various methods of cost–benefit analysis, utility theory, property right structures, government institutions, and cultural and ethical aspects. Considers specific policies aimed at sustaining the environment and their impacts on specific natural resource and agricultural products.
Prerequisite: None.
Registration Information: Sophomore standing. This is a partial semester course.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 482B Study Abroad-Italian Culture: Economics of Food and the Environment Credits: 3 (0-0-3)
Course Description: The historical and current economics of agriculture and natural resources in Florence, Tuscany and Italy. Focus on (1) Italian culture in general; (2) the economic and political history of Florence in particular; and (3) the production and regional economic importance of agricultural products of and natural resources used in central Italy.
Prerequisite: None.
Registration Information: Sophomore standing. This is a partial semester course. Required field trips.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 484 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 10 credits allowed in course. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 487 Internship Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: May be taken for a maximum of 6 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 495 Independent Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: May be taken for a maximum of 6 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 505 Agricultural Production Economics Credits: 3 (3-0-0)
Course Description: Empirical applications of production economic theory for use of imputs and allocation of resources in agricultural, natural resource sectors.
Prerequisite: (MATH 141) and (AREC 405 or ECON 306).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 506 Applied Microeconomic Theory Credits: 3 (3-0-0)
Also Offered As: ECON 506.
Course Description: Introduction to mathematical models in modern microeconomics, including choices and demand, production and supply, and market structures and failures.
Prerequisite: ECON 306.
Registration Information: Credit not allowed for both AREC 506 and ECON 506.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 507 Applied Welfare and Policy Analysis Credits: 3 (3-0-0)
Course Description: How policies are crafted to effectively address social issues, especially for agriculture and the environment, and how they impact society.
Prerequisite: ECON 306.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 508 Financial Management in Agriculture Credits: 2 (2-0-0)
Course Description: Systematic approach to understanding and applying financial management in farm businesses.
Prerequisite: (AREC 408 or FIN 305) and (ECON 306).
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 510 Agricultural Product Marketing Credits: 3 (3-0-0)
Course Description: Marketing techniques, industrial organization/ competition for agricultural products in US domestic, international trade, and developing country markets.
Prerequisite: (AREC 310) and (AREC 335 or ECON 335).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 511 Opportunities in the Agricultural Value Chain Credits: 2 (2-0-0)
Course Description: Explores the economics and business structure of operations within the food and agribusiness system, using readings, field trips and guest speakers.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Required field trips. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 512 Innovation in Agribusinesses Credits: 2 (2-0-0)
Course Description: Core concepts of entrepreneurship within both private and social enterprises. General applications of innovation and entrepreneurship with particular emphasis on the industries that make up the agricultural and food system.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 513 Idea Evaluation in Agricultural Value Chains Credits: 2 (2-0-0)
Course Description: Processes of identifying and evaluating a new idea, applying strategic and design-thinking principles and tools to explore pathways by which it could grow into a viable agribusiness.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 514 Entrepreneurial Accounting and Finance Credits: 2 (2-0-0)
Course Description: Foundational background in accounting and financial concepts and mastery of financial tools needed to start a new agribusiness.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 515 Assessing Agricultural and Food Markets Credits: 2 (2-0-0)
Course Description: Foundational background regarding marketing concepts needed to evaluate the potential market for an agricultural or food product or service, using an economics framework.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 516 Business Economics for the Entrepreneur Credits: 2 (2-0-0)
Course Description: Microeconomic framework that a potential entrepreneur can use to analyze business opportunities. Topics include components of cost and revenue and their relevance for new business ventures, determinants and measurement of consumer demand, and alternate forms of business organization and interaction.
Prerequisite: AREC 202 or ECON 202.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 517 Entrepreneurial Identity and Team Formation Credits: 2 (1-2-0)
Course Description: Students explore their emergent identity as "entrepreneur", including their necessary interdependence on other members of a team when engaged in creative endeavors such as innovation or new business development in the agricultural space.
Prerequisite: AREC 513.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 518 Raising Capital in the Agricultural Sector Credits: 2 (2-0-0)
Course Description: Methods to value a startup business and approaches to identifying sources of capital needed to launch and sustain the startup. Emphasis on unique challenges in and sources of raising capital in the agricultural sector.
Prerequisite: AREC 512 and AREC 514.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 519A New Venture Communication: Interpersonal Interactions Credit: 1 (0-2-0)
Course Description: Communicating in the workplace, both orally and in written form. Development of a succinct business proposal.
Prerequisite: AREC 517, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 519B New Venture Communication: Making the Pitch Credit: 1 (0-2-0)
Course Description: Emphasis on oral communication when trying to sell a business idea to potential investors. Development of tailored presentations to target audience within moments of opportunity.
Prerequisite: AREC 519A.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 520 Intellectual Property in Food and Agriculture Credits: 2 (2-0-0)
Course Description: Explores the critical role that intellectual property plays in commercial activities within the knowledge economy. Emphasis on strategic management of technology through patents and other control mechanisms, thereby allowing startups to survive and thrive in the knowledge economy with special attention to property developed in the agricultural and food systems.
Prerequisite: AREC 518 and BUS 660.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 521 New Food Product Development Credits: 2 (2-0-0)
Course Description: An overview of the food product development process. Topics include strategies, marketing perspectives, quality controls and supply chains in the food system.
Prerequisite: AREC 515.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 528 Applied Agribusiness Decision Tools Credits: 2 (2-0-0)
Course Description: Applications of quantitative tools for managerial decision-making in the context of an agribusiness.
Prerequisite: (AREC 305 or AREC 408 or FIN 305) and (ECON 306).
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 530 Agricultural Price Analysis Credits: 3 (3-0-0)
Course Description: Agricultural commodity prices related to neoclassical economics; current literature emphasizing management problems.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 535 Applied Econometrics Credits: 3 (3-0-0)
Also Offered As: ECON 535.
Course Description: Econometric techniques applied to testing and quantification of theoretical economic relationships drawn from both microeconomics, macroeconomics.
Prerequisite: (AREC 335 or ECON 335) and (ECON 304 or ECON 306).
Registration Information: Credit not allowed for both AREC 535 and ECON 535.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 540 Environmental and Natural Resource Economics Credits: 3 (3-0-0)
Also Offered As: ECON 540.
Course Description: Theory, methods, and policy in environmental and natural resource economics.
Prerequisite: AREC 506 or ECON 506.
Registration Information: Credit not allowed for both AREC 540 and ECON 540.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 541 Environmental Economics Credits: 3 (3-0-0)
Also Offered As: ECON 541.
Course Description: Economics of environmental policy; partial equilibrium and general equilibrium model; pollution; natural environments; population and economic growth.
Prerequisite: ECON 306.
Registration Information: Credit not allowed for both AREC 541 and ECON 541.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 542 Applied Advanced Water Resource Economics Credits: 3 (3-0-0)
Course Description: Theory and application of economics in water resource planning.
Prerequisite: (ECON 306 and AREC 342 and STAT 301) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Credit not allowed for both AREC 542 and AREC 442.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 547 Public Lands Planning and Management Credits: 3 (3-0-0)
Course Description: Principles and techniques used by federal land management agencies including Forest Service, Park Service, Fish and Wildlife Service, and BLM.
Prerequisite: AREC 202 or ECON 202.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 563 Regional Economics-Theory, Methods, and Issues Credits: 3 (3-0-0)
Also Offered As: ECON 563.
Course Description: Tools and methods of regional economics, including supply, demand, and externality analysis. Applications to current urban and regional policy issues.
Prerequisite: ECON 306 and ECON 501, may be taken concurrently.
Registration Information: Credit not allowed for both AREC 563 and ECON 563.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 566 Contemporary Issues in Developing Countries Credits: 3 (3-0-0)
Also Offered As: SOC 566.
Course Description: Social, economic, and technological factors in developing countries.
Prerequisite: None.
Registration Information: Two or more courses in AREC or ECON or SOC. Credit not allowed for both AREC 566 and SOC 566.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 570 Methodology of Economic Research Credits: 3 (3-0-0)
Also Offered As: ECON 530.
Course Description: Philosophical foundations of science and research. Concepts and skills for planning, performing, reporting, and evaluating economic research.
Prerequisite: ECON 304 and ECON 306.
Registration Information: Credit not allowed for both AREC 570 and ECON 530.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 572 Social Benefit Cost Analysis Credits: 3 (3-0-0)
Course Description: Theory, application of concepts relating to social benefit cost analysis of public projects, policies intended to promote social welfare, economic growth.
Prerequisite: ECON 306.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 586A New Venture Launch Practicum: Explore and Validate Value Proposition Credits: 2 (0-0-4)
Course Description: Team-based development of a new venture or innovation focusing on co-creation of value. Four main areas of competency--(1) entrepreneurial mindset and teamwork; (2) technology and product development; (3) communication and substantiation of value; and (4) business strategy and execution--are developed and demonstrated in the process of preparing to launch a new venture or innovation in the agricultural, food, or related industries.
Prerequisite: AREC 517, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

AREC 586B New Venture Launch Practicum: Communicate, Design, and Iterate Credits: 2 (0-0-4)
Course Description: Team-based development of a new venture or innovation focusing on co-creation of value. Four main areas of competency--(1) entrepreneurial mindset and teamwork; (2) technology and product development; (3) communication and substantiation of value; and (4) business strategy and execution--are developed and demonstrated in the process of preparing to launch a new venture or innovation in the agricultural, food, or related industries.
Prerequisite: AREC 586A, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

AREC 586C New Venture Launch Practicum: Final Evaluation, Presentation, and Launch Credits: Var[1-6] (0-0-0)
Course Description: Team-based development of a new venture or innovation focusing on co-creation of value. Four main areas of competency--(1) entrepreneurial mindset and teamwork; (2) technology and product development; (3) communication and substantiation of value; and (4) business strategy and execution--are developed and demonstrated in the process of preparing to launch a new venture or innovation in the agricultural, food, or related industries.
Prerequisite: AREC 586B, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Course may be taken multiple times for maximum of 12 credits total.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

AREC 605 Agricultural Production and Cost Analysis Credits: 2 (2-0-0)
Course Description: Empirical application and analysis of production and cost issues in the agricultural and natural resource sectors.
Prerequisite: (AREC 506) and (AREC 535 or ECON 535).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 606 Microeconomic Analysis I Credits: 3 (3-0-0)
Also Offered As: ECON 606.
Course Description: Advanced price/allocation theory: consumer/producer decisions; uncertainty; market structure; partial/general equilibrium; efficiency/welfare.
Prerequisite: ECON 306 and ECON 501.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 606 and ECON 606.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 610 Agricultural Marketing and Demand Analysis Credits: 2 (2-0-0)
Course Description: Empirical application and analysis of agricultural marketing and demand issues in the agricultural and natural resource sectors.
Prerequisite: (AREC 506) and (AREC 535 or ECON 535).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 615 Optimization Methods for Applied Economics Credits: 3 (3-0-0)
Course Description: Theory and practice of optimization techniques used in economic applications with emphasis on linear and nonlinear programming.
Prerequisite: AREC 506.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 635 Econometric Theory I Credits: 3 (3-0-0)
Also Offered As: ECON 635.
Course Description: Theory of mathematical statistics and classical linear regression model in context of economic application.
Prerequisite: (AREC 535 or ECON 535) and (ECON 501, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 635 and ECON 635.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 647 Land Use Economics and Spatial Modeling Credits: 3 (3-0-0)
Course Description: Use of spatial data in economic analysis of land use focusing on development patterns, land conservation, spatial externalities and agricultural land.
Prerequisite: (AREC 506 or ECON 506) and (AREC 535 or ECON 535).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 660 Development of Rural Resource-Based Economies Credits: 3 (3-0-0)
Course Description: Economic literature-based exploration of human welfare measures and implications of approaches to agriculture and resource-based economic development.
Prerequisite: AREC 506.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 678 Agricultural and Resource Policy Credits: 3 (3-0-0)
Course Description: Evaluate and analyze economic theory, applications and public incentives related to government policies for agriculture and natural resources.
Prerequisite: ECON 306 and MATH 141.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 695 Independent Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 705 Advanced Production and Technological Change Credits: 2 (2-0-0)
Course Description: Production theory is applied to real-world issues including risk, innovation, and environment, through lectures and readings of current literature.
Prerequisite: (AREC 605) and (AREC 706, may be taken concurrently or ECON 706, may be taken concurrently) and (AREC 735 or ECON 735).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 706 Microeconomic Analysis II Credits: 3 (3-0-0)
Also Offered As: ECON 706.
Course Description: Advanced topics in microtheory: game theory; market imperfections; adverse selection; principal-agent problems; social choice theory; incentives, etc.
Prerequisite: ECON 606.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 706 and ECON 706.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 710 Advanced Agricultural Marketing Issues Credits: 2 (2-0-0)
Course Description: Theoretical and modeling issues of consumer demand, market structure, product differentiation and market behavior.
Prerequisite: (AREC 610) and (AREC 706, may be taken concurrently or ECON 706, may be taken concurrently) and (AREC 735 or ECON 735).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 735 Econometric Theory II Credits: 2 (2-0-0)
Also Offered As: ECON 735.
Course Description: Econometrics models and estimators in econometrics, from fully parametric to semiparametric and nonparametric approaches.
Prerequisite: AREC 635 or ECON 635.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 735 and ECON 735. This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 736A Advanced Econometric Methods: Discrete Choice Models Credit: 1 (1-0-0)
Also Offered As: ECON 736A.
Course Description: Econometrics analysis of: Discrete Choice Models.
Prerequisite: AREC 735, may be taken concurrently or ECON 735, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 736A-C and ECON 736A-C. This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 736B Advanced Econometric Methods: Panel Data Models Credit: 1 (1-0-0)
Also Offered As: ECON 736B.
Course Description: Econometrics analysis of: Panel Data Models.
Prerequisite: AREC 735, may be taken concurrently or ECON 735, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 736A-C and ECON 736A-C. This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 736C Advanced Econometric Methods: Time Series Models Credit: 1 (1-0-0)
Also Offered As: ECON 736C.
Course Description: Econometrics analysis of: Time Series Models.
Prerequisite: AREC 735, may be taken concurrently or ECON 735, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 736A-C and ECON 736A-C. This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 740 Advanced Natural Resource Economics Credits: 3 (3-0-0)
Also Offered As: ECON 740.
Course Description: Advanced theory, methods, and literature in natural resource economics, including dynamic programming and optimal control.
Prerequisite: AREC 706 or ECON 706.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 740 and ECON 740.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 741 Advanced Environmental Economics Credits: 3 (3-0-0)
Also Offered As: ECON 741.
Course Description: Advanced theory, methods, and literature in environmental economics.
Prerequisite: AREC 706 or ECON 706.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 770 Advanced Methods in Applied Economics Credits: 3 (3-0-0)
Course Description: Advanced research methods in applied economics: lab and field experiments, non-market valuation and discrete choice experiments.
Prerequisite: (AREC 706, may be taken concurrently or ECON 706, may be taken concurrently) and (AREC 735 or ECON 735).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 784 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 792A Seminar: Agricultural Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 792B Seminar: International Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 792C Seminar: Resources Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Agricultural Education (AGED)

AGED 110 Agriculture Production Systems Credits: 3 (2-3-0)
Course Description: Broad survey of the diverse aspects of Colorado agriculture.
Prerequisite: None.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 210 History of Agriculture in the United States Credits: 3 (3-0-0)
Course Description: Relationships in agriculture. Historical/Native American/early practices, industrial agriculture, technologies, philosophy, green revolution.
Prerequisite: CO 150.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D.

AGED 220 Understanding Agricultural Education Credit: 1 (1-0-0)
Course Description: Understanding different agricultural education systems. Understanding delivery models of agricultural education programs.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 240 Technical Tool Applications in Ag Education Credits: 2 (1-3-0)
Course Description: Development of safe competencies and applications related to power and technical tools utilized in school-based agricultural education programs.
Prerequisite: None.
Registration Information: Must register for lecture and lab.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 244 Power, Structure, and Tech. Systems in Ag Ed Credits: 3 (2-3-0)
Course Description: Development of competencies and theory related to agricultural power, structure, and technical systems utilized in school-based agricultural education programs.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 320 Technology Lab for Ag Education Credit: 1 (0-3-0)
Course Description: Laboratory applications related to the power, structure, and technical systems pathway utilized in school-based agricultural education programs.
Prerequisite: AGED 240, may be taken concurrently or AGED 244, may be taken concurrently.
Registration Information: May be taken twice for credit.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 330 Program Design and Evaluation in Ag. Literacy Credits: 3 (3-0-0)
Course Description: Design and evaluate programs in agricultural literacy using experiential methods.
Prerequisite: AGED 220.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 420 Developing School-Based Ag Education Programs Credits: 3 (3-0-0)
Course Description: Developing knowledge in the approach and delivery of school-based agricultural education programs.
Prerequisite: AGED 220.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 430 Methods of Agricultural Literacy Credits: 3 (3-0-0)
Course Description: Prepare and conduct agricultural literacy instructional units to work with a variety of audiences and instructional topics.
Prerequisite: AGED 330.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 440 Managing Experiences in Ag Ed Laboratories Credit: 1 (0-3-0)
Course Description: Theory, management and pedagogy of delivering safety instruction and experiential curriculum in secondary agricultural education laboratory settings.
Prerequisite: AGED 420.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 486A Practicum: Agricultural Literacy Credits: Var[1-3] (0-0-0)
Course Description: Experience in the agricultural literacy field.
Prerequisite: (AGED 220) and (AGED 330 or AGED 430).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AGED 486B Practicum: On-site Experience in Agricultural Outreach Credits: Var[1-2] (0-0-0)
Course Description: Formalized training on conducting non-formal agricultural education at the National Western Stock Show.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGED 486C Practicum: FFA Credits: Var[1-2] (0-0-0)
Course Description: Formalized training on managing FFA experiences, including Career Development Events and Leadership Development Events.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AGED 487 Internship Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AGED 495 Independent Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AGED 496 Group Study Credits: Var[1-12] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AGED 510 American Agricultural Values and Ideology Credits: 3 (3-0-0)
Course Description: Explore how people have conceptualized agriculture in the United States, how agricultural ideologies have shaped our agricultural values, and how differing agricultural ideologies impact the work in agriculture today and in the future.
Prerequisite: None.
Registration Information: Senior standing. Written consent of instructor. Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AGED 525 Agricultural and Extension Teaching Credits: 3 (3-0-0)
Course Description: Use research on effective teaching methods to define and deliver educational programs, courses and presentations in formal and non-formal educational settings in agriculture. Apply organization and instructional methods to evaluate, plan, deliver and assess effective educational programs.
Prerequisite: None.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AGED 540 Ag Ed Laboratory Management and Safety Credits: 2 (2-0-0)
Course Description: Theory, management, and pedagogy of delivering safety instruction and experiential curriculum in secondary agricultural education laboratory settings.
Prerequisite: EDCT 420.
Restriction: .
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AGED 587 Internship in Extension Credits: Var[1-2] (0-0-0)
Course Description: First-hand experiences in extension programming.
Prerequisite: AGRI 547.
Registration Information: Graduate standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AGED 600 Evaluation and Applied Research in Extension Credits: 3 (3-0-0)
Course Description: Train extension and other outreach specialists in the basics of program evaluation and research methods. Work with real world scenarios and/or their own field experiences to learn how to strategically design evaluation plans and effectively analyze the data collected. Emphasizing how to improve programming with the collected data.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online. Credit not allowed for both AGED 600 and EDRM 600.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AGED 692 Agricultural Education Seminar Credit: 1 (0-0-1)
Course Description: Agricultural education focusing on current trends in Extension.
Prerequisite: AGED 587, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrolled in the Master of Agriculture Extension Education or the Graduate Certificate of Teaching in Extension. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGED 698 Agricultural Education Research Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Master of Agriculture in Agricultural Sciences, Teacher Development Specialization. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Major in Agricultural Business

The Agricultural Business major teaches students the operating techniques and business skills used in the modern food and fiber industry. This program builds student knowledge and skills needed to manage small- and medium-sized businesses in agriculture and allied industries. This is true whether the business is directly involved in production, value-adds to raw agricultural products, or provides support services including the distribution, processing, packaging, and marketing of agricultural products.

Two things tend to distinguish the major in Agricultural Business from a typical business degree: first, our focus tends to be on small- and medium-sized businesses where the decision maker must be more attuned to all dimensions of their operating environment, whereas more traditional business degrees often focus on a larger business organization where functions are more specialized. Second, the major emphasizes the importance of understanding the underlying technical processes that drive business decisions through formal course requirements in the agricultural sciences. The interface between technical training in agricultural sciences, economics, and management sets this degree apart.

Completing this program enhances students' professional development, technical competence, problem-solving skills, and communication skills. The program operates in the nexus of business management, public policy, and agriculture. Strong interdisciplinary coordination in the department allows majors in agricultural business to strengthen their technical training by simultaneously completing a second major in allied fields including animal science, equine science, soil and crop science, agricultural education, technical journalism, and other fields of interest.

Learning Outcomes

Successful students will demonstrate:

- Technical competency including appropriate use of economic theory in formulating analytical problems, identifying and gathering appropriate data, and employing appropriate economic methods to analyze those problems, utilizing appropriate available computer technology
- Ability to solve real-world problems beyond the pedagogical context. Students will be able to identify a problem and its scope, evaluate resources to address the problem, formulate alternative solutions, and select the solution(s) most consistent with a stated objective
- Proficiency in oral and written communication including the ability to communicate critically and analytically at a professional level

Potential Occupations

Although students from farms and ranches choose this major each year, business-oriented students with a wide variety of backgrounds have launched successful careers with this versatile degree. Graduates establish careers in management, marketing, sales, and finance to name a few areas. Participating in internships and experiential opportunities is strongly encouraged to enhance practical training and development. Graduates who seek further specialization are prepared to pursue advanced studies.

Examples of career paths of recent graduates include, but are not limited to: commodity broker, agricultural statistician, loan officer, farm manager, supply chain analyst, farm machinery sales representative, grain merchandiser, operations manager, landscape contractor, human resources specialist, ranch manager, credit analyst, crop insurance agent, precision ag technologist, feedlot manager, agricultural chemical sales representative, real estate appraiser, and elevator manager.

Concentrations

- Agricultural Economics Concentration
- Farm and Ranch Management Concentration

Requirements

Effective Spring 2018

Freshman

		AUCC	Credits
AGRI 192 or 292	Orientation to Agricultural Systems Transfer Seminar		1
Select one course from the following:			3-4
ANEQ 101	Food Animal Science		
ANEQ 102	Introduction to Equine Science		
FTEC 110	Food-From Farm to Table		
HORT 100	Horticultural Science	3A	
SOCR 100	General Crops		
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	3
Select four credits from the following:			4
BZ 110 & BZ 111	Principles of Animal Biology (GT-SC2)	3A	
BZ 120	Principles of Plant Biology (GT-SC1)	3A	
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
CHEM 103	Chemistry in Context (GT-SC2)	3A	3
CO 150	College Composition (GT-CO2)	1A	3
CS 110	Personal Computing		4
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
Arts and Humanities		3B	3
	Total Credits		30-31

Sophomore

ACT 205	Fundamentals of Accounting		3
AREC 224	Introduction to Agribusiness Entrepreneurship		1
AREC 305	Agricultural and Resource Enterprise Analysis		3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
SPCM 200	Public Speaking		3
Advanced Writing		2	3
Agricultural Science Electives[1]			6
Foundations and Perspectives[2]		3B, 3D, 3E	9
Elective			2
	Total Credits		33

Junior

AREC 310	Agricultural Marketing		3
Select a minimum of 3 credits from the following:			3
AREC 325	Personnel Management in Agriculture		
AREC 340/ECON 340	Introduction-Economics of Natural Resources		
AREC 342	Water Law, Policy, and Institutions		
AREC 346/ECON 346	Economics of Outdoor Recreation		
AREC 375	Agricultural Law		
AREC 415	International Agricultural Trade		
AREC 442	Water Resource Economics		
AREC 454/REL 454	Real Estate Appraisal		
AREC 335/ECON 335	Introduction to Econometrics		3

ECON 306	Intermediate Microeconomics		3
FIN 305	Fundamentals of Finance		3
MKT 305	Fundamentals of Marketing		3
MKT 362	Professional Selling		3
STAT 301	Introduction to Statistical Methods		3
Agricultural Science Electives[1]			3
Electives			3
	Total Credits		30-31

Senior

Select two courses from the following:			6
AREC 405	Agricultural Production Management		
AREC 408	Agricultural Finance		
AREC 412	Agricultural Commodities Marketing		
AREC 428	Agricultural Business Management	4A,4C	3
Select one of the following:			3
AREC 460	Ag- and Resource-Based Economic Development	4B	
AREC 478	Agricultural Policy	4A,4B,4C	
Select a minimum of six credits from the following, not taken elsewhere:			6
AREC 325	Personnel Management in Agriculture		
AREC 340/ECON 340	Introduction-Economics of Natural Resources		
AREC 342	Water Law, Policy, and Institutions		
AREC 346/ECON 346	Economics of Outdoor Recreation		
AREC 375	Agricultural Law		
AREC 405	Agricultural Production Management		
AREC 408	Agricultural Finance		
AREC 412	Agricultural Commodities Marketing		
AREC 415	International Agricultural Trade		
AREC 442	Water Resource Economics		
AREC 454/REL 454	Real Estate Appraisal		
AREC 460	Ag- and Resource-Based Economic Development		
AREC 478	Agricultural Policy		
Agricultural Science Electives[1]			3
Electives[3]			3-6
	Total Credits		24-27
	Program Total Credits:		120

1 Select from the courses in AGED, AGRI, ANEQ, AREC, BSPM, FTEC, HORT, LAND, SOCR, FSHN 150, NR 120A-NR 120B, or NR 320. A maximum of 6 AREC credits may be used as Agricultural Science Electives.

2 Select three courses to meet the AUCC core requirements in Arts and Humanities (3B), Historical Perspectives (3D), and Diversity and Global Awareness (3E)

3 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					1
AGRI 192	Orientation to Agricultural Systems				
AGRI 292	Transfer Seminar				
AREC 202	Agricultural and Resource Economics (GT-SS1)	X		3C	3
CS 110	Personal Computing				4

Select four credits from the following:					4
BZ 110 & BZ 111	Principles of Animal Biology (GT-SC2)			3A	
BZ 120	Principles of Plant Biology (GT-SC1)			3A	
LIFE 102	Attributes of Living Systems (GT-SC1)		X	3A	
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)			1B	1
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3-4
ANEQ 101	Food Animal Science				
ANEQ 102	Introduction to Equine Science				
FTEC 110	Food-From Farm to Table				
HORT 100	Horticultural Science			3A	
SOCR 100	General Crops				
CHEM 103	Chemistry in Context (GT-SC2)			3A	3
CO 150	College Composition (GT-CO2)	X		1A	3
ECON 204	Principles of Macroeconomics (GT-SS1)			3C	3
Arts and Humanities				3B	3
AUCC 1B (Quantitative Reasoning) must be completed by the end of Semester 2.		X			
	Total Credits				15
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 205	Fundamentals of Accounting				3
AREC 224	Introduction to Agribusiness Entrepreneurship				1
SPCM 200	Public Speaking				3
Historical Perspectives				3D	3
Agricultural Sciences Electives (See List on Concentration Requirements Tab)					6
CS 110 must be completed by the end of Semester 3.		X			
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
AREC 305	Agricultural and Resource Enterprise Analysis				3
MATH 141	Calculus in Management Sciences (GT-MA1)	X		1B	3
Advanced Writing				2	3
Arts and Humanities				3B	3
Diversity and Global Awareness				3E	3
Elective					2
ECON 204, ACT 205, and one of the following: ANEQ 101, ANEQ 102, FTEC 110, HORT 100, or SOCR 100, must be completed by the end of Semester 4.		X			
	Total Credits				17
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
AREC 310	Agricultural Marketing	X			3
ECON 306	Intermediate Microeconomics				3
MKT 305	Fundamentals of Marketing	X			3
STAT 301	Introduction to Statistical Methods	X			3
AREC Choice Block (300- to 400-level AREC courses not previously taken) (See List on Program Requirements Tab)					3
	Total Credits				15

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
AREC 335/ ECON 335	Introduction to Econometrics	X			3
FIN 305	Fundamentals of Finance				3
MKT 362	Professional Selling				3
Agricultural Science Elective (See List on Program Requirements Tab)					3
Elective					3
AREC 305 and ECON 306 must be completed by the end of Semester 6.		X			
	Total Credits				15

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
AREC Choice Block (300- to 400-level AREC courses not previously taken):					6
Select two courses from the following:					6
AREC 405	Agricultural Production Management				
AREC 408	Agricultural Finance				
AREC 412	Agricultural Commodities Marketing				
Elective					3
	Total Credits				15

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
AREC 428	Agricultural Business Management	X		4A,4C	3
Select one course from the following:		X			3
AREC 460	Ag- and Resource-Based Economic Development			4B	
AREC 478	Agricultural Policy			4A,4B,4C	
Agricultural Sciences Elective (See List on Concentration Requirements Tab)		X			3
Elective		X			3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12
	Program Total Credits:				120

Major in Agricultural Business, Agricultural Economics Concentration

The Agricultural Economics concentration focuses on the theoretical and analytic tools of applied economics and provides students with the skills necessary to apply these principles in applied settings such as water, recreation, environmental economics, in industry and business, marketing, production, or government. This program is more quantitative in nature and best prepares students interested in graduate study.

Requirements Effective Fall 2015

Freshman

		AUCC	**Credits**
AGRI 192 or 292	Orientation to Agricultural Systems Transfer Seminar		1
Select one from the following courses:			3-4
ANEQ 101	Food Animal Science		
ANEQ 102	Introduction to Equine Science		
FTEC 110	Food-From Farm to Table		
HORT 100	Horticultural Science	3A	
SOCR 100	General Crops		
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	3
Select four credits from the following courses:			4
BZ 110 & BZ 111	Principles of Animal Biology (GT-SC2)	3A	
BZ 120	Principles of Plant Biology (GT-SC1)	3A	

LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
CHEM 103[1]	Chemistry in Context (GT-SC2)	3A	3
CO 150	College Composition (GT-CO2)	1A	3
CS 110	Personal Computing		4
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
Arts and Humanities		3B	3
	Total Credits		30-31

Sophomore

ACT 205	Fundamentals of Accounting		3
AREC 305	Agricultural and Resource Enterprise Analysis		3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
SPCM 200	Public Speaking		3
Advanced Writing		2	3
Foundations and Perspectives[2]		3B, 3D, 3E	9
Agricultural Sciences Electives[3]			3
Electives			3
	Total Credits		30

Junior

Select two courses from the following:			6
AREC 310	Agricultural Marketing		
AREC 311	Agricultural and Resource Product Marketing		
AREC 408	Agricultural Finance		
AREC 412	Agricultural Commodities Marketing		
AREC 428	Agricultural Business Management		
AREC 335/ECON 335	Introduction to Econometrics		3
AREC 340/ECON 340 or 342	Introduction-Economics of Natural Resources Water Law~ Policy~ and Institutions		3
FIN 305	Fundamentals of Finance		3
STAT 301	Introduction to Statistical Methods		3
Agricultural Sciences Electives[3]			3
AREC, ECON Electives[4]			3
Electives			6
	Total Credits		30

Senior

AREC 405	Agricultural Production Management	4A,4C	3
AREC 415	International Agricultural Trade		3
AREC 478	Agricultural Policy	4A,4B,4C	3
ECON 304	Intermediate Macroeconomics		3
ECON 306	Intermediate Microeconomics		3
Agricultural Sciences Electives[3]			6
AREC, ECON Electives[4]			6
Electives[5]			2-3
	Total Credits		29-30
	Program Total Credits:		120

[1] Students planning to take SOCR 240 should take CHEM 107 and CHEM 108 and reduce the number of free electives in the program.

[2] Select three courses to meet the AUCC core requirements in Arts and Humanities (3B), Historical Perspectives (3D), and Diversity and Global Awareness (3E)

[3] Select a total of 12 credits from courses in AGED, AGRI, ANEQ, AREC, BSPM, FSHN, FTEC, HORT, LAND, NR, RS, SOCR, or WR. A maximum of six AREC credits may be used as Agricultural Sciences electives.

[4] Select credits from AREC and/or ECON courses.

[5] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					1
AGRI 192	Orientation to Agricultural Systems				
AGRI 292	Transfer Seminar				
AREC 202	Agricultural and Resource Economics (GT-SS1)	X		3C	3
CS 110	Personal Computing				4
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)			1B	1
Select four credits from the following:					4
BZ 110 & BZ 111	Principles of Animal Biology (GT-SC2)			3A	
BZ 120	Principles of Plant Biology (GT-SC1)			3A	
LIFE 102	Attributes of Living Systems (GT-SC1)			3A	
	Total Credits				15

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3-4
ANEQ 101	Food Animal Science				
ANEQ 102	Introduction to Equine Science				
FTEC 110	Food-From Farm to Table				
HORT 100	Horticultural Science			3A	
SOCR 100	General Crops				
CHEM 103	Chemistry in Context (GT-SC2)			3A	3
CO 150	College Composition (GT-CO2)	X		1A	3
ECON 204	Principles of Macroeconomics (GT-SS1)			3C	3
Arts and Humanities				3B	3
AUCC 1B (Quantitative Reasoning) must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 205	Fundamentals of Accounting				3
AREC 305	Agricultural and Resource Enterprise Analysis				3
Historical Perspectives				3D	3
Advanced Writing				2	3
Agricultural Sciences Elective (See List on Concentration Requirements Tab)					3
CS 110 must be completed by the end of Semester 3.		X			
	Total Credits				15

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 141	Calculus in Management Sciences (GT-MA1)	X		1B	3
SPCM 200	Public Speaking				3
Arts and Humanities				3B	3
Diversity and Global Awareness				3E	3
Elective					3

ECON 204 and ACT 205 must be completed by the end of Semester 4.		X			
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
AREC 310	Agricultural Marketing				
AREC 311	Agricultural and Resource Product Marketing				
AREC 408	Agricultural Finance				
AREC 412	Agricultural Commodities Marketing				
AREC 428	Agricultural Business Management				
FIN 305	Fundamentals of Finance				3
STAT 301	Introduction to Statistical Methods		X		3
Agricultural Sciences Elective (See List on Concentration Requirements Tab)					3
Elective					3
AREC 310 must be completed by the end of Semester 5.		X			
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
AREC 310	Agricultural Marketing				
AREC 311	Agricultural and Resource Product Marketing				
AREC 408	Agricultural Finance				
AREC 412	Agricultural Commodities Marketing				
AREC 428	Agricultural Business Management				
AREC 335/ ECON 335	Introduction to Econometrics				3
Select one course from the following:					3
AREC 340/ ECON 340	Introduction-Economics of Natural Resources				
AREC 342	Water Law, Policy, and Institutions				
AREC/ECON Elective					3
Elective					3
STAT 301 must be completed by the end of Semester 6.		X			
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
ECON 306	Intermediate Microeconomics		X		3
AREC 415	International Agricultural Trade				3
AREC/ECON Electives					6
Elective					3
AREC 335 must be completed by the end of Semester 7.		X			
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
ECON 304	Intermediate Macroeconomics	X			3
AREC 405	Agricultural Production Management	X		4A,4C	3
AREC 478	Agricultural Policy	X		4A,4B,4C	3
Agricultural Sciences Electives (See List on Concentration Requirements Tab)		X			6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study		X			
	Total Credits				15
	Program Total Credits:				120

Major in Agricultural Business, Farm and Ranch Management Concentration

The Farm and Ranch Management concentration builds skills in applied decision making required in production agriculture. The program of study allows students to apply a solid understanding of economics and the underlying physical and biological sciences that drive agricultural technology to problems facing modern farmers and ranchers.

Requirements Effective Fall 2015

Freshman

		AUCC	Credits
AGRI 192 or 292	Orientation to Agricultural Systems Transfer Seminar		1
Select one course from the following:			3-4
ANEQ 101	Food Animal Science		
ANEQ 102	Introduction to Equine Science		
FTEC 110	Food-From Farm to Table		
HORT 100	Horticultural Science	3A	
SOCR 100	General Crops		
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	3
Select four credits from the following:			4
BZ 110 & BZ 111	Principles of Animal Biology (GT-SC2)	3A	
BZ 120	Principles of Plant Biology (GT-SC1)	3A	
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
CHEM 103	Chemistry in Context (GT-SC2)	3A	3
CO 150	College Composition (GT-CO2)	1A	3
CS 110	Personal Computing		4
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
Arts and Humanities		3B	3
	Total Credits		30-31

Sophomore

ACT 205	Fundamentals of Accounting		3
AREC 305	Agricultural and Resource Enterprise Analysis		3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
SPCM 200	Public Speaking		3
Advanced Writing		2	3
Foundations and Perspectives[1]		3B, 3D, 3E	9
Agricultural Science Elecives[2]			3
Elective			3
	Total Credits		30

Junior

Select two courses from the following:			6
AREC 310	Agricultural Marketing		
AREC 311	Agricultural and Resource Product Marketing		
AREC 412	Agricultural Commodities Marketing		
AREC 415	International Agricultural Trade		
AREC 428	Agricultural Business Management		
AREC 335/ECON 335	Introduction to Econometrics		3

AREC 408	Agricultural Finance		3
MKT 305	Fundamentals of Marketing		3
MKT 362	Professional Selling		3
STAT 301	Introduction to Statistical Methods		3
Agricultural Sciences Electives[2]			6
Electives			3
	Total Credits		30

Senior

AREC 375	Agricultural Law		3
AREC 405	Agricultural Production Management	4A,4C	3
Select one from the following:			3
AREC 460	Ag- and Resource-Based Economic Development	4B	
AREC 478	Agricultural Policy	4A,4B,4C	
ECON 306	Intermediate Microeconomics		3
Agricultural Science Electives[2]			6
AREC/ECON Electives[3]			6
Electives[4]			5-6
	Total Credits		29-30
	Program Total Credits:		120

1 Select three courses to meet the AUCC requirements in Arts and Humanities (3B), Historical Perspectives (3D), and Diversity and Global Awareness (3E).

2 Select a total of 15 credits from courses in AGED, AGRI, ANEQ, AREC, BSPM, FSHN, FTEC, HORT, LAND, NR, RS, SOCR, or WR. A maximum of six AREC credits may be used as Agricultural Science Electives.

3 Select from AREC and/or ECON courses.

4 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					1
AGRI 192	Orientation to Agricultural Systems				
AGRI 292	Transfer Seminar				
AREC 202	Agricultural and Resource Economics (GT-SS1)	X		3C	3
CS 110	Personal Computing				4
Select four credits from the following:					4
BZ 110 & BZ 111	Principles of Animal Biology (GT-SC2)			3A	
BZ 120	Principles of Plant Biology (GT-SC1)			3A	
LIFE 102	Attributes of Living Systems (GT-SC1)			3A	
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)			1B	1
	Total Credits				15

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3-4
ANEQ 101	Food Animal Science				
ANEQ 102	Introduction to Equine Science				
FTEC 110	Food-From Farm to Table				
HORT 100	Horticultural Science			3A	
SOCR 100	General Crops				
CHEM 103	Chemistry in Context (GT-SC2)			3A	3

CO 150	College Composition (GT-CO2)	X		1A	3
ECON 204	Principles of Macroeconomics (GT-SS1)			3C	3
Arts and Humanities				3B	3
AUCC 1B (Quantitative Reasoning) must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 205	Fundamentals of Accounting				3
AREC 305	Agricultural and Resource Enterprise Analysis				3
Historical Perspectives				3D	3
Advanced Writing				2	3
Agricultural Sciences Elective (See List on Concentration Requirements Tab)					3
CS 110 must be completed by the end of Semester 3.		X			
	Total Credits				15

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 141	Calculus in Management Sciences (GT-MA1)	X		1B	3
SPCM 200	Public Speaking				3
Arts and Humanities				3B	3
Diversity and Global Awareness				3E	3
Elective					3
ECON 204 and ACT 205 must be completed by the end of Semester 4.		X			
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
AREC 310	Agricultural Marketing				
AREC 311	Agricultural and Resource Product Marketing				
AREC 412	Agricultural Commodities Marketing				
AREC 428	Agricultural Business Management				
MKT 305	Fundamentals of Marketing				3
STAT 301	Introduction to Statistical Methods	X			3
Agricultural Sciences Elective (See List on Concentration Requirements Tab)					3
Elective					3
AREC 310 must be completed by the end of Semester 5.		X			
	Total Credits				15

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
AREC 310	Agricultural Marketing				
AREC 311	Agricultural and Resource Product Marketing				
AREC 408	Agricultural Finance				
AREC 412	Agricultural Commodities Marketing				
AREC 428	Agricultural Business Management				
AREC 335/ ECON 335	Introduction to Econometrics				3
AREC 408	Agricultural Finance				3
MKT 362	Professional Selling				3
Agricultural Sciences Elective (See List on Concentration Requirements Tab)					3
	Total Credits				15

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
AREC 375	Agricultural Law				3

ECON 306	Intermediate Microeconomics		X		3
AREC/ECON Electives					6
Elective					3
AREC 335 must be completed by the end of Semester 7.		X			
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
AREC 405	Agricultural Production Management	X		4A,4C	3
Select one course from the following:		X			3
AREC 460	Ag- and Resource-Based Economic Development			4B	
AREC 478	Agricultural Policy			4A,4B,4C	
Agricultural Sciences Electives		X			6
Elective		X			3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Agricultural Education

Agricultural Education is defined as a systematic program of instruction for students desiring to learn and teach/educate the science, business, and technology of agriculture, food and environmental/natural resource systems. Agricultural Education prepares students for successful careers and a lifetime of informed choices regarding agriculture. Agricultural Education is a major in the Department of Agricultural and Resource Economics, but works significantly with the School of Education – Center for Educator Preparation. CSU focuses on two delivery concentrations in Agricultural Education: Teacher Development for school-based agricultural education, and Agricultural Literacy. The department also offers a minor in Agricultural Literacy.

Learning Outcomes

The successful student will demonstrate:

- Competent knowledge of agricultural subject matter
- Ability to create instruction opportunities that are adapted to diverse learners in agricultural education
- Employment of innovative instructional methodologies and assessment techniques to promote learning in agriculture
- Effective program management and program evaluation techniques

Potential Occupations

Graduates in Agricultural Education are in demand to fill a continuous shortage of agricultural teachers in Colorado and nationwide. Two-thirds of the CSU graduates have become teachers or administrators in public schools. Other graduates take agribusiness positions with seed, fertilizer, feed, machinery, or finance firms. Students are also prepared to teach in community or junior colleges, area career and technical schools, and technical institutes. Participation in internships is required to enhance practical training and development.

Advanced studies after graduation include graduate studies in agricultural education, extension education and administration, or more in-depth studies in other areas of agriculture, food and natural resources. Upon completion of these advanced degrees, additional opportunities exist for program completers including: advanced high school agriculture teachers, post-secondary agriculture teacher, agribusiness or agriservice representative, cooperative extension agent, education specialist, 4-H association youth specialist, youth development specialist, science teacher.

A Bachelor of Science degree in Agricultural Education with an Agricultural Literacy concentration will enable students to guide, direct, plan, deliver and assess agriculture programs for non-formal or informal programs such as museums, business or industry programs, county or state fair displays or integrated after-school programs. A Bachelor of Science in Agricultural Education with a Teacher Development concentration leads to teacher licensure by the state of Colorado. Teachers combine classroom, laboratory, and hands-on experiences to teach high school students about the myriad agricultural topics. The curriculum requires students to demonstrate a competent knowledge of educational theory and a broad-based understanding in agricultural content.

Concentrations

- Agricultural Literacy Concentration
- Teacher Development Concentration

Major in Agricultural Education, Agricultural Literacy Concentration

An integral part of a complete agricultural education system is agricultural literacy. Agricultural literacy is the synthesis, instruction, and communication of basic information about agriculture to the public. Potential occupations may include assisting educators, producers, industry groups, and others to effectively incorporate information about agriculture into subjects being taught or examined in public and private forums. Agricultural literacy is education about agriculture. The agricultural literacy programming and training in this degree area will focus on a wide-range of ages (from early childhood to adult), audiences (rural, urban, ethnically diverse, etc.) and a variety of agriculture topics. Coursework includes technical agriculture and natural resources content knowledge, communications, philosophy, and human development. Students are required to complete an internship in agricultural literacy. Students graduating with a degree in Agricultural Education with a concentration in Agricultural Literacy would have to complete additional educational coursework in order to teach in public schools in Colorado.

Potential Occupations

Potential occupations for graduates of this concentration include working for industry, trade, or community organizations that promote and advocate for an agriculturally literate society.

Requirements Effective Fall 2017

Freshman

		AUCC	Credits
AGED 110	Agriculture Production Systems		3
AGED 220	Understanding Agricultural Education		1
AGRI 192 or 292	Orientation to Agricultural Systems Transfer Seminar		1
ANEQ 101 or 102	Food Animal Science Introduction to Equine Science		4
CHEM 107 or 111	Fundamentals of Chemistry (GT-SC2) General Chemistry I (GT-SC2)	3A	4
CO 150	College Composition (GT-CO2)	1A	3
FSHN 125	Food and Nutrition in Health		2
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
Arts and Humanities		3B	6
	Total Credits		31

Sophomore

AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	3
EDUC 275	Schooling in the United States (GT-SS3)	3C	3
FTEC 110	Food-From Farm to Table		3
FW 104	Wildlife Ecology and Conservation (GT-SC2)	3A	3
HDFS 101	Individual and Family Development (GT-SS3)	3C	3
SOCR 100 or 240	General Crops Introductory Soil Science		4
SPCM 200	Public Speaking		3
SPCM 207	Public Argumentation		3
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
	Total Credits		31

Junior

Select one from the following courses:			2-3
AGRI 116/IE 116	Plants and Civilizations (GT-SS3)	3E	
AGRI 270/IE 270	World Interdependence-Population and Food (GT-SS3)	3E	
AGRI 300	Issues in Agriculture		
HORT 171/SOCR 171	Environmental Issues in Agriculture (GT-SS3)	3E	
Select one from the following courses:			3
AGRI 330/PHIL 330	Agricultural and Food System Ethics		
PHIL 305E	Philosophical Issues in the Professions: Animal Science		
PHIL 320	Ethics of Sustainability		
PHIL 345	Environmental Ethics		
ANEQ 250	Live Animal and Carcass Evaluation		3
AREC 328	Small Agribusiness Management		3
AREC 478	Agricultural Policy		3

CO 300 or JTC 300	Writing Arguments (GT-CO3) Professional and Technical Communication (GT-CO3)	2	3
HORT 100	Horticultural Science	3A	4
JTC 419	Food and Natural Resources Communication		3
Department Electives[1]			6
	Total Credits		30-31

Senior

AGED 330	Program Design and Evaluation in Ag. Literacy	4A	3
AGED 430	Methods of Agricultural Literacy	4B,4C	3
AGED 486A	Practicum: Agricultural Literacy		2
AREC 340/ECON 340	Introduction-Economics of Natural Resources		3
JTC 350	Public Relations		3
Department Electives[1]			12
Electives[2]			1-2
	Total Credits		27-28
	Program Total Credits:		120

[1] Select 9 upper-division credits (300- to 400-level) from each of two pathways listed below, for a total of 18 credits. Select from the subject codes associated with each pathway, with approval of advisor.

- Animal Systems: ANEQ
- Plant Systems: BSPM, HORT, LAND, SOCR
- Agricultural Business: AREC
- Natural Resources and Environmental Systems: AREC 342, F, FW, NR, RS
- Food Products and Processing Systems: FSHN, FTEC
- Human Development: HDFS

[2] Select enough elective credits to bring the program total to a minimum of 120 credits. At least 42 credits must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					1
AGRI 192	Orientation to Agricultural Systems				
AGRI 292	Transfer Seminar				
AGED 110	Agriculture Production Systems				3
AGED 220	Understanding Agricultural Education				1
LIFE 102	Attributes of Living Systems (GT-SC1)			3A	4
MATH 117	College Algebra in Context I (GT-MA1)			1B	1
MATH 118	College Algebra in Context II (GT-MA1)			1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)			1B	1
Arts and Humanities				3B	3
	Total Credits				15

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					4
ANEQ 101	Food Animal Science		X		
ANEQ 102	Introduction to Equine Science				
Select one course from the following:					4
CHEM 107	Fundamentals of Chemistry (GT-SC2)			3A	
CHEM 111	General Chemistry I (GT-SC2)			3A	
CO 150	College Composition (GT-CO2)	X		1A	3
FSHN 125	Food and Nutrition in Health				2
Arts and Humanities				3B	3

AUCC 1B (Quantitative Reasoning) must be completed by the end of Semester 2.		X			
	Total Credits				16
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
AREC 202	Agricultural and Resource Economics (GT-SS1)			3C	3
SPCM 200	Public Speaking				3
HDFS 101	Individual and Family Development (GT-SS3)			3C	3
Select one course from the following:					4
SOCR 100	General Crops				
SOCR 240	Introductory Soil Science				
Historical Perspectives				3D	3
AGED 110, AGED 220, and CHEM 107 or CHEM 111 must be completed by the end of Semester 3.		X			
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 275	Schooling in the United States (GT-SS3)			3C	3
FTEC 110	Food-From Farm to Table				3
FW 104	Wildlife Ecology and Conservation (GT-SC2)			3A	3
SPCM 207	Public Argumentation				3
Diversity and Global Awareness				3E	3
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
AREC 328	Small Agribusiness Management				3
AREC 478	Agricultural Policy				3
Select one course from the following:					2-3
AGRI 116/ IE 116	Plants and Civilizations (GT-SS3)			3E	
AGRI 270/ IE 270	World Interdependence-Population and Food (GT-SS3)			3E	
AGRI 300	Issues in Agriculture				
HORT 171/ SOCR 171	Environmental Issues in Agriculture (GT-SS3)			3E	
Select one course from the following:					3
JTC 300	Professional and Technical Communication (GT-CO3)			2	
CO 300	Writing Arguments (GT-CO3)			2	
Department Elective (See List on Concentration Requirements Tab)					3
	Total Credits				14-15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
ANEQ 250	Live Animal and Carcass Evaluation				3
HORT 100	Horticultural Science			3A	4
JTC 419	Food and Natural Resources Communication				3
Select one course from the following:					3
AGRI 330/ PHIL 330	Agricultural and Food System Ethics				
PHIL 305E	Philosophical Issues in the Professions: Animal Science				
PHIL 320	Ethics of Sustainability				
PHIL 345	Environmental Ethics				
Departmental Elective (See List on Concentration Requirements Tab)					3
	Total Credits				16

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
AGED 330	Program Design and Evaluation in Ag. Literacy	X		4A	3
JTC 350	Public Relations				3
Department Electives (See List on Concentration Requirements Tab)					6
Electives					1-2
	Total Credits				13-14
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
AGED 430	Methods of Agricultural Literacy	X		4B,4C	3
AGED 486A	Practicum: Agricultural Literacy	X			2
AREC 340/ ECON 340	Introduction-Economics of Natural Resources	X			3
Upper-Division Department Electives (See List on Concentration Requirements Tab)		X			6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				14
	Program Total Credits:				120

Major in Agricultural Education, Teacher Development Concentration

Teacher development in school-based agricultural education is delivered in a three-part model: classroom, experiential learning, and leadership development. Teacher development in school-based agriculture education is education in agriculture. In Colorado, agricultural education is delivered through approximately 100 secondary programs located throughout the state. Over 5,600 young people are enrolled in agricultural education programs in Colorado. Students in the Teacher Development concentration take classes in agriculture and in the Center for Educator Preparation (http://www.cep.chhs.colostate.edu) (CEP). A Bachelor of Science degree in Agricultural Education with a concentration in Teacher Development leads to teacher licensure by the state of Colorado. The curriculum requires students to demonstrate a competent knowledge of educational theory and a broad-based understanding in agricultural content. Students combine practical experience and technical course work including animal science, plant science, agricultural mechanics, natural resources, food products and processing, and agriculture business. Students must have a 2.75 GPA, pass the PLACE assessment for Agriculture and Renewable Natural Resources licensure and complete a student teaching semester internship.

Potential occupations

Graduates in the Teacher Development concentration are in demand to fill a shortage in agricultural education teachers. Two-thirds of program graduates take teaching and administrative positions in public schools. Other graduates fill positions in agribusiness, feed, seed, fertilizer, machinery and finance companies, and human resource positions in agribusiness companies. Additionally, graduates often pursue advanced degrees in teaching agriculture and work at community colleges, in extension, or as curriculum specialists in organizations.

Requirements Effective Fall 2017

Freshman

		AUCC	**Credits**
AGED 220	Understanding Agricultural Education		1
AGED 240	Technical Tool Applications in Ag Education		2
AGRI 192 or 292	Orientation to Agricultural Systems Transfer Seminar		1
ANEQ 101 or 102	Food Animal Science Introduction to Equine Science		4
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	3
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	4
CO 150	College Composition (GT-CO2)	1A	3
SOCR 100	General Crops		4
Select four credits from the following:			4
BZ 110 & BZ 111	Principles of Animal Biology (GT-SC2)	3A	
BZ 120	Principles of Plant Biology (GT-SC1)	3A	
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	

Select a minimum of three credits from the following:			3-4
MATH 117	College Algebra in Context I (GT-MA1)	1B	
MATH 118	College Algebra in Context II (GT-MA1)	1B	
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	
Arts and Humanities		3B	3
	Total Credits		32-33

Sophomore

ANEQ 250	Live Animal and Carcass Evaluation		3
AGED 244	Power, Structure, and Tech. Systems in Ag Ed		3
SOCR 240	Introductory Soil Science		4
Select 3 credits from the following Natural Resource/Environmental System Electives:			3
AREC 240	Issues in Environmental Economics (GT-SS1)	3C	
AREC 340/ECON 340	Introduction-Economics of Natural Resources		
AREC 342	Water Law, Policy, and Institutions		
FW 104	Wildlife Ecology and Conservation (GT-SC2)	3A	
FW 260	Principles of Wildlife Management		
RS 300	Rangeland Conservation and Stewardship		
Agricultural Science Elective[1]			3
Food Products and Processing Systems Elective[1]			5-6
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
	Total Credits		30-31

Junior

AGED 420	Developing School-Based Ag Education Programs		3
AREC 305	Agricultural and Resource Enterprise Analysis		3
EDUC 275	Schooling in the United States (GT-SS3)	3C	3
EDUC 331	Educational Technology and Assessment		2
EDUC 340	Literacy and the Learner		3
EDUC 350	Instruction I-Individualization/Management		3
EDUC 386	Practicum-Instruction I		1
HORT 100	Horticultural Science	3A	4
Select 3 credits not previously taken from the following Natural Resource/Environmental System Electives:			3
AREC 240	Issues in Environmental Economics (GT-SS1)	3C	
AREC 340/ECON 340	Introduction-Economics of Natural Resources		
AREC 342	Water Law, Policy, and Institutions		
FW 104	Wildlife Ecology and Conservation (GT-SC2)	3A	
FW 260	Principles of Wildlife Management		
RS 300	Rangeland Conservation and Stewardship		
Select one of the following courses:			3
AREC 310	Agricultural Marketing		
AREC 328	Small Agribusiness Management		
AREC 408	Agricultural Finance		
Advanced Writing		2	3
	Total Credits		31

Senior

EDCT 425	Methods/Materials in Agricultural Education		4
EDCT 485	Student Teaching	4A,4B,4C	11
EDCT 492	Seminar-Professional Relations	4C	2
EDUC 450	Instruction II-Standards and Assessment		4
EDUC 486E	Practicum: Instruction II		1
Agricultural Science Elective[1]			3-6
	Total Credits		25-28
	Program Total Credits:		120

[1] Select course(s) in consultation with advisor.

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
AGED 220	Understanding Agricultural Education		X		1
AGED 240	Technical Tool Applications in Ag Education	X			2
Select one course from the following:					1
AGRI 192	Orientation to Agricultural Systems				
AGRI 292	Transfer Seminar				
Select one course from the following:					4
ANEQ 101	Food Animal Science				
ANEQ 102	Introduction to Equine Science				
AREC 202	Agricultural and Resource Economics (GT-SS1)		X	3C	3
SOCR 100	General Crops				4
Select a minimum of three credits from the following:		X			3-4
MATH 117	College Algebra in Context I (GT-MA1)			1B	
MATH 118	College Algebra in Context II (GT-MA1)			1B	
MATH 124	Logarithmic and Exponential Functions (GT-MA1)			1B	
MATH 141	Calculus in Management Sciences (GT-MA1)			1B	
MATH 155	Calculus for Biological Scientists I (GT-MA1)			1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)			1B	
	Total Credits				18-19

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select four credits from the following:					4
BZ 110 & BZ 111	Principles of Animal Biology (GT-SC2)			3A	
BZ 120	Principles of Plant Biology (GT-SC1)			3A	
LIFE 102	Attributes of Living Systems (GT-SC1)			3A	
CHEM 107	Fundamentals of Chemistry (GT-SC2)			3A	4
CO 150	College Composition (GT-CO2)	X		1A	3
Arts and Humanities				3B	3
	Total Credits				14

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ANEQ 250	Live Animal and Carcass Evaluation				3
AGED 244	Power, Structure, and Tech. Systems in Ag Ed	X			3
Agricultural Science Elective					3
Historical Perspectives				3D	3
Diversity and Global Awareness				3E	3
CHEM 107 must be completed by the end of Semester 3.		X			
	Total Credits				15

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Select three credits from the following:					3
AREC 240	Issues in Environmental Economics (GT-SS1)			3C	
AREC 340/ ECON 340	Introduction-Economics of Natural Resources				
AREC 342	Water Law, Policy, and Institutions				
FW 104	Wildlife Ecology and Conservation (GT-SC2)			3A	
FW 260	Principles of Wildlife Management				
RS 300	Rangeland Conservation and Stewardship				
SOCR 240	Introductory Soil Science				4
Arts and Humanities				3B	3
Food Products and Processing Systems Electives					5-6
	Total Credits				15-16

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
AREC 305	Agricultural and Resource Enterprise Analysis				3
Select one course from the following:					3
AREC 310	Agricultural Marketing				
AREC 328	Small Agribusiness Management				
AREC 408	Agricultural Finance				
EDUC 275	Schooling in the United States (GT-SS3)	X		3C	3
EDUC 340	Literacy and the Learner	X			3
Advanced Writing				2	3
AGED 220 must be completed by the end of Semester 5.		X			
Acceptance into teacher licensure must be completed by the end of Semester 5.		X			
	Total Credits				15

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
AGED 420	Developing School-Based Ag Education Programs				3
Select three credits not previously taken from the following courses:					3
AREC 240	Issues in Environmental Economics (GT-SS1)			3C	
AREC 340/ ECON 340	Introduction-Economics of Natural Resources				
AREC 342	Water Law, Policy, and Institutions				
FW 104	Wildlife Ecology and Conservation (GT-SC2)			3A	
FW 260	Principles of Wildlife Management				
RS 300	Rangeland Conservation and Stewardship				
EDUC 331	Educational Technology and Assessment	X			2
EDUC 350	Instruction I-Individualization/Management	X			3
EDUC 386	Practicum-Instruction I	X			1
HORT 100	Horticultural Science			3A	4
	Total Credits				16

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
EDCT 425	Methods/Materials in Agricultural Education				4
EDUC 450	Instruction II-Standards and Assessment	X			4
EDUC 486E	Practicum: Instruction II	X			1
EDCT 492	Seminar-Professional Relations			4C	1
Agricultural Science Electives (See List on Concentration Requirements Tab)					3-6
	Total Credits				13-16

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
EDCT 485	Student Teaching	X		4A,4B,4C	11

EDCT 492	Seminar-Professional Relations	X	4C	1
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X		
	Total Credits			12
	Program Total Credits:			120

Major in Environmental and Natural Resource Economics

The Major in Environmental and Natural Resource Economics prepares students to apply economic tools to evaluate the allocation and utilization of natural resources and the management of the natural environment. Economic analysis provides a strong basis to guide societal choices that directly and indirectly affect our environment. Economic theory provides a framework for understanding both environmental and natural resource issues, predicting the likely effects of government policies and regulations, and devising solutions to pressing economic and environmental problems.

This major differentiates from other programs of study that address natural resource management in that it focuses on weighing the private and public implications of choices that we make ranging from a local through a global scale. To broaden their technical training, students majoring in Environmental and Natural Resource Economics can simultaneously complete a second major in Natural Resource Management, or other more specialized majors offered through the Warner College of N (https://warnercnr.colostate.edu)atural Resources.

Learning Outcomes

Successful students will demonstrate:

- Technical competency including appropriate use of economic theory in formulating analytical problems, identifying and gathering appropriate data, and employing appropriate economic methods to analyze those problems, utilizing appropriate available computer technology.
- Ability to solve real-world problems beyond the pedagogical context. Students will be able to identify a problem and its scope, evaluate resources available to address the problem, formulate alternative solutions, and select the solution(s) most consistent with a stated objective.
- Proficiency in oral and written communication including the ability to communicate critically and analytically at a professional level.

Potential Occupations

Environmental and resource economists are employed in a wide range of fields from education and research to business and government. Profit and non-profit organizations employ economists in international and community development, international relations, and environmental and conservation analyses. Some examples include, but are not limited to, energy resource analyst, environmental researcher/analyst, resource policy analyst, natural resource analyst, environmental pollution analyst, environmental policy analyst, economic analyst/forecaster, land use planner, international development specialist, rural community organizer, community development specialist, financial analyst, foreign trade analyst, market forecaster, and extension agent. Participation in internships, volunteer activities, and cooperative education opportunities is highly recommended to enhance practical training and development. Graduates who seek further specialization are prepared to pursue advanced studies.

Requirements Effective Fall 2015

Freshman

		AUCC	Credits
AGRI 192	Orientation to Agricultural Systems		1
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	3
Select four credits from the following:			4
BZ 110 & BZ 111	Principles of Animal Biology (GT-SC2)	3A	
BZ 120	Principles of Plant Biology (GT-SC1)	3A	
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
CO 150	College Composition (GT-CO2)	1A	3
CS 110	Personal Computing		4
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	3
Natural Resource or Agriculture Elective[1]			3
	Total Credits		30

Sophomore

ACT 205	Fundamentals of Accounting		3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
SPCM 200	Public Speaking		3
Advanced Writing		2	3
Foundations and Perspectives		3B, 3D, 3E	9
Natural Resource or Agriculture Elective[1]			3
Electives			6
	Total Credits		30

Junior

AREC 240/ECON 240	Issues in Environmental Economics (GT-SS1)	3C	3
AREC 305 or FIN 305	Agricultural and Resource Enterprise Analysis Fundamentals of Finance		3
AREC 335/ECON 335	Introduction to Econometrics		3
AREC 340/ECON 340	Introduction-Economics of Natural Resources		3
AREC 375 or POLS 361	Agricultural Law U.S. Environmental Politics and Policy		3
ECON 306	Intermediate Microeconomics		3
STAT 301	Introduction to Statistical Methods		3
Natural Resource or Agriculture Electives[1]			6
Electives			3
	Total Credits		30

Senior

AREC 341	Environmental Economics		3
AREC 342	Water Law, Policy, and Institutions		3
AREC 346/ECON 346	Economics of Outdoor Recreation		3
AREC 440	Advanced Environmental and Resource Economics	4A,4C	3
AREC 460	Ag- and Resource-Based Economic Development	4B	3
AREC 478	Agricultural Policy	4B	3
ECON 304	Intermediate Macroeconomics		3
AREC or ECON Electives[2]			3
Natural Resource or Agriculture Elective[1]			3
Electives[3]			3
	Total Credits		30
	Program Total Credits:		120

1 Select from courses with AGED, AGRI, ANEQ, BSPM, BZ, CBE, CHEM, CIVE, ECOL, ESS, FW, F, GEOL, GES, HORT, LAND, LIFE, NR, NRRT, RS, SOCR, or WR subject codes.

2 Select credits from AREC and/or ECON courses.

3 Select enough elective credits to bring program total to 120 credits with a minimum of 42 upper-division (300- to 400-level) credits.

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
AGRI 192	Orientation to Agricultural Systems				1
AREC 202	Agricultural and Resource Economics (GT-SS1)	X		3C	3
CS 110	Personal Computing				4
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)			1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)			1B	1

Arts and Humanities				3B	3
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select four credits from the following:					4
BZ 110 & BZ 111	Principles of Animal Biology (GT-SC2)			3A	
BZ 120	Principles of Plant Biology (GT-SC1)			3A	
LIFE 102	Attributes of Living Systems (GT-SC1)			3A	
CO 150	College Composition (GT-CO2)	X		1A	3
ECON 204	Principles of Macroeconomics (GT-SS1)			3C	3
Biological and Physical Sciences				3A	3
Natural Resource or Agricultural Elective (See allowable subject codes on Program Requirements Tab)					3
AUCC 1B (Quantitative Reasoning) must be completed by the end of Semester 2.		X			
	Total Credits				16
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 205	Fundamentals of Accounting				3
MATH 141	Calculus in Management Sciences (GT-MA1)	X		1B	3
Arts and Humanities				3B	3
Historical Perspectives				3D	3
Elective					3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
SPCM 200	Public Speaking				3
Advanced Writing				2	3
Diversity and Global Awareness				3E	3
Natural Resource or Agricultural Elective (See allowable subject codes on Program Requirements Tab)					3
Elective					3
ACT 205, ECON 204, and CS 110 must be completed by the end of Semester 4.		X			
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
AREC 240/ ECON 240	Issues in Environmental Economics (GT-SS1)			3C	3
Select one course from the following:					3
AREC 305	Agricultural and Resource Enterprise Analysis				
FIN 305	Fundamentals of Finance				
Select one course from the following:					3
AREC 375	Agricultural Law				
POLS 361	U.S. Environmental Politics and Policy				
STAT 301	Introduction to Statistical Methods	X			3
Natural Resource or Agricultural Elective (See allowable subject codes on Program Requirements Tab)					3
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
AREC 335/ ECON 335	Introduction to Econometrics				3
AREC 340/ ECON 340	Introduction-Economics of Natural Resources	X			3

ECON 306	Intermediate Microeconomics				3
Natural Resource or Agricultural Elective (See allowable subject codes on Program Requirements Tab)					3
Elective					3
	Total Credits				15

Senior

Semester 7		Critical	Recommended	AUCC	Credits
AREC 346/ ECON 346	Economics of Outdoor Recreation	X			3
AREC 341	Environmental Economics	X			3
ECON 304	Intermediate Macroeconomics				3
AREC or ECON Elective					3
Elective					3
	Total Credits				15

Semester 8		Critical	Recommended	AUCC	Credits
AREC 342	Water Law, Policy, and Institutions	X			3
AREC 440	Advanced Environmental and Resource Economics	X		4A,4C	3
AREC 460	Ag- and Resource-Based Economic Development	X		4B	3
AREC 478	Agricultural Policy	X		4B	3
Natural Resource or Agricultural Elective (See allowable subject codes on Program Requirements Tab)		X			3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Minor in Agricultural Literacy

The minor in Agricultural Literacy offers students an integrated set of courses in agricultural education, including an agricultural literacy internship. Students pursuing this minor should be passionate about content in animal sciences, plant sciences, food products and processing, agricultural mechanics or natural resources, and students should have a desire to teach others these disciplines. These experiences help round-out a student's education for those who are interested in working in a broad range of fields where a background in agricultural literacy would be beneficial.

Requirements Effective Fall 2018

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Core Courses		
AGED 110	Agriculture Production Systems	3
AGED 220	Understanding Agricultural Education	1
AGED 330	Program Design and Evaluation in Ag. Literacy	3
AGED 430	Methods of Agricultural Literacy	3
AGED 486A	Practicum: Agricultural Literacy	2
Selected Courses		
Select 9 credits, including a minimum of 4 upper-division (300- to 400-level) credits, from the following subject codes:		9
AGED, AGRI, ANEQ, AREC, F, FSHN, FTEC, FW, HDFS, HORT, NR, RS, SOCR		
Program Total Credits:		21

Food Industry Management Interdisciplinary Minor

This minor provides a platform for students to integrate business principles with applied food management courses. Areas of study in the minor include food products marketing, food supply chain and cost management, food safety management, food law and policy.

Requirements Effective Fall 2017

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Required Courses		
AREC 202	Agricultural and Resource Economics (GT-SS1)	3
AREC 311	Agricultural and Resource Product Marketing	3
AREC Electives		

Select at least two courses from the following:		6
AREC 305	Agricultural and Resource Enterprise Analysis	
AREC 325	Personnel Management in Agriculture	
AREC 328	Small Agribusiness Management	
or AREC 428	Agricultural Business Management	
AREC 375	Agricultural Law	
AREC 478	Agricultural Policy	
Food Industry Electives		
Select a minimum of 9 credits from the following:		9
FTEC 110	Food-From Farm to Table	
FTEC 400	Food Safety	
HORT 100	Horticultural Science	
MGT 301	Supply Chain Management	
RRM 310	Food Service Systems-Operations	
RRM 311	Food Service Systems-Production and Purchasing	
RRM 330	Alcohol Beverage Control and Management	
RRM 345	Food, Beverage, and Labor Cost Control	
RRM 460/ NRRT 460	Event and Conference Planning	
Program Total Credits:		21

Minor in Agricultural Business

The minor in Agricultural Business is open to all students who desire to complete an integrated set of courses where they learn how to apply economic principles and business management tools to a broad range of agricultural and small business management applications. Students will develop skills in agricultural production management, financial management, marketing, and international development and trade. These skills will be valuable to students seeking careers at agricultural companies, or as owner-operators in their own businesses.

The minor is highly complementary to the major fields of study that focus on the agricultural sciences (e.g., most majors within the College of Agricultural Sciences) and those that focus on other technical fields where applied business management skills are relevant. Applicable courses that contribute to the minor include core cores in agricultural economics, financial management, product and commodity marketing, law and policy, and agribusiness management.

Requirements Effective Fall 2017

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Required Courses		
AREC 202	Agricultural and Resource Economics (GT-SS1)	3
AREC 305	Agricultural and Resource Enterprise Analysis	3
Elective Courses		15
Select 15 credits from the following:		
AREC 310	Agricultural Marketing	
AREC 325	Personnel Management in Agriculture	
AREC 328	Small Agribusiness Management	
or AREC 428	Agricultural Business Management	
AREC 375	Agricultural Law	
AREC 405	Agricultural Production Management	
AREC 412	Agricultural Commodities Marketing	
AREC 478	Agricultural Policy	
Program Total Credits:		21

Minor in Environmental and Natural Resource Economics

The minor in Environmental and Natural Resource Economics is open to all students who desire to complete an integrated set of courses where they learn how to apply economics to a broad range of natural resources and environmental issues. Interested in how economists view climate change, parks and protected areas, renewable energy, deforestation, carbon accounting, corporate social (and environmental) responsibility and/or biodiversity and ecosystem services? Students have the opportunity to develop skills to evaluate private and societal choices that are made regarding human interactions with the natural world. Economic theory and analytical methods are central to most public policy discussions and investment projects. Students who build these skills will be positioned to guide social dialogue and private investment around some of the most important issues of the modern era.

The minor is highly complementary to the major fields of study that focus on the management of natural resources (e.g., most majors within the Warner College of Natural Resources) and those that focus on public policy and social choice. Applicable courses that contribute to the minor include core cores in environmental and natural resource economics as well as courses applied to specialty topics in water, outdoor recreation and tourism, energy, development, and agriculture.

Requirements Effective Fall 2017

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Required Courses:		
AREC 202	Agricultural and Resource Economics (GT-SS1)	3
AREC 240/ECON 240	Issues in Environmental Economics (GT-SS1)	3
Electives – Choose at least 15 credits from the following:		15
AREC 340/ ECON 340	Introduction-Economics of Natural Resources	
AREC 341	Environmental Economics	
AREC 342	Water Law, Policy, and Institutions	
AREC 346/ ECON 346	Economics of Outdoor Recreation	

AREC 440	Advanced Environmental and Resource Economics	
AREC 442	Water Resource Economics	
AREC 444/ ECON 444	Economics of Energy Resources	
Program Total Credits:		21

Master of Agribusiness and Food Innovation Management, Plan C

The professional Master of Agribusiness and Food Innovation Management (Plan C) is a program of study consisting of 35 credit hours of coursework, including 9 credit hours of practicum, that prepares students to start their own businesses in the agribusiness food system or to join the team of an existing startup in the agricultural value chain. Completion of the degree program implies mastery of what it means to be an entrepreneur, ability to describe the agriculture value chain and potential business opportunities, practical understanding of the role that economics plays in successful business startups, financial and marketing skills needed to put together a business plan, ability to evaluate the viability of a new product or service, ability to work together in a team to put together a business plan, communication skills to sell that plan to others (particularly potential investors), and working knowledge of intellectual property and how to protect it from unauthorized exploitation. The practicum provides experience in the development of a business plan for an actual business.

Requirements Effective Fall 2019

First Year		
Fall		**Credits**
AREC 511	Opportunities in the Agricultural Value Chain	2
AREC 512	Innovation in Agribusinesses	2
AREC 513	Idea Evaluation in Agricultural Value Chains	2
AREC 514	Entrepreneurial Accounting and Finance	2
AREC 515	Assessing Agricultural and Food Markets	2
AREC 516	Business Economics for the Entrepreneur	2
	Total Credits	12
Spring		
AREC 517	Entrepreneurial Identity and Team Formation	2
AREC 518	Raising Capital in the Agricultural Sector	2
AREC 519A	New Venture Communication: Interpersonal Interactions	1
AREC 586A	New Venture Launch Practicum: Explore and Validate Value Proposition	2
BUS 620	Leadership and Teams	2
BUS 660	Ethical, Legal, and Regulatory Issues	2
	Total Credits	11
Summer		
AREC 520	Intellectual Property in Food and Agriculture	2
AREC 521	New Food Product Development	2
AREC 586B	New Venture Launch Practicum: Communicate, Design, and Iterate	2
	Total Credits	6
Second Year		
Fall		
AREC 519B	New Venture Communication: Making the Pitch	1
AREC 586C	New Venture Launch Practicum: Final Evaluation, Presentation, and Launch	5
	Total Credits	6
	Program Total Credits:	35

A minimum of 35 credits are required to complete this program.

Graduate Certificate in Teaching in Extension

This Graduate Certificate in Teaching in Extension will provide training to non-extension personnel on the purposes, history, structure, function, and development of extension education programs. Students pursing this certificate will get fundamental training on how to deliver effective instruction in a variety of settings across multiple age groups. The coursework for this certificate includes principles of extension, delivery of extension, and advanced teaching methods for extension, plus an elective course. This certificate could be applied in a variety of different graduate programs that will provide breadth and expertise in the latest programmatic offerings and opportunities in extension. This program can be completed online or face-to-face on campus.

Requirements Effective Spring 2018

Additional coursework may be required due to prerequisites.

Code	Title	Credits
AGED 525	Agricultural and Extension Teaching	3
AGRI 546	Principles of Cooperative Extension	3
AGRI 547	Delivery of Cooperative Extension Programs	4

Select one course from the following:		3
AGED 600	Evaluation and Applied Research in Extension	
EDAE 5XX-7XX		
HDFS 5XX-7XX		
Program Total Credits:		13

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Master of Science in Agricultural and Resource Economics, Plan A

The Master of Science in Agricultural and Resource Economics, Plan A, offered by the Department of Agricultural and Resource Economics, is a program of study consisting of 30 credit hours, including the preparation and defense of an original M.S. research thesis (up to 6 credits of research work). Completion of this degree implies a mastery of fundamental microeconomic theory and econometrics, with an ability to conduct applied economic research under supervision. Graduates are competitive for employment in the public and private sectors as analysts, consultants, researchers, and other occupations involving analytical skills. Our students have gone on to rewarding careers in federal agencies, NGOs, and the private sector. The program provides a solid foundation in microeconomics and quantitative methods, coupled with direct experience in applied economic research. This course of study represents an excellent basis for those inclined to pursue doctoral degrees, and many of our students have entered our own Ph.D. program or other top-level institutions across the country.

Requirements Effective Fall 2013

Code	Title	Credits
Core Courses		
AREC 506/ECON 506	Applied Microeconomic Theory	3
AREC 507	Applied Welfare and Policy Analysis	3
AREC 535/ECON 535	Applied Econometrics	3
Methods Courses		
Select one from the following:		3
AREC 615	Optimization Methods for Applied Economics	
AREC 635/ ECON 635	Econometric Theory I	
Field Courses		
Select one group from the following:		4-6
Group A:		
AREC 540/ ECON 540	Environmental and Natural Resource Economics	
AREC 541/ ECON 541	Environmental Economics	
Group B:		
AREC 605	Agricultural Production and Cost Analysis	
AREC 610	Agricultural Marketing and Demand Analysis	
Electives		
Electives [1]		6-8
Thesis		
AREC 699	Thesis	6
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

[1] Select courses with approval of advisor and committee.

Master of Science in Agricultural and Resource Economics, Plan B

The Master of Science in Agricultural and Resource Economics, Plan B, offered by the Department of Agricultural and Resource Economics, is a program of study consisting of 30 credit hours in coursework, plus the preparation of a technical paper. Completion of this degree implies a mastery of fundamental microeconomic theory and econometrics, with an ability to conduct applied economic research under supervision. Graduates are competitive for employment in the public and private sectors as analysts, consultants, researchers, and other occupations involving analytical skills. Our students have gone on to rewarding careers in federal agencies such as the National Park Service, U.S. Department of Agriculture, State Departments of Agriculture, NGOs, and the private sector. The program provides a solid foundation for the students wishing to pursue higher level graduate studies (Ph.D.), but it is particularly well suited for students seeking to directly enter the workforce, or international students planning to return to their own country after obtaining the degree.

Requirements Effective Fall 2013

Code	Title	Credits
Core Courses		
AREC 506/ECON 506	Applied Microeconomic Theory	3
AREC 507	Applied Welfare and Policy Analysis	3
AREC 535/ECON 535	Applied Econometrics	3
Methods Courses		
Select one from the following:		3
AREC 615	Optimization Methods for Applied Economics	
AREC 635/ ECON 635	Econometric Theory I	
Field Courses		
Select one group from the following:		4-6
Group A:		
AREC 540/ ECON 540	Environmental and Natural Resource Economics	
AREC 541/ ECON 541	Environmental Economics	
Group B:		
AREC 605	Agricultural Production and Cost Analysis	
AREC 610	Agricultural Marketing and Demand Analysis	
Electives		
Electives [1]		12-14
Research		

Technical Paper Required [2]	
Program Total Credits:	30

A minimum of 30 credits are required to complete this program.

1. Select courses with approval of advisor.
2. Students in Plan B must write a technical paper.

Ph.D. in Agricultural and Resource Economics

The Ph.D. offered by the Department of Agricultural and Resource Economics consists of 72 credits plus a substantial work of original research in the form of a dissertation. Completion of the Ph.D. in Agricultural and Resource Economics generally signifies a mastery of advanced microeconomic theory and quantitative methods, with a particular expertise in either agricultural economics or natural resource and environmental economics. Ph.D. graduates are experts in applied economics and are trained to develop and execute innovative research programs, teach undergraduate and graduate level economics courses, and present theoretical and applied economic concepts and results to a wide variety of audiences. Graduates of this program have gone on to succeed in a variety of positions at universities, in the public institution sector (e.g. USDA, ERS), and private enterprises including consulting firms.

Requirements Effective Fall 2013

Code	Title	Credits
Core Courses		
AREC 506/ECON 506	Applied Microeconomic Theory	3
AREC 570/ECON 530	Methodology of Economic Research	3
AREC 615	Optimization Methods for Applied Economics	3
AREC 635/ECON 635	Econometric Theory I	3
AREC 706/ECON 706	Microeconomic Analysis II	3
AREC 735/ECON 735	Econometric Theory II	2
AREC 770	Advanced Methods in Applied Economics	3
ECON 501	Quantitative Methods for Economists	3
Field Courses		
Select one from the following:		3-4
AREC 705 & AREC 710	Advanced Production and Technological Change and Advanced Agricultural Marketing Issues	
AREC 740/ ECON 740	Advanced Natural Resource Economics	
Electives		
Electives [1]		2-3
Research and Dissertation		
AREC 799	Dissertation	12
Exams		
Exams [2]		0
Master Degree Credit		
Master Degree Credit [3]		30
Program Total Credits:		72

A minimum of 72 credits are required to complete this program.

1. Select courses with approval of advisor and committee.
2. Students must pass the written Ph.D. Qualifying Examinations in Quantitative Methods and in Microeconomics, the field Examination, the preliminary Oral Examination, and the final Oral Examination.
3. Student may apply an earned Master's degree for up to 30 credits toward the PhD requirements conditioned on satisfying course requirements for the Agricultural and Resource Economics Master of Science Program.

Department of Animal Sciences

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Dr. Keith Belk, Department Head

Undergraduate Majors

- Major in Animal Science
- Major in Equine Science

Certificates

- Certificate in Animal Nutrition
- Certificate in Beef Feedlot Management
- Certificate in Beef Production Systems
- Certificate in Meat Science

Pre-professional Veterinary Medicine Requirements

Pre-veterinary medical students with specific interest in animal science or equine science may follow either the Animal Science or Equine Science major. Maximum flexibility in career direction may be obtained by meeting the requirements for a degree in animal or equine science while simultaneously completing the admission requirements for the professional veterinary medical program. The Food Animal Veterinary Career Incentive Program (FAVCIP) is available for Animal Science majors.

Graduate
Graduate Programs in Animal Sciences

The department offers graduate programs leading to the Master of Science and the Doctor of Philosophy degrees. Students interested in graduate work should refer to the Graduate and Professional Bulletin, and the department's website (http://ansci.agsci.colostate.edu).

Master's Programs

- Master of Science in Animal Sciences, Plan A

Ph.D.

- Ph.D. in Animal Sciences*

* Please see department for program of study.

Courses
Animal Sciences (ANEQ)

ANEQ 101 Food Animal Science Credits: 4 (3-3-0)
Course Description: Development, organization, trends and management of the livestock industry; emphasis on applying science to the production of food and fiber.
Prerequisite: None.
Registration Information: Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 102 Introduction to Equine Science Credits: 4 (3-2-0)
Course Description: Equine physiology, production systems and management systems as it pertains to the equine industry and management.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 103 Introduction to Animal Science Credits: 3 (3-0-0)
Course Description: Introduction to the livestock industries with emphasis on food and fiber animals. Overviews of the industry structures, and historical and future trends. Product quality evaluation and factors influencing animal performance such as management, nutrition, genetics, and reproduction are presented.
Prerequisite: None.
Registration Information: Non-Animal Sciences majors only. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 104 Values, Culture, and Food Animal Agriculture Credits: 3 (3-0-0)
Also Offered As: PHIL 104.
Course Description: Evolution of the social values and cultural understandings shaping modern animal agriculture; current problems in animal agriculture.
Prerequisite: None.
Registration Information: Non-Animal Science majors with a freshman or sophomore standing. Credit not allowed for both ANEQ 104 and PHIL 104.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 105 Introduction to Large Animal Anatomy Credit: 1 (0-2-0)
Course Description: Basic gross animal anatomy.
Prerequisite: None.
Registration Information: Animal Science or Equine Science majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 115 Applied Equine Behavior Credits: 2 (1-2-0)
Course Description: Understanding ethology, the science of animal behavior, will be a key component to evaluating horse behavior. Topics are instinctive, learned, social and reproductive behaviors as well as sensory perception and behavioral neuroanatomy important to equine health and welfare.
Prerequisite: ANEQ 102.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 200 Applied Horsemanship and Equitation Credits: 2 (0-4-0)
Course Description: Foundation and advancement of horsemanship, on the ground and on horseback.
Prerequisite: ANEQ 115.
Registration Information: Sophomore standing. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 201A Preparation of Horses for Competition: Western Credits: 2 (0-4-0)
Course Description: Development of skills to prepare and present horses in competitions aimed at enhancing their value.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 201B Preparation of Horses for Competition: English Credits: 2 (0-4-0)
Course Description: Development of skills to prepare and present horses in competitions aimed at enhancing their value.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 203 Equine Management Credits: 2 (1-2-0)
Course Description: Equine management and care techniques with hands-on experience.
Prerequisite: ANEQ 102.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 204 Equine Facilities Management Credits: 3 (2-2-0)
Course Description: Understanding of all aspects required to manage an equine facility coupled with hands-on experience.
Prerequisite: ANEQ 102.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 205 Equine Assessment, Evaluation and Retraining Credits: 2 (0-4-0)
Course Description: Skills in assessing, evaluating, and training horses in transitional phases of their lives, including, but not limited to horses with a history of non-use, previous trauma, compliance issues, and other problematic concerns.
Prerequisite: ANEQ 115.
Registration Information: Written consent of instructor. Credit not allowed for both ANEQ 205 and ANEQ 280A2.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 220 Feeds and Feeding Credits: 2 (2-0-0)
Course Description: Advantages and limitations of feedstuffs; nutrients and their functions; and feed practices for all physiological stages of livestock.
Prerequisite: ANEQ 101 or ANEQ 102.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 230 Farm Animal Anatomy and Physiology Credits: 3 (3-0-0)
Course Description: Basic concepts of farm animal anatomy and physiology; emphasis on growth, digestion, and reproduction.
Prerequisite: LIFE 100 to 199 - at least 3 credits.
Registration Information: Credit not allowed for both ANEQ 230 and ANEQ 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 249 Introduction to the Trail Riding Industry Credit: 1 (0-2-0)
Course Description: Emphasis on horse care, regulations, first aid, health, training, and hosting a trail ride.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 250 Live Animal and Carcass Evaluation Credits: 3 (1-4-0)
Course Description: Growth, development, and value-determining characteristics of market animals.
Prerequisite: ANEQ 101 or ANEQ 102.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 286 Livestock Practicum Credits: 2 (0-0-0)
Course Description: Livestock breeds and terminology; classification of feedstuffs; livestock handling and care; basic animal management techniques, hands-on experience.
Prerequisite: ANEQ 101 or ANEQ 102.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 292 Equine Industry Seminar Credit: 1 (1-0-0)
Course Description: Overview of the equine industry and industry careers.
Prerequisite: ANEQ 102.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 293 Animal Science Career Exploration Seminar Credit: 1 (0-0-1)
Course Description: Better understanding of individual abilities, strengths and passions is imperative to be successful in a career search as well as to succeeding in life. Designed to help students explore who they are individually, how they might fit into a career or graduate programs in animal agriculture; how to prepare marketing materials to be competitive in selection processes.
Prerequisite: ANEQ 101.
Registration Information: This is a partial semester course. Sophomore standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 300A Topics in Animal Sciences: Livestock Handling Credit: 1 (1-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 300B Topics in Animal Sciences: Livestock Entomology Credit: 1 (1-0-0)
Also Offered As: BSPM 300.
Course Description: Identification, biology and management of insect, tick, and mite pests.
Prerequisite: BZ 100 to 199 between 3 and 5 credits - at least 3 credits or LIFE 100 to 199 between 3 and 5 credits - at least 3 credits.
Registration Information: Credit not allowed for both ANEQ 300B and BSPM 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 300E Topics in Animal Sciences: Family Ranching Credit: 1 (1-0-0)
Course Description:
Prerequisite: ANEQ 101 or ANEQ 102.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 300L Topics in Animal Sciences: Quality Assurance Credits: 2 (2-0-0)
Course Description:
Prerequisite: ANEQ 101 or ANEQ 102.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 300N Topics in Animal Sciences: Seedstock Merchandising Credits: 2 (2-0-0)
Course Description: Overview of beef seedstock industry, including hands-on selection, management, and marketing of cattle.
Prerequisite: None.
Restriction: Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Junior or senior standing. Course required to apply for seedstock team.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 300R Topics in Animal Sciences: Calving and Calf Care Credits: 2 (1-2-0)
Course Description:
Prerequisite: (ANEQ 310) and (ANEQ 478 or ANEQ 510).
Registration Information: Senior standing. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 300T Topics in Animal Sciences: Event, Fair, and Show Management Credit: 1 (1-0-0)
Course Description:
Prerequisite: ANEQ 101 or ANEQ 102.
Registration Information: Credit not allowed for both ANEQ 300T and ANEQ 358.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 300U Topics in Animal Sciences: Seedstock Sale Management Credits: 2 (2-0-0)
Course Description: Develop, plan, and implement an effective seedstock cattle sale based on genetic information, customer service principles, and client relationships.
Prerequisite: ANEQ 300N.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 300W Topics in Animal Sciences: Equine Manure Management Credit: 1 (1-0-0)
Course Description: Practices which maximize the benefits of manure to soils and crops while minimizing hazards to air and water quality; complying with regulations.
Prerequisite: ANEQ 101 or ANEQ 102.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 303 Equine Digital Photography Credits: 3 (2-2-0)
Course Description: Basics of photographic principles and DSLR cameras with a focus on equine subjects.
Prerequisite: ANEQ 102.
Registration Information: Sophomore standing. Must register for lecture and laboratory. Credit not allowed for both ANEQ 303 and ANEQ 380A4.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 305 Functional Large Animal Physiology Credits: 3 (3-0-0)
Course Description: Concepts of large animal physiology; emphasis on growth, digestion, and reproduction.
Prerequisite: (LIFE 100 to 199 - at least 3 credits) and (CHEM 107 or CHEM 111).
Restriction: .
Registration Information: Credit not allowed for both ANEQ 305 and ANEQ 230.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 310 Animal Reproduction Credits: 3 (3-0-0)
Course Description: Anatomy and physiology of the reproductive system; causes of reproductive failure in farm animals; methods of improving reproductive performance.
Prerequisite: ANEQ 230 or BMS 300 or ANEQ 305.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 312 Animal Ultrasonography Credits: 2 (1-2-0)
Course Description: Fundamentals and application of using ultrasound in farm animals; basic reproductive technologies; utilizing ultrasound as a management tool.
Prerequisite: (ANEQ 230 or ANEQ 305) and (ANEQ 310).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 313 Prevention and Control of Livestock Diseases Credits: 3 (3-0-0)
Also Offered As: VS 313.
Course Description: Common ailments of livestock; sanitation and disease prevention and control.
Prerequisite: (ANEQ 230 or BMS 300 or ANEQ 305) and (ANEQ 310, may be taken concurrently and ANEQ 320, may be taken concurrently).
Registration Information: Junior or senior standing. Credit not allowed for both ANEQ 313 and VS 313.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 315 Equine Behavior Credits: 2 (1-2-0)
Course Description: Equine behaviors related to training and learning.
Prerequisite: ANEQ 102.
Registration Information: Sophomore or higher standing. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 320 Principles of Animal Nutrition Credits: 4 (3-3-0)
Course Description: Understanding of nutrients and nutrient function required to support animal life through all physiological states.
Prerequisite: (ANEQ 230 or BMS 300 or BMS 360 or ANEQ 305) and (CHEM 100 to 199 - at least 3 credits).
Registration Information: Must register for lecture and laboratory. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 322 Pet Nutrition Credits: 2 (2-0-0)
Course Description: Nutrients, nutrient requirements, feeding practices, food sources and management for companion animals (dogs, cats, birds, fish, reptiles, etc.).
Prerequisite: ANEQ 320 or ANEQ 345 or FSHN 350.
Registration Information: Offered as a correspondence or online course only.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANEQ 323 Zoo Nutrition Credits: 2 (2-0-0)
Course Description: Unique nutritional requirements of mammalian, avian, and reptile captive wild animals; management protocols needed.
Prerequisite: ANEQ 320 or ANEQ 345 or FSHN 350.
Registration Information: Offered as a correspondence or online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 325 Equine Exercise Physiology Credits: 2 (2-0-0)
Course Description: Overview of the main aspects of equine exercise physiology.
Prerequisite: ANEQ 230 or BMS 300 or ANEQ 305.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 328 Foundations in Animal Genetics Credits: 3 (3-0-0)
Course Description: Foundational information to understand animal genetics: genomes, molecular genetics, transmission-Mendelian inheritance, pedigree, population genetics, and introduction to quantitative genetics.
Prerequisite: (ANEQ 101 or ANEQ 102) and (LIFE 100 to 199 - at least 3 credits).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 330 Principles of Animal Breeding Credits: 3 (3-0-0)
Course Description: Genetic principles underlying animal improvement; elementary population genetics; heritability; selection response; mating systems; DNA markers.
Prerequisite: (BZ 350 or ANEQ 328 or SOCR 330) and (STAT 200 to 279 - at least 3 credits or STAT 300 to 379 - at least 3 credits).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANEQ 334 Principles of Equine Genetics Credits: 3 (3-0-0)
Course Description: Application of genetic principles for understanding important quantitative and qualitative traits in horses. Topics include variation, mechanisms of gene action, selection and genetic improvement.
Prerequisite: (ANEQ 102 with a minimum grade of C) and (ANEQ 328 with a minimum grade of C or BZ 350 with a minimum grade of C or SOCR 330 with a minimum grade of C) and (ANEQ 305 with a minimum grade of C or BMS 300 with a minimum grade of C).
Registration Information: Sophomore standing. Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 340 Horse Training and Sale Preparation I Credits: 3 (0-6-0)
Course Description: Practical training skills using a yearling or two year old: in-hand, restraint, ground driving, lungeing, first rides, stable management.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 341 Horse Training and Sale Preparation II Credits: 3 (0-6-0)
Course Description: Skills in training for specific riding maneuvers, conditioning, and fitting for sale.
Prerequisite: ANEQ 340.
Registration Information: Additional time outside of class required on weekends.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 344 Principles of Equine Reproduction Credits: 3 (3-0-0)
Course Description: Principles of reproduction and reproductive management of the mare and stallion.
Prerequisite: (ANEQ 102 with a minimum grade of C) and (ANEQ 230 with a minimum grade of C or ANEQ 305 with a minimum grade of C or BMS 300 with a minimum grade of C).
Registration Information: Sophomore standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 345 Principles of Nutrition: Equine Applications Credits: 3 (3-0-0)
Course Description: Principles of nutrition; application in feeding horses in different physiological states to promote health and wellness.
Prerequisite: (ANEQ 102 with a minimum grade of C) and (ANEQ 230 with a minimum grade of C or ANEQ 305 with a minimum grade of C or BMS 300 with a minimum grade of C) and (CHEM 100 to 199 - at least 3 credits and MATH 100 to 499 - at least 3 credits).
Registration Information: Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 346 Equine Disease Management Credits: 4 (3-2-0)
Course Description: Normal and abnormal body structures and functions of major systems of the horse. Recognition of main diseases, causes, prevention and treatments.
Prerequisite: (ANEQ 102 with a minimum grade of C) and (ANEQ 230 with a minimum grade of C or ANEQ 305 with a minimum grade of C or BMS 300 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 349 Packing and Outfitting Credits: 2 (1-2-0)
Course Description: Business aspects of outfitting/packing the horse; hitches, knots, horse care; planning pack trips, setting up camp.
Prerequisite: ANEQ 102.
Registration Information: Written consent of instructor. Must register for lecture and laboratory. Required field trips (Overnight pack trip).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 351 Techniques in Therapeutic Riding Credits: 2 (1-2-0)
Course Description: Equine assisted activities; therapeutic horseback riding, hippotherapy, driving/vaulting, mental health treatments, programs for youth at risk.
Prerequisite: ANEQ 102.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 352 Introduction to Horse Evaluation Credits: 2 (0-4-0)
Course Description: Criteria and techniques for evaluation of horses; development of logical decision processes for establishing comparative value.
Prerequisite: ANEQ 102.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 353 Advanced Horse Evaluation Credits: 3 (0-6-0)
Course Description: Advanced criteria/techniques for horse evaluation; logical decision process development to establish comparative value; intercollegiate competition.
Prerequisite: ANEQ 352.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 354 Introduction to Livestock Evaluation Credits: 3 (0-6-0)
Course Description: Criteria and techniques for evaluation of livestock; development of logical decision processes for establishing comparative value.
Prerequisite: ANEQ 101.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 355 Advanced Livestock Evaluation Credit: 1 (0-9-0)
Course Description: Advanced criteria and techniques for evaluation of livestock; establishing comparative value; participating in intercollegiate competition.
Prerequisite: ANEQ 354.
Registration Information: Course may be taken twice for a maximum of 2 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 356 Introduction to Dairy Evaluation Credits: 3 (0-6-0)
Course Description: Criteria and techniques for evaluation of dairy cattle; development of logical decision processes for establishing comparative value.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 357 Advanced Dairy Evaluation Credits: 2 (0-4-0)
Course Description: Advanced criteria and techniques for evaluation of dairy cattle; establishing comparative value; participating in intercollegiate competition.
Prerequisite: ANEQ 356.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 358 Equine Event and Sales Management Credits: 2 (2-0-0)
Course Description: Skills necessary to produce, organize, and promote equine related events.
Prerequisite: ANEQ 102.
Registration Information: Credit not allowed for both ANEQ 358 and ANEQ 300T.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 359 Equine Sales Production Credits: 2 (0-4-0)
Course Description: Emphasizes skills necessary to host and evaluate an equine sale.
Prerequisite: ANEQ 358.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 360 Principles of Meat Science Credits: 3 (3-0-0)
Course Description: Structure, composition, and biology of muscle and associated tissues; wholesomeness, nutritive value, and palatability of beef, pork, and lamb.
Prerequisite: CHEM 100 to 199 - at least 3 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 361 Introduction to Meat Product Evaluation Credits: 3 (0-6-0)
Course Description: Criteria and techniques for evaluation of meat products; development of logical decision processes for establishing comparative value.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 362 Advanced Meat Product Evaluation Credit: 1 (0-4-0)
Course Description: Criteria and techniques for evaluation of meat products; establishing comparative value; participating in intercollegiate competition.
Prerequisite: ANEQ 361.
Registration Information: Course may be taken twice for a maximum of 2 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 363 Introduction to Wool and Fiber Evaluation Credit: 1 (0-2-0)
Course Description: Criteria and techniques for evaluation of wool; development of logical decision processes for establishing comparative value.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 364 Advanced Wool and Fiber Evaluation Credit: 1 (0-2-0)
Course Description: Criteria and techniques for evaluation of wool; establishing comparative value; participating in intercollegiate competition.
Prerequisite: ANEQ 363.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 365 Principles of Teaching Therapeutic Riding Credits: 3 (2-2-0)
Course Description: Practical experiences and knowledge of the techniques to be a professional certified therapeutic riding instructor.
Prerequisite: ANEQ 351.
Registration Information: Written consent of instructor. Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 366 Animal Welfare Evaluation Credits: 2 (1-2-0)
Course Description: Criteria and techniques for evaluating animal welfare generally and for specific species based on the selected focus (specific species differ by year but include farm, companion, lab, working, and exotic animal species). Development of logical decision processes for establishing comparative value between cases.
Prerequisite: ANEQ 101 or ANEQ 102.
Registration Information: Must register for lecture and laboratory. Required field trips. Credit not allowed for both ANEQ 366 and ANEQ 380A3.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANEQ 386A Equine Practicum: Equine Training and Management Credits: 2 (1-2-0)
Course Description:
Prerequisite: ANEQ 102.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANEQ 386B Equine Practicum: Equine Reproductive Management Credits: 2 (1-2-0)
Course Description:
Prerequisite: ANEQ 344.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ANEQ 386C Equine Practicum: Equine Farrier Management Credit: 1 (0-2-0)
Course Description:
Prerequisite: ANEQ 102.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ANEQ 410 Applied Food Animal Behavior Credits: 3 (3-0-0)
Course Description: Principles of animal behavior applied to food animal species; the importance of understanding, observing, and assessing animal behavior in relation to food animal production; farm animal species specific behavior patterns.
Prerequisite: ANEQ 305.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 420 Applied Nutrition--Computer Diet Formulation Credits: 3 (3-0-0)
Course Description: Comparative diet formulation strategies for cattle (beef and dairy), equine, swine, and poultry. Utilizing advanced computer software to formulate diets, predict performance, and manage ingredient inventory.
Prerequisite: ANEQ 320 or ANEQ 345.
Registration Information: Junior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 440 Equine Industry and Issues Credits: 3 (3-0-0)
Course Description: For students planning a career in the horse industry; management of facilities, production systems, personnel, marketing, and biological systems.
Prerequisite: ANEQ 344 and ANEQ 345 or ANEQ 334 and ANEQ 344 or ANEQ 345 and ANEQ 346 or ANEQ 334 and ANEQ 345 or ANEQ 334 and ANEQ 346 or ANEQ 344 and ANEQ 346.
Registration Information: Any two of the following: ANEQ 334, ANEQ 344, ANEQ 345, ANEQ 346.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 441 Integrated Equine Science Credits: 2 (2-0-0)
Course Description: Describe, understand and integrate the newest scientific principles in equine sciences with equine management.
Prerequisite: ANEQ 334 and ANEQ 345 and ANEQ 344 or ANEQ 334 and ANEQ 344 and ANEQ 346 or ANEQ 346 and ANEQ 344 and ANEQ 345.
Registration Information: Junior standing.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 442 Riding Instructor Training Credits: 2 (0-4-0)
Course Description: Teaching techniques; theory; handling of large mounted groups, beginner through advanced levels.
Prerequisite: ANEQ 102.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 443 Applied Equine Nutrition Credits: 2 (1-2-0)
Course Description: Applying principles of nutrition to feeding horses in different physiological states in an effort to promote their health and well-being.
Prerequisite: ANEQ 345.
Registration Information: Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 444 Equine Business Management Credits: 2 (2-0-0)
Course Description: Real life" equine industry experience and the ins and outs of managing an equine facility/business.
Prerequisite: ANEQ 440.
Registration Information: Required field trips.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 445 Foaling Management Credits: 2 (1-3-0)
Course Description: Management of the foaling mare and newborn foal; monitoring techniques, preventative and emergency care procedures.
Prerequisite: ANEQ 344.
Registration Information: ANEQ 344 or PVM sophomore standing. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 447 Food Chemistry Credits: 2 (2-0-0)
Also Offered As: FTEC 447.
Course Description: Chemistry of food constituents as related to food quality and stability.
Prerequisite: CHEM 241 or CHEM 245 or CHEM 345.
Registration Information: Credit not allowed for both ANEQ 447 and FTEC 447.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 448 Livestock Manure Management and Environment Credits: 3 (2-2-0)
Course Description: Manure management; maximizing benefits to soils and crops; minimizing air and water quality hazards; complying with regulations.
Prerequisite: CHEM 100 to 199 - at least 3 credits.
Registration Information: Credit allowed for only one of the following: ANEQ 448, ANEQ 548, SOCR 448, SOCR 548. Must register for lecture and laboratory. Required field trips.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 450 Processed Meats Credits: 3 (2-3-0)
Course Description: Physical, chemical and functional characteristics of meat raw materials. Science and technology of value-added processing including curing, sausage manufacture, low moisture products, and restructuring. Quality assurance and related current industry topics.
Prerequisite: ANEQ 360.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 460 Meat Safety Credits: 2 (2-0-0)
Course Description: Meat safety; food borne pathogens; hazard analysis critical control points (HACCP) and total quality management (TQM) practices.
Prerequisite: CHEM 100 to 199 - at least 3 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 470 Meat Processing Systems Credits: 4 (3-2-0)
Course Description: Advanced understanding of the manufacturing, packaging, distribution, storage, and cooking of meat products.
Prerequisite: ANEQ 360.
Restriction: Must be a: Senior, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing. Must register for lecture and lab.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 472 Sheep Systems Credits: 3 (2-2-0)
Course Description: Sheep production under farm and ranch conditions; products, breeds, breeding, nutrition, reproduction, and management systems.
Prerequisite: None.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 473 Dairy Systems Credits: 3 (2-3-0)
Course Description: Integration of nutrition, genetics, physiology, and economics for management decisions of dairy farm operations and production and marketing of milk.
Prerequisite: (ANEQ 230 or BMS 300 or ANEQ 305) and (ANEQ 310 and ANEQ 320).
Restriction: .
Registration Information: Senior standing. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 474 Swine Systems Credits: 3 (2-2-0)
Course Description: Production of purebred and commercial swine; breeds, breeding, feeding, marketing, and management.
Prerequisite: None.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 475 Travel Abroad-Animal Agriculture Credits: 2 (2-0-0)
Course Description: Onsite evaluation of international animal agriculture systems with emphasis on production, marketing, and management.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 476 Feedlot Systems Credits: 3 (3-0-0)
Course Description: Feedlot facilities; nutrition; procurement; merchandising; handling; processing cattle; health care; custom feeding; managerial duties.
Prerequisite: ANEQ 320.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 478 Beef Systems Credits: 3 (2-2-0)
Course Description: Beef production as related to consumer through seedstock segments. Major emphasis on cow-calf management.
Prerequisite: None.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing. Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 486 Therapeutic Riding Instructor Practicum Credit: 1 (0-3-0)
Course Description: Mentor-guided teaching hours to students preparing for the PATH International Instructor examination.
Prerequisite: ANEQ 365.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

ANEQ 487A Internship: Animal Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANEQ 487B Internship: Equine Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANEQ 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANEQ 496 Group Study Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U Sat/Unsat Only, Traditional.
Special Course Fee: No.

ANEQ 500 Recent Developments Credits: Var[1-6] (0-0-0)
Course Description: Recent developments in animal science, avian science, and food technology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANEQ 510 Bovine Reproduction Management Credits: 4 (3-2-0)
Course Description: Role of reproduction in economic efficiency of cattle production systems. Causes of delayed breeding and nonpregnancy, abortion and perinatal mortality.
Prerequisite: ANEQ 310.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 522 Animal Metabolism Credits: 3 (3-0-0)
Course Description: Nutrient digestion, absorption, transport and metabolism in monogastric and ruminant domestic species as affected by physiological changes.
Prerequisite: CHEM 346 or CHEM 245 and CHEM 246.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 525 Advanced Meat Science Credits: 3 (3-0-0)
Course Description: Advanced study of fundamental and biochemical basis of meat quality.
Prerequisite: ANEQ 360 or ANEQ 470.
Registration Information: Junior standing. Credit not allowed for both ANEQ 525 and ANEQ 581A5.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 531 Applied Bovine Respiratory Disease Management Credit: 1 (1-0-0)
Course Description: Economic significance, management and measurement of bovine respiratory disease; introduction to genetic influence on susceptibility.
Prerequisite: ANEQ 313 or ANEQ 346.
Registration Information: Written consent of instructor. Offered as an online course only. This is a partial semester course. Senior standing. Credit not allowed for both ANEQ 531 and ANEQ 580A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 532 Genetics of Bovine Respiratory Disease Credit: 1 (1-0-0)
Course Description: Quantitative and molecular perspectives on the genetics of susceptibility to bovine respiratory disease (BRD); genetic improvement in BRD susceptibility.
Prerequisite: ANEQ 330 and ANEQ 531.
Registration Information: Senior standing. Written consent of instructor. Offered as an online course only. This is a partial semester course. Credit not allowed for both ANEQ 532 and ANEQ 580A2.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 533 Marker and Gene Assisted Selection Credit: 1 (1-0-0)
Course Description: Approaches to including DNA marker and gene information into livestock selection decisions to improve accuracy and rate of genetic improvement.
Prerequisite: ANEQ 535 or ANEQ 575.
Registration Information: Graduate standing. Written consent of instructor. Offered as an online course only. This is a partial semester course. Credit not allowed for both ANEQ 533 and ANEQ 580A3.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 534 Markers to Gene Function - Functional Change Credit: 1 (1-0-0)
Course Description: Results of marker association analyses are expanded to how sequence polymorphisms translate into functional changes in the animal genome and variation in animal performance. Topics include an introduction to the tools used to generate multi-omics data and how these data are used in genetic evaluation and animal improvement programs.
Prerequisite: ANEQ 328.
Registration Information: Senior standing. Written consent of instructor. Offered as an online course only. This is a partial semester course. Credit not allowed for both ANEQ 534 and ANEQ 580A4.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 535 Genetic Prediction in Livestock Credit: 1 (1-0-0)
Course Description: Emphasizes approaches to genetic prediction in livestock focusing on the use of mixed models and best linear unbiased prediction.
Prerequisite: ANEQ 575.
Registration Information: Graduate standing. Written consent of instructor. Offered as an online course only. This is a partial semester course. Credit not allowed for both ANEQ 535 and ANEQ 581A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 536 Livestock Variance Component Estimation Credit: 1 (1-0-0)
Course Description: Emphasizes approaches to estimation of (co)variance components and genetic parameters required to solve mixed models in livestock genetics.
Prerequisite: ANEQ 535 or ANEQ 575.
Registration Information: Senior standing. Written consent of instructor. Offered as an online course only. This is a partial semester course. Credit not allowed for both ANEQ 536 or ANEQ 581A2.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 545 Molecular Methods in Animal Genetics Credits: 3 (0-6-0)
Course Description: Hands-on learning exercises to help develop technical skills and conceptual understanding for critical evaluation of animal genetics at the molecular level. Practical experience in classical and modern genetics laboratory techniques as well as an appreciation for when these techniques should be applied and how to interpret the results.
Prerequisite: ANEQ 330 or ANEQ 334.
Registration Information: Senior standing. Credit not allowed for both ANEQ 545 and ANEQ 581A3.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 548 Issues in Manure Management Credits: 4 (2-2-1)
Course Description: Manure management practices maximizing benefits to soils and crops while minimizing hazards to air and water quality and complying with regulations.
Prerequisite: CHEM 100 to 199 - at least 3 credits.
Registration Information: Credit allowed for only one of the following courses: ANEQ 448, ANEQ 548, SOCR 448, SOCR 548. Must register for lecture, laboratory, and recitation. Required field trips.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 550A Basic Research Surgery: Farm Animal Credits: 2 (1-2-0)
Course Description: Basic principles and techniques of animal surgery to meet ACUC requirements for experimental procedures.
Prerequisite: ANEQ 230 or ANEQ 305 or BMS 300 or BMS 305.
Registration Information: Junior, senior, or graduate standing. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 550B Basic Research Surgery: Rodent Credits: 2 (1-2-0)
Course Description: Basic principles and techniques of animal surgery to meet ACUC requirements for experimental procedures.
Prerequisite: ANEQ 230 or ANEQ 305 or BMS 300 or BMS 305 or VS 333.
Registration Information: Junior, senior, or graduate standing. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 551 Field Necropsy Credits: 2 (1-2-0)
Course Description: Field necropsy techniques for collection of animal tissues for submission to a diagnostic laboratory.
Prerequisite: (ANEQ 230 or BMS 300 or ANEQ 305) and (VS 313 or ANEQ 346 or MIP 315 or ANEQ 313).
Restriction: Must be a: Graduate, Professional.
Registration Information: Junior or senior standing. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 565 Interpreting Animal Science Research Credits: 3 (3-0-0)
Course Description: Designing, conducting, analyzing, and reporting of animal science research.
Prerequisite: (ANEQ 101 or ANEQ 102) and (STAT 100 to 499 - at least 3 credits).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 567 HACCP Meat Safety Credits: 2 (2-0-0)
Course Description: Control of health problems in meat products through hazard analysis critical control point (HACCP) and total quality management (TQM) practices.
Prerequisite: ANEQ 460.
Registration Information: This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 575 Computational Biology in Animal Breeding Credits: 3 (2-2-0)
Course Description: Numerical analysis and use of computers to solve problems in animal improvement.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing or written consent of instructor. Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 587 Internship Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANEQ 610 Hormonal Regulation of Growth Credits: 2 (2-0-0)
Course Description: Cellular and molecular regulation of animal growth by hormones and growth factors.
Prerequisite: BMS 501.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 621 Vitamin and Mineral Metabolism Credits: 3 (3-0-0)
Course Description: Vitamin and mineral metabolism in domestic animals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 626 Animal Nutrition, Emissions, and Management Credits: 4 (3-3-0)
Course Description: Nutrients and nutrient function required to support animal life through all physiological states and assessment of the impacts on gaseous emissions from these animals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 631 Selection Index Theory Credits: 3 (2-0-1)
Course Description: Quantitative methods for genetic evaluation: selection index theory and introduction to best linear unbiased prediction.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANEQ 660 Topics in Meat Safety Credit: 1 (1-0-0)
Course Description: Topics of current concern in meat safety.
Prerequisite: ANEQ 567.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 676 Molecular Approaches to Food Safety Credits: 3 (1-4-0)
Course Description: Molecular subtyping, tracking, and control; molecular ecology and evolution of food-borne pathogens; molecular pathogenesis of food-borne diseases.
Prerequisite: MIP 300 or MIP 334.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANEQ 720 Nutritional Energetics Credits: 3 (3-0-0)
Course Description: Dietary energy use to meet animal requirements for maintenance, growth, pregnancy, and lactation; environmental, nutritional, and physiological effects.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 725 Rumen Metabolism Credits: 3 (3-0-0)
Course Description: Microbial degradation, transformation, and synthesis of ingested nutrients; feed particle passage kinetics in the rumen.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 730 Advances in Cattle Breeding Credits: 3 (3-0-0)
Course Description: Literature and research methods in beef cattle breeding.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANEQ 731 Advanced Genetic Prediction Credits: 3 (3-0-0)
Course Description: Models and methods for prediction of genetic merit in livestock populations.
Prerequisite: ANEQ 575.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANEQ 792A Seminar: General Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANEQ 792B Seminar: Breeding/Genetics Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANEQ 792C Seminar: Physiology Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANEQ 792D Seminar: Meat Sciences Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANEQ 792E Seminar: Nutrition Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANEQ 792F Seminar: Livestock Management Systems Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANEQ 792H Seminar: Livestock Behavior and Welfare Credit: 1 (0-0-1)
Course Description: Issues in the field of livestock behavior and welfare.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANEQ 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANEQ 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Major in Animal Science

Students majoring in Animal Science (food animals) are provided with an industry-oriented, science-based education that prepares them for careers in animal agriculture or one of many industries associated with livestock production. The curriculum focuses on the study of food-producing animals and includes foundation courses in the sciences. Students also choose from specialized courses to enhance their technical, practical, and business skills in topics related to various aspects of production, marketing, and processing of livestock and their products.

Learning Outcomes

Successful students will demonstrate:

- Broad-based understanding of biological principles and develop the ability to incorporate the use of these principles into animal management systems
- An understanding of business/economic principles and their application to food animal production systems
- Ability to critically evaluate industry and management issues
- Problem-solving and leadership skills that enhance professional success

Potential Occupations

Potential occupations include: managers of production units such as ranches, feedlots, and dairy farms; sales representatives for feed companies, pharmaceutical firms, and livestock service organizations; employment with organizational groups/associations such as breed organizations, clientele groups, and branded beef companies; cooperative extension and other educational positions; or enrollment in graduate and professional schools.

Requirements
Effective Fall 2019

A maximum of five credits is allowed for the following: ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, and ANEQ 364.

A maximum of 12 credits is allowed for any combination of the following: ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355,ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, ANEQ 364

ANEQ 384, ANEQ 487A, ANEQ 495, and ANEQ 496.

A minimum grade of 'C' (2.000) is required for ANEQ 313/VS 313, BMS 300, MIP 315 and each of the ANEQ courses used to meet requirements for the major.

Freshman

		AUCC	Credits
ANEQ 101	Food Animal Science		4
ANEQ 105	Introduction to Large Animal Anatomy		1
CO 150	College Composition (GT-CO2)	1A	3
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
Select one course from the following:			3
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	
ECON 202	Principles of Microeconomics (GT-SS1)	3C	
Select one group from the following:			5
Group A:			
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	
Group B:			

CHEM 111	General Chemistry I (GT-SC2)	3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	
Select at least three credits from the following:			3-4
MATH 117	College Algebra in Context I (GT-MA1)	1B	
MATH 118	College Algebra in Context II (GT-MA1)	1B	
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	
MATH 125	Numerical Trigonometry (GT-MA1)	1B	
MATH 126	Analytic Trigonometry (GT-MA1)	1B	
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	
Arts and Humanities		3B	3
Historical Perspectives		3D	3
	Total Credits		29-30

Sophomore

ANEQ 250	Live Animal and Carcass Evaluation		3
ANEQ 293	Animal Science Career Exploration Seminar		1
ANEQ 310	Animal Reproduction	4B	3
SPCM 200	Public Speaking		3
Select one course from the following:			3-4
ANEQ 230	Farm Animal Anatomy and Physiology		
ANEQ 305	Functional Large Animal Physiology		
BMS 300	Principles of Human Physiology		
Select one course from the following:			3
ANEQ 328	Foundations in Animal Genetics		
SOCR 330	Principles of Genetics		
Select one course from the following:			3
RS 300	Rangeland Conservation and Stewardship		
SOCR 320	Forage and Pasture Management		
Select one course from the following:			3
STAT 201	General Statistics		
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
Business/Economics Electives[1]			6
Advanced Writing		2	3
	Total Credits		31-32

Junior

ANEQ 320	Principles of Animal Nutrition	4B	4
ANEQ 360	Principles of Meat Science	4B	3
Science Electives (Select 5-8 credits from a minimum of two courses below):			5-8
ANEQ 447/FTEC 447	Food Chemistry		
ANEQ 460	Meat Safety		
ANEQ 522	Animal Metabolism		
BC 351	Principles of Biochemistry		
BC 401	Comprehensive Biochemistry I		
BC 403	Comprehensive Biochemistry II		
CHEM 245	Fundamentals of Organic Chemistry		
CHEM 335	Introduction to Analytical Chemistry		
CHEM 341	Modern Organic Chemistry I		
CHEM 343	Modern Organic Chemistry II		
CHEM 345	Organic Chemistry I		

CHEM 346	Organic Chemistry II		
LIFE 205	Microbial Biology		
MIP 300	General Microbiology		
Applied Animal Science Elective (Select a minimum of 4 credits from a minimum of two courses -- see list below)			4
Specialization Animal Science List (see list below)[2]			6
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
	Total Credits		28-31

Senior

ANEQ 330	Principles of Animal Breeding	4B	3
Select one course from the following:			3-4
ANEQ 313/VS 313	Prevention and Control of Livestock Diseases		
ANEQ 346	Equine Disease Management		
MIP 315	Pathology of Human and Animal Disease		
Select two courses from the following:			6-7
ANEQ 470	Meat Processing Systems	4A,4C	
ANEQ 472	Sheep Systems	4A,4C	
ANEQ 473	Dairy Systems	4A,4C	
ANEQ 474	Swine Systems	4A,4C	
ANEQ 476	Feedlot Systems	4A,4C	
ANEQ 478	Beef Systems	4A,4C	
Business/Economics Electives[1]			3
Specialization Animal Science List (see list below)[2]			6
Electives[3]			4-11
	Total Credits		27-32
	Program Total Credits:		120

Specialization Animal Science List [2]

Code	Title	Credits
ANEQ 334	Principles of Equine Genetics	3
ANEQ 345	Principles of Nutrition: Equine Applications	3
May select one advanced judging evaluation course:		
ANEQ 355	Advanced Livestock Evaluation	
ANEQ 357	Advanced Dairy Evaluation	
ANEQ 362	Advanced Meat Product Evaluation	
ANEQ 364	Advanced Wool and Fiber Evaluation	
ANEQ 420	Applied Nutrition–Computer Diet Formulation	3
ANEQ 447/FTEC 447	Food Chemistry	2
ANEQ 450	Processed Meats	3
ANEQ 460	Meat Safety	2
ANEQ 470	Meat Processing Systems	4
ANEQ 472	Sheep Systems	3
ANEQ 473	Dairy Systems	3
ANEQ 474	Swine Systems	3
ANEQ 476	Feedlot Systems	3
ANEQ 478	Beef Systems	3
ANEQ 487A	Internship: Animal	Var.
ANEQ 495	Independent Study	Var.
ANEQ 496	Group Study	Var.
ANEQ 510	Bovine Reproduction Management	4
ANEQ 522	Animal Metabolism	3
ANEQ 525	Advanced Meat Science	3
ANEQ 531	Applied Bovine Respiratory Disease Management	1
ANEQ 532	Genetics of Bovine Respiratory Disease	1
ANEQ 534	Markers to Gene Function - Functional Change	1
ANEQ 551	Field Necropsy	2
ANEQ 565	Interpreting Animal Science Research	3
ANEQ 567	HACCP Meat Safety	2
ANEQ 575	Computational Biology in Animal Breeding	3
BC 463	Molecular Genetics	3
BC 465	Molecular Regulation of Cell Function	3
BMS 305	Domestic Animal Gross Anatomy	4
BMS 409	Human and Animal Reproductive Biology	3
BMS 430	Endocrinology	3
BMS 450	Pharmacology	3
BSPM 462/BZ 462/ MIP 462	Parasitology and Vector Biology	5
MIP 334	Food Microbiology	3
MIP 335	Food Microbiology Laboratory	2
MIP 342	Immunology	4
MIP 343	Immunology Laboratory	2

MIP 432/ESS 432	Microbial Ecology	3
MIP 433/ESS 433	Microbial Ecology Laboratory	1
MIP 436	Industrial Microbiology	4
MIP 443	Microbial Physiology	4
MIP 450	Microbial Genetics	3
RS 400	Rangeland Improvements	2
RS 471	Rangeland Planning and Grazing Management	2
RS 472	Rangeland Ecosystem Planning	4
VS 331	Histology	4

Applied Animal Science List (Select a minimum of 4 credits from a minimum of 2 courses)

Code	Title	Credits
ANEQ 286	Livestock Practicum	2
ANEQ 300A	Topics in Animal Sciences: Livestock Handling	1
ANEQ 300B	Topics in Animal Sciences: Livestock Entomology	1
ANEQ 300E	Topics in Animal Sciences: Family Ranching	1
ANEQ 300L	Topics in Animal Sciences: Quality Assurance	2
ANEQ 300N	Topics in Animal Sciences: Seedstock Merchandising	2
ANEQ 300R	Topics in Animal Sciences: Calving and Calf Care	2
ANEQ 300U	Topics in Animal Sciences: Seedstock Sale Management	2
ANEQ 312	Animal Ultrasonography	2
ANEQ 322	Pet Nutrition	2
ANEQ 323	Zoo Nutrition	2
ANEQ 352	Introduction to Horse Evaluation	2
ANEQ 354	Introduction to Livestock Evaluation	3
ANEQ 356	Introduction to Dairy Evaluation	3
ANEQ 361	Introduction to Meat Product Evaluation	3
ANEQ 363	Introduction to Wool and Fiber Evaluation	1
ANEQ 366	Animal Welfare Evaluation	2
ANEQ 384	Supervised College Teaching	1-5
ANEQ 410	Applied Food Animal Behavior	3
Applied Equine Sciences Course (A maximum of one course, 1-3 credits, may be selected from the following courses):		1-3
ANEQ 200	Applied Horsemanship and Equitation	
ANEQ 201A	Preparation of Horses for Competition: Western	
ANEQ 201B	Preparation of Horses for Competition: English	
ANEQ 203	Equine Management	
ANEQ 204	Equine Facilities Management	
ANEQ 249	Introduction to the Trail Riding Industry	
ANEQ 303	Equine Digital Photography	
ANEQ 315	Equine Behavior	
ANEQ 325	Equine Exercise Physiology	
ANEQ 340	Horse Training and Sale Preparation I	
ANEQ 341	Horse Training and Sale Preparation II	
ANEQ 349	Packing and Outfitting	
ANEQ 351	Techniques in Therapeutic Riding	
ANEQ 353	Advanced Horse Evaluation	
ANEQ 358	Equine Event and Sales Management	
ANEQ 359	Equine Sales Production	
ANEQ 365	Principles of Teaching Therapeutic Riding	
ANEQ 386B	Equine Practicum: Equine Reproductive Management	
ANEQ 386C	Equine Practicum: Equine Farrier Management	
ANEQ 442	Riding Instructor Training	
ANEQ 445	Foaling Management	
ANEQ 486	Therapeutic Riding Instructor Practicum	

1 Select credits from any AREC or ECON course or any business course, of which 3 credits may be a computer course. Access granted for the following business courses: ACT 205, BUS 205, FIN 305, MGT 305, MKT 305.

2 Select a total of 12 credits from the Specialization Animal Science List, or students may satisfy the requirement by completing a second major (Equine Science, Agricultural Business, Agricultural Education, or Journalism and Media Communication) or a minor (Food Science and Safety, Agricultural Business, or Business Administration).

3 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program: A maximum of five credits is allowed for ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, and ANEQ 364. A maximum of 12 credits is allowed for any combination of the following: ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, ANEQ 364, ANEQ 384, ANEQ 487A, ANEQ 495, and ANEQ 496.

A minimum grade of 'C' (2.000) is required for ANEQ 313/VS 313, BMS 300, MIP 315 and each of the ANEQ courses used to meet requirements for the major.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
ANEQ 101	Food Animal Science	X			4
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	4
Select at least three credits from the following:		X			3-4
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	

MATH 118	College Algebra in Context II (GT-MA1)	X		1B	
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	X		1B	
MATH 125	Numerical Trigonometry (GT-MA1)	X		1B	
MATH 126	Analytic Trigonometry (GT-MA1)	X		1B	
MATH 141	Calculus in Management Sciences (GT-MA1)	X		1B	
MATH 155	Calculus for Biological Scientists I (GT-MA1)	X		1B	
Historical Perspectives			X	3D	3
	Total Credits				14-15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
ANEQ 105	Introduction to Large Animal Anatomy				1
CO 150	College Composition (GT-CO2)	X		1A	3
Select one group from the following:					5
Group A:					
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	X		3A	
Group B:					
CHEM 111	General Chemistry I (GT-SC2)	X		3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	
Select one course from the following:					3
AREC 202	Agricultural and Resource Economics (GT-SS1)		X	3C	
ECON 202	Principles of Microeconomics (GT-SS1)			3C	
Arts and Humanities			X	3B	3
	Total Credits				15
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ANEQ 250	Live Animal and Carcass Evaluation		X		3
Select one course from the following:		X			3-4
ANEQ 230	Farm Animal Anatomy and Physiology				
ANEQ 305	Functional Large Animal Physiology		X		
BMS 300	Principles of Human Physiology				
Select one course from the following:					3
STAT 201	General Statistics				
STAT 301	Introduction to Statistical Methods		X		
STAT 307	Introduction to Biostatistics		X		
Business/Economics Elective			X		3
Advanced Writing				2	3
	Total Credits				15-16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ANEQ 293	Animal Science Career Exploration Seminar	X			1
ANEQ 310	Animal Reproduction	X		4B	3
SPCM 200	Public Speaking		X		3
Select one course from the following:		X			3
ANEQ 328	Foundations in Animal Genetics		X		
SOCR 330	Principles of Genetics				
Select one course from the following:					3
RS 300	Rangeland Conservation and Stewardship				
SOCR 320	Forage and Pasture Management		X		
Business/Economics Elective		X			3
	Total Credits				16
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
ANEQ 320	Principles of Animal Nutrition			4B	4

ANEQ 360	Principles of Meat Science	X		4B	3
Science Elective (See List on Requirements tab)			X		2-4
Arts and Humanities				3B	3
Diversity and Global Awareness			X	3E	3
	Total Credits				15-17
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Specialization Animal Science Electives (See List on Requirements tab)		X			6
Applied Animal Science Electives (See List on Requirements tab)			X		4
Science Elective (See List on Requirements tab)			X		3-4
	Total Credits				13-14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3-4
ANEQ 313/ VS 313	Prevention and Control of Livestock Diseases	X			
ANEQ 346	Equine Disease Management	X			
MIP 315	Pathology of Human and Animal Disease	X			
Select one course from the following:					3-4
ANEQ 470	Meat Processing Systems			4A,4C	
ANEQ 472	Sheep Systems			4A,4C	
ANEQ 473	Dairy Systems			4A,4C	
ANEQ 474	Swine Systems			4A,4C	
ANEQ 476	Feedlot Systems			4A,4C	
ANEQ 478	Beef Systems			4A,4C	
Specialization Animal Science Electives (See List on Requirements tab)		X			6
Elective					0-3
	Total Credits				12-17
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
ANEQ 330	Principles of Animal Breeding	X		4B	3
Select one course not previously taken:		X			3-4
ANEQ 470	Meat Processing Systems	X		4A,4C	
ANEQ 472	Sheep Systems	X		4A,4C	
ANEQ 473	Dairy Systems	X		4A,4C	
ANEQ 474	Swine Systems	X		4A,4C	
ANEQ 476	Feedlot Systems	X		4A,4C	
ANEQ 478	Beef Systems	X		4A,4C	
Business/Economics Elective		X			3
Electives		X			3-8
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12-16
	Program Total Credits:				120

Major in Equine Science

The Equine Science major prepares students to serve the many needs of a growing industry and focuses on providing students with an in-depth scientific knowledge of the varied functions of the horse and how to relate those scientific principles to the industry. Equine Science majors have the opportunity to develop a broad understanding of the horse as it relates to business, recreational, and production aspects of the industry. Currently, CSU has the most comprehensive equine program in the United States with major efforts in research, teaching, and public service.

Learning Outcomes

Successful students will demonstrate:

- Broad-based understanding of biological principles and develop the ability to incorporate the use of these principles into the horse industry
- An understanding of business/economic principles and their application to equine enterprises
- Ability to critically evaluate equine industry issues

- Problem-solving and leadership skills that enhance professional success

Potential Occupations

- The opportunity to attend professional and/or graduate school
- Positions that provide services to the horse industry
- Management of equine production systems such as breeding farms
- Positions with horse organizations and horse shows
- Education positions with cooperative extension and colleges and universities

Requirements Effective Fall 2018

A minimum grade of "C" (2.00) is required for each of the ANEQ courses which are required to complete the major.

A maximum of five credits is allowed for ANEQ 352 , ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, **and** ANEQ 364. **A maximum of twelve credits is allowed for any combination of the following: ANEQ 352** , ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, ANEQ 364, ANEQ 384, ANEQ 487B, ANEQ 495, and ANEQ 496.

Freshman

		AUCC	Credits
ANEQ 102	Introduction to Equine Science		4
ANEQ 105	Introduction to Large Animal Anatomy		1
ANEQ 115	Applied Equine Behavior		2
ANEQ 292	Equine Industry Seminar		1
CO 150	College Composition (GT-CO2)	1A	3
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
SPCM 200	Public Speaking		3
Select one group from the following:			5
Group A:			
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	
Group B:			
CHEM 111	General Chemistry I (GT-SC2)	3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	
Select a minimum of 3 credits from the following:			3-4
MATH 117	College Algebra in Context I (GT-MA1)	1B	
MATH 118	College Algebra in Context II (GT-MA1)	1B	
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	
MATH 125	Numerical Trigonometry (GT-MA1)	1B	
MATH 126	Analytic Trigonometry (GT-MA1)	1B	
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	
Arts and Humanities		3B	3
	Total Credits		29-30

Sophomore

Select one course from the following:			3-4
ANEQ 230	Farm Animal Anatomy and Physiology		
ANEQ 305	Functional Large Animal Physiology		
BMS 300[1]	Principles of Human Physiology		
Select one course from the following:			3
ANEQ 328	Foundations in Animal Genetics		
SOCR 330	Principles of Genetics		
Select one course from the following:			3
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	
ECON 202	Principles of Microeconomics (GT-SS1)	3C	
Select one course from the following:			3
STAT 201	General Statistics		

STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
Business/Economics Electives[2]			6
Arts and Humanities		3B	3
Historical Perspectives		3D	3
Electives			6
	Total Credits		30-31

Junior

ANEQ 334	Principles of Equine Genetics		3
ANEQ 344	Principles of Equine Reproduction	4B	3
ANEQ 345	Principles of Nutrition: Equine Applications	4B	3
ANEQ 346	Equine Disease Management		4
Experience Equine Science Electives – Select a minimum of 2 credits from the following:			2-6
ANEQ 487B	Internship: Equine		
Department-approved Study Abroad			
Applied Equine Science Electives (see list below)			4
Business/Economics Elective[2]			3
Advanced Writing		2	3
Elective			3
	Total Credits		28-32

Senior

ANEQ 440	Equine Industry and Issues	4A,4C	3
Select one course from following:			2
ANEQ 441	Integrated Equine Science		
ANEQ 444	Equine Business Management		
Advanced Science Course Electives (see list below)			3-4
Applied Equine Science Electives (see list below)			4
Business/Economics Elective[2]			3
Diversity and Global Awareness		3E	3
Electives[3]			8-15
	Total Credits		27-34
	Program Total Credits:		120

Applied Equine Sciences List – Select a minimum of 8 credits from a minimum of 4 courses

Code	Title	Credits
ANEQ 200	Applied Horsemanship and Equitation	2
ANEQ 201A	Preparation of Horses for Competition: Western	2
ANEQ 201B	Preparation of Horses for Competition: English	2
ANEQ 202		1
ANEQ 203	Equine Management	2
ANEQ 204	Equine Facilities Management	3
ANEQ 249	Introduction to the Trail Riding Industry	1
ANEQ 303	Equine Digital Photography	3
ANEQ 315	Equine Behavior	2
ANEQ 325	Equine Exercise Physiology	2
ANEQ 340	Horse Training and Sale Preparation I	3
ANEQ 341	Horse Training and Sale Preparation II	3
ANEQ 349	Packing and Outfitting	2
ANEQ 351	Techniques in Therapeutic Riding	2
ANEQ 352	Introduction to Horse Evaluation	2
ANEQ 353	Advanced Horse Evaluation	3
ANEQ 358	Equine Event and Sales Management	2
ANEQ 359	Equine Sales Production	2
ANEQ 365	Principles of Teaching Therapeutic Riding	3
ANEQ 384	Supervised College Teaching	Var.
ANEQ 386B	Equine Practicum: Equine Reproductive Management	2
ANEQ 386C	Equine Practicum: Equine Farrier Management	1
ANEQ 442	Riding Instructor Training	2
ANEQ 445	Foaling Management	2
ANEQ 486	Therapeutic Riding Instructor Practicum	1
ANEQ 495	Independent Study	Var.
ANEQ 496	Group Study	Var.
L*** 2** 200-Level Foreign Language		Var.

Food Animal Courses. Students may select a maximum of two courses:		
ANEQ 250	Live Animal and Carcass Evaluation	3
ANEQ 286	Livestock Practicum	2
ANEQ 300A	Topics in Animal Sciences: Livestock Handling	1
ANEQ 300B	Topics in Animal Sciences: Livestock Entomology	1
ANEQ 300E	Topics in Animal Sciences: Family Ranching	1
ANEQ 300L	Topics in Animal Sciences: Quality Assurance	2
ANEQ 300N	Topics in Animal Sciences: Seedstock Merchandising	2
ANEQ 300R	Topics in Animal Sciences: Calving and Calf Care	2
ANEQ 300T	Topics in Animal Sciences: Event, Fair, and Show Management	1
ANEQ 300U	Topics in Animal Sciences: Seedstock Sale Management	2
ANEQ 300W	Topics in Animal Sciences: Equine Manure Management	1
ANEQ 310	Animal Reproduction	3
ANEQ 312	Animal Ultrasonography	2
ANEQ 320	Principles of Animal Nutrition	4
ANEQ 330	Principles of Animal Breeding	3

Advanced Science Course List

Code	Title	Credits
ANEQ 522	Animal Metabolism	3
BC 351	Principles of Biochemistry	4
BC 401	Comprehensive Biochemistry I	3
BC 403	Comprehensive Biochemistry II	3
BMS 345	Functional Neuroanatomy	4
BMS 430	Endocrinology	3
CHEM 245	Fundamentals of Organic Chemistry	4
CHEM 335	Introduction to Analytical Chemistry	3
CHEM 341	Modern Organic Chemistry I	3
CHEM 343	Modern Organic Chemistry II	3
MIP 300	General Microbiology	3
MIP 342	Immunology	4
PSY 320	Abnormal Psychology	3
PSY 454	Biological Psychology	3
PSY 458	Cognitive Neuroscience	3

1 If students opt to take BMS 300, a minimum grade of C is required.

2 Select credits from any 200-level or above AREC or ECON course or any business course of which 3 credits may be a computer course. Access granted for the following business courses: ACT 205, BUS 205, FIN 305, MGT 305, MKT 305.

3 Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program: A minimum grade of "C" (2.00) is required for each of the ANEQ courses which are required to complete the major.

A maximum of five credits is allowed for ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, and ANEQ 364.

A maximum of twelve credits is allowed for any combination of the following**: ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, ANEQ 364, ANEQ 384, ANEQ 487B, ANEQ 495, and ANEQ 496.**

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
ANEQ 102	Introduction to Equine Science	X			4
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	4
Select a minimum of three credits from the following:		X		1B	3-4
MATH 117	College Algebra in Context I (GT-MA1)			1B	
MATH 118	College Algebra in Context II (GT-MA1)			1B	
MATH 124	Logarithmic and Exponential Functions (GT-MA1)			1B	
MATH 125	Numerical Trigonometry (GT-MA1)			1B	
MATH 126	Analytic Trigonometry (GT-MA1)			1B	
MATH 141	Calculus in Management Sciences (GT-MA1)			1B	
MATH 155	Calculus for Biological Scientists I (GT-MA1)			1B	
Arts and Humanities			X	3B	3
	Total Credits				14-15

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
ANEQ 105	Introduction to Large Animal Anatomy				1
ANEQ 115	Applied Equine Behavior				2
ANEQ 292	Equine Industry Seminar				1
CO 150	College Composition (GT-CO2)	X		1A	3

SPCM 200	Public Speaking		X		3
Select one group from the following:		X			5
Group A:					
CHEM 107	Fundamentals of Chemistry (GT-SC2)			3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)			3A	
Group B:					
CHEM 111	General Chemistry I (GT-SC2)			3A	
CHEM 112	General Chemistry Lab I (GT-SC1)			3A	
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3-4
ANEQ 230	Farm Animal Anatomy and Physiology				
ANEQ 305	Functional Large Animal Physiology		X		
BMS 300	Principles of Human Physiology				
Select one course from the following:		X			3
AREC 202	Agricultural and Resource Economics (GT-SS1)			3C	
ECON 202	Principles of Microeconomics (GT-SS1)			3C	
Select one course from the following:			X		3
STAT 201	General Statistics				
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
Business/Economics Elective (See requirements tab)			X		3
Elective			X		3
	Total Credits				15-16

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:		X			3
ANEQ 328	Foundations in Animal Genetics		X		
SOCR 330	Principles of Genetics				
Business/Economics Elective (See requirements tab)		X			3
Arts and Humanities			X	3B	3
Historical Perspectives			X	3D	3
Elective			X		3
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
ANEQ 344	Principles of Equine Reproduction	X	X	4B	3
ANEQ 346	Equine Disease Management		X		4
Applied Equine Science Electives (See list on requirements tab.)		X			4
Experience Equine Science Elective – Select a minimum of 2 credits from the following:					2-6
ANEQ 487B	Internship: Equine				
Department-approved Study Abroad					
	Total Credits				13-17

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
ANEQ 334	Principles of Equine Genetics	X			3
ANEQ 345	Principles of Nutrition: Equine Applications	X		4B	3
Business/Economics Elective (See requirements tab)			X		3
Advanced Writing			X	2	3
Elective					3
	Total Credits				15

Senior

Semester 7		Critical	Recommended	AUCC	Credits
ANEQ 440	Equine Industry and Issues	X		4A,4C	3
Applied Equine Science Electives (See list on requirements tab.)		X			4
Business/Economics Elective (See requirements tab)			X		3
Diversity and Global Awareness				3E	3
Elective			X		2
ANEQ 346 must be completed by the end of Semester 7.		X			
	Total Credits				15

Semester 8		Critical	Recommended	AUCC	Credits
Select one course from the following:		X			2
ANEQ 441	Integrated Equine Science				
ANEQ 444	Equine Business Management				
Advanced Science Electives (See list on requirements tab)		X			3-4
Electives		X			6-13
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12-19
	Program Total Credits:				120

Certificate in Animal Nutrition

The Department of Animal Sciences offers a certificate in Animal Nutrition to undergraduate students majoring in Animal Science. This certificate prepares students for careers that require specialized training in feeding and nutritional management of animals or for advanced studies in the field of animal nutrition.

Effective Fall 2017

A minimum grade of C (2.000) is required in each course with the traditional grade mode and a Satisfactory for each course with the S/U grade mode.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
ANEQ 345	Principles of Nutrition: Equine Applications	3
ANEQ 420	Applied Nutrition--Computer Diet Formulation	3
ANEQ 476	Feedlot Systems	3
ANEQ 487A	Internship: Animal	1
or ANEQ 495	Independent Study	
BC 351	Principles of Biochemistry	4
Program Total Credits:		14

Certificate in Beef Feedlot Management

The Department of Animal Sciences offers a Certificate in Beef Feedlot Management. This certificate prepares graduates for careers in the cattle feeding industry and associated allied industries.

Effective Spring 2017

A minimum grade of C (2.000) is required in each course with the traditional grade mode and a Satisfactory for each course with the S/U grade mode.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
ANEQ 420	Applied Nutrition--Computer Diet Formulation	3
ANEQ 476	Feedlot Systems	3
ANEQ 487A	Internship: Animal [1]	1
AREC 310	Agricultural Marketing	3
AREC 412	Agricultural Commodities Marketing	3
Program Total Credits:		13

[1] Internship in beef feedlot management.

Certificate in Beef Production Systems

The Department of Animal Sciences offers a Certificate in Beef Production Systems to students majoring in Animal Science. This certificate prepares students for careers that require specialized training in all facets of beef production including genetic selection, seedstock merchandising, cow-calf production and management, feedlot management, beef processing, and marketing of beef products (retail and food service).

Effective Spring 2017

A minimum grade of C (2.000) is required in each course with the traditional grade mode and a Satisfactory for each course with the S/U grade mode.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
ANEQ 300N	Topics in Animal Sciences: Seedstock Merchandising	2
ANEQ 470	Meat Processing Systems	4
ANEQ 476	Feedlot Systems	3
ANEQ 478	Beef Systems	3
ANEQ 487A	Internship: Animal [1]	1
Program Total Credits:		13

[1] Internship in beef production systems.

Certificate in Meat Science

The Department of Animal Sciences offers a Certificate in Meat Science to undergraduate students majoring in Animal Science. This certificate prepares students for careers that require specialized training in meat processing technology, product quality, microbiology and meat safety or for advanced studies in the field of Meat Science or Food Safety.

Effective Fall 2018

A minimum grade of C (2.000) is required in each course with the traditional grade mode and a Satisfactory for each course with the S/U grade mode.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
ANEQ 361	Introduction to Meat Product Evaluation	3
ANEQ 450	Processed Meats	3
ANEQ 460	Meat Safety	2
ANEQ 470	Meat Processing Systems	4
Select one course from the following:		1
ANEQ 487A	Internship: Animal [1]	
ANEQ 495	Independent Study [1]	
ANEQ 496	Group Study [1]	1
Program Total Credits:		14

[1] Must be related to meat evaluation, meat processing technology, product quality, microbiology, and/or food safety.

Master of Science in Animal Sciences, Plan A

The Master of Science in Animal Sciences consists of 30 credit hours, including the preparation and defense of an original research thesis. At least one peer review publication is expected for this effort. Students will study within one of the discipline groups of the department (i.e., beef and dairy systems management; breeding and genetics; livestock behavior and welfare; meat science and food safety; nutrition; reproduction; equine sciences) to prepare for future employment in the animal agricultural industries and/or the pursuit of a doctoral degree.

Requirements Effective Spring 2015

Code	Title	Credits
Lecture Courses [1, 2]		25
ANEQ 792A	Seminar: General	1
ANEQ 699	Thesis	Var.
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

[1] At least 12 credits must be at the 500-level or above.

[2] Select courses with approval of advisor and graduate committee

Department of Bioagricultural Sciences and Pest Management

Office in Plant Sciences Building, Room C129
(970) 491-5261
bspm.agsci.colostate.edu (http://bspm.agsci.colostate.edu)

Professor Amy Charkowski, Head
Janet Dill, Graduate Coordinator

Although there is no undergraduate major in bioagricultural sciences offered within the department, instructional programs in the Department of Bioagricultural Sciences and Pest Management serve a number of undergraduate majors and graduate programs across CSU.

Undergraduate Minors

Minors are offered in Entomology and Plant Health. Students are provided with maximum breadth and depth with a limited number of required courses. The minors also serve to broaden the academic background of students seeking employment in the interdisciplinary job markets associated with most plant science majors. The minors provide adequate credits to meet most federal and state certification requirements for employment. Please contact Dr. Kondratieff for information on the entomology minor and Janet Dill for the plant health minor.

- Entomology
- Plant Health

Graduate

Graduate Programs in Bioagricultural Sciences

The department offers graduate programs leading to Master of Science and Doctor of Philosophy degrees in Bioagricultural Sciences, with specializations available in Entomology, Pest Management, Plant Pathology, and Weed Science.

Research in the department is focused in four areas of emphasis that cut across disciplinary specializations:

1. genomics and molecular biology;
2. ecology and biodiversity;
3. biology and management of invasive species; and
4. integrated pest management.

In addition, a number of faculty in the department are members of CSU's Graduate Degree Program in Ecology or the Cell and Molecular Biology Program and advise M.S. and Ph.D. students through these programs. Students interested in graduate work should refer to the Graduate and Professional Bulletin or visit the Department of Bioagricultural Sciences and Pest Management (http://bspm.agsci.colostate.edu).

Master's Programs

- Master of Science in Bioagricultural Sciences
- Master of Science in Bioagricultural Sciences, Plan A, Entomology Specialization
- Master of Science in Bioagricultural Sciences, Plan B, Pest Management Specialization
- Master of Science in Bioagricultural Sciences, Plan A, Plant Pathology Specialization
- Master of Science in Bioagricultural Sciences, Plan A, Weed Science Specialization

Ph.D.

- Ph.D. in Bioagricultural Sciences
- Ph.D. in Bioagricultural Sciences, Entomology Specialization
- Ph.D. in Bioagricultural Sciences, Plant Pathology Specialization
- Ph.D. in Bioagricultural Sciences, Weed Science Specialization

Courses

Subjects in this department include: Agricultural Biology (AB) and Bioagricultural Sciences and Pest Management (BSPM)

Bioagricultural Sciences and Pest Management (BSPM)

BSPM 102 Insects, Science, and Society (GT-SC2) Credits: 3 (3-0-0)
Course Description: How insects develop, behave, and affect human activity. What every student should know about the most diverse life form on Earth.
Prerequisite: None.
Registration Information: Credit not allowed for both BSPM 102 and BSPM 356A.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

BSPM 201 Weed Management and Control Credits: 3 (0-0-3)
Course Description: Basic overview of weeds and weed control.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 300 Topics in Livestock Entomology Credit: 1 (1-0-0)
Also Offered As: ANEQ 300B.
Course Description: Identification, biology, and management of insect, tick, and mite pests.
Prerequisite: BZ 100 to 199 between 3 and 5 credits - at least 3 credits or LIFE 100 to 199 between 3 and 5 credits - at least 3 credits.
Registration Information: Credit not allowed for both BSPM 300 and ANEQ 300B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 302 Applied and General Entomology Credits: 2 (2-0-0)
Course Description: Biology and management of insects.
Prerequisite: None.
Registration Information: Credit not allowed for both BSPM 302 and BSPM 356A.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

BSPM 303A Entomology Laboratory: General Credits: 2 (0-4-0)
Course Description: Biology and recognition of insects.
Prerequisite: BSPM 302, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

BSPM 303B Entomology Laboratory: Horticultural Credit: 1 (0-2-0)
Course Description: Biology and recognition of insects.
Prerequisite: BSPM 302, may be taken concurrently.
Registration Information: Credit not allowed for both BSPM 303B and BSPM 356A.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 303C Entomology Laboratory: Agricultural Credit: 1 (0-2-0)
Course Description: Biology and recognition of insects.
Prerequisite: BSPM 302, may be taken concurrently.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 308 Ecology and Management of Weeds Credits: 3 (2-3-0)
Course Description: Classification, characteristics; weed biology and ecology; control by cultural, mechanical, chemical, and biological means; successional management.
Prerequisite: (BZ 120 or LIFE 103) and (CHEM 107 or CHEM 111).
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 310 Understanding Pesticides Credits: 3 (3-0-0)
Course Description: Identification, properties, use, labeling, environmental interactions, and application of major classes of pesticides.
Prerequisite: BZ 100 to 199 - at least 3 credits or CHEM 100 to 199 - at least 3 credits.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 355A Horticulture Pathology: General Pathology Credit: 1 (1-0-0)
Course Description: A 5-week course consisting of General Plant Pathology; identification of the organisms that can cause plant diseases.
Prerequisite: HORT 100 to 199 or LIFE 100 to 199.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only. Credit not allowed for both BSPM 355A and BSPM 381A2.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 355B Hort Pathology: Turf and Ornamental Disease Credit: 1 (1-0-0)
Course Description: Turf and ornamental plant diseases, their management and control.
Prerequisite: BSPM 355A.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only. Credit not allowed for both BSPM 355B and BSPM 361.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 355C Horticulture Pathology: Vegetable and Greenhouse Disease Credit: 1 (1-0-0)
Course Description: Diseases in the Greenhouse and Vegetable crops, management and control.
Prerequisite: BSPM 355A.
Registration Information: Offered as an online course only. This is a partial semester course. Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 356A Horticultural Entomology Introduction Credit: 1 (1-0-0)
Course Description: Basic biology, identification and management of insects and mites affecting horticultural crops.
Prerequisite: HORT 100 to 199 or LIFE 100 to 199.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only. Credit not allowed for both BSPM 102 and BSPM 356A. Credit not allowed for both BSPM 302 and BSPM 356A. Credit not allowed for both BSPM 303B and BSPM 356A.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 356B Horticultural Entomology: Food Crops Credit: 1 (1-0-0)
Course Description: Insect and mite pests of fruits, vegetables and other garden grown food crops.
Prerequisite: BSPM 102 or BSPM 302 or BSPM 356A.
Registration Information: This is a partial semester course. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 356C Horticultural Entomology: Landscape Plants Credit: 1 (1-0-0)
Course Description: Insect and mite pests of ornamentals (woody plants, flowers) and turfgrass and their management.
Prerequisite: BSPM 102 or BSPM 302 or BSPM 356A.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 361 Elements of Plant Pathology Credits: 3 (2-2-0)
Course Description: Diseases of economic plants.
Prerequisite: BZ 104 or BZ 120 or HORT 100 or LIFE 102.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BSPM 365 Integrated Tree Health Management Credits: 4 (3-3-0)
Course Description: Insects and diseases in forest and urban ecosystems. Effects, diagnosis, prevention, and interactions.
Prerequisite: BZ 120 or LIFE 102.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

BSPM 384 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 415 Pollinator Management in Agroecosystems Credits: 2 (2-0-0)
Also Offered As: SOCR 415.
Course Description: Fundamental concepts of pollinator biology and management, sustainable crop-pollinator interactions, regional and global issues on pollinator management and conservation, best management practices for commercially managed pollinators.
Prerequisite: HORT 100 or SOCR 100.
Registration Information: Junior standing. Credit not allowed for both SOCR 415 and BSPM 415. Required field trips.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 423 Evolution and Classification of Insects Credits: 3 (1-4-0)
Course Description: Major groups of insects, living and fossil; major evolutionary trends in structure and behavior.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BSPM 423 and BSPM 523.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 424 Principles of Systematic Zoology Credits: 3 (3-0-0)
Also Offered As: BZ 424.
Course Description: Principles and methods of classification, zoological nomenclature, taxonomic decisions regarding species and higher categories.
Prerequisite: BZ 111 and BZ 110 or LIFE 103.
Registration Information: Credit not allowed for both BSPM 424 and BZ 424.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 445 Aquatic Insects Credits: 4 (2-4-0)
Course Description: Biology and recognition of major orders and families of aquatic insects; a collection is required.
Prerequisite: BZ 111 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

BSPM 450 Molecular Plant-Microbe Interaction Credits: 3 (3-0-0)
Course Description: Principles of plant-microbe/insect interactions, physiological and molecular aspects of plant defense, genomics approaches to study plant defense.
Prerequisite: (BZ 100 to 499 - at least 3 credits) and (BZ 346 or SOCR 330).
Registration Information: Credit not allowed for both BSPM 450 and BSPM 550.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 451 Integrated Pest Management Credits: 3 (3-0-0)
Course Description: Concepts of integrated pest management and the strategies and tactics employed in the application of these concepts.
Prerequisite: BSPM 302 or BSPM 308 or BSPM 361.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 462 Parasitology and Vector Biology Credits: 5 (3-4-0)
Also Offered As: BZ 462 and MIP 462.
Course Description: Protozoa, helminths, and insects and related arthropods of medical importance; systematics, epidemiology, host damage and control.
Prerequisite: (BZ 110 or LIFE 103) and (BZ 212 or LIFE 206 or MIP 302).
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: BSPM 462, BZ 462, MIP 462.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 487 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 492 Seminar Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 496 Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 500 Foundations of Bioagricultural Sciences Credits: 2 (2-0-0)
Course Description: Introduction to graduate school covering managing time, advisor and research, plus a survey of topics encompassed by the department of BSPM.
Prerequisite: None.
Restriction: Must be a: Graduate.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 502A Topics in Plant Pathology: Plant Viruses Credit: 1 (1-0-0)
Course Description:
Prerequisite: BIO 300 to 499 - at least 3 credits or BSPM 300 to 499 - at least 3 credits or BZ 300 to 499 - at least 3 credits or LIFE 300 to 499 - at least 3 credits.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 502B Topics in Plant Pathology: Plant Bacteriology Credit: 1 (1-0-0)
Course Description:
Prerequisite: BIO 300 to 499 - at least 3 credits or BSPM 300 to 499 - at least 3 credits or BZ 300 to 499 - at least 3 credits or LIFE 300 to 499 - at least 3 credits.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 502F Topics in Plant Pathology: Plant Disease Epidemiology Credit: 1 (1-0-0)
Course Description:
Prerequisite: BSPM 361.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 507 Insect Behavior Credits: 3 (3-0-0)
Course Description: Behavior of insects and related arthropods with special attention to social behavior.
Prerequisite: None.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 508 Environmental Fate of Pesticides Credits: 3 (3-0-0)
Course Description: Processes that affect fate of pesticides and their metabolites in the environment with emphasis on soil and water.
Prerequisite: BZ 440 or CHEM 245 or SOCR 240.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 509 Herbicide Selectivity and Action Credits: 3 (3-0-0)
Course Description: Selectivity of major photosynthetic and growth inhibitor herbicides based on herbicide transport, metabolism, and mode of action.
Prerequisite: BSPM 308 or BZ 440.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 510 Insect-Plant Disease Relationships Credits: 3 (3-0-0)
Course Description: Relationships between insects and various plant pathogens as they affect survival and transmissions of pathogens.
Prerequisite: BSPM 302 or BSPM 361.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 520 Advanced Systematics Credits: 3 (3-0-0)
Also Offered As: BZ 520.
Course Description: Theory and practice of modern systematics.
Prerequisite: BSPM 424 or BZ 424 or BZ 325.
Registration Information: Credit not allowed for both BSPM 520 and BZ 520.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 521 Forest Health Issues Credits: 3 (3-0-0)
Course Description: Current topics related to forest and shade tree health from ecosystems to tree defense physiology.
Prerequisite: None.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 523 Advanced Evolution/Classification of Insects Credits: 4 (1-4-1)
Course Description: Major groups of insects, living and fossil; major evolutionary trends in structure and behavior.
Prerequisite: None.
Registration Information: Must register for lecture, laboratory, and recitation. Credit not allowed for both BSPM 523 and BSPM 423.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 525 Insect Physiology Credits: 3 (3-0-0)
Course Description: Principles of insect function.
Prerequisite: BSPM 302.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 526 Evolutionary Ecology Credits: 3 (3-0-0)
Also Offered As: BZ 526.
Course Description: Adaptation to abiotic and biotic environments; how current ecological processes interact with evolutionary history.
Prerequisite: LIFE 320 or LIFE 220 or LAND 220.
Registration Information: Credit not allowed for both BSPM 526 and BZ 526.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 528 Invasive Plants/Weeds—Ecosystems to Molecules Credits: 3 (3-0-0)
Course Description: Contributions of disciplines of weed science and invasion ecology to understanding the biology, ecology and management of "problem plants."
Prerequisite: (LIFE 320 or LAND 220 or LIFE 220) and (BZ 120) and (LIFE 102 or LIFE 103).
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

BSPM 530 Scientific Writing Credit: 1 (1-0-0)
Also Offered As: SOCR 530.
Course Description: Skills necessary to prepare complete scientific journal articles including writing, editing, and literature searching and assessment.
Prerequisite: None.
Registration Information: Credit not allowed for both BSPM 530 and SOCR 530.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 540 Understanding Genomes Credits: 3 (3-0-0)
Course Description: Harnessing genome information and related -omics level technologies for use in answering biological questions.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 550 Molecular Plant-Microbe Interactions Credits: 3 (3-0-0)
Course Description: Principles of plant-microbe interactions, physiological and molecular aspects of plant defense, genomic approaches to study plant defense.
Prerequisite: (BZ 100 to 499 - at least 3 credits) and (BZ 346 or SOCR 330).
Registration Information: Credit not allowed for both BSPM 550 and BSPM 450.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 551 Advanced Integrated Pest Management Credits: 4 (3-0-1)
Course Description: Concepts of integrated pest management and the strategies and tactics employed in the practical application of these concepts.
Prerequisite: BSPM 302 or BSPM 308 or BSPM 361.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 555 Immature Insects Credits: 3 (1-4-0)
Course Description: Characteristics of immature forms of orders and families of insects emphasizing those important to man.
Prerequisite: BSPM 303A or BSPM 303B or BSPM 303C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 556 Biological Control of Plant Pests Credits: 3 (3-0-0)
Course Description: Management of insect pests of plants and weeds using biological control agents such as insects, bacteria, viruses, and fungi.
Prerequisite: (BZ 120 or LIFE 103) and (LIFE 320 or LAND 220 or LIFE 220).
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 570 Chemical Ecology Credits: 3 (3-0-0)
Course Description: Chemical interactions among animals, plants, fungi, and microorganisms.
Prerequisite: None.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 571 Techniques in Chemical Ecology Credit: 1 (0-2-0)
Course Description: Practical experience with chemical techniques for separation, analysis, and synthesis of natural products together with biological assays for activity.
Prerequisite: None.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 575 Molecular and Genomic Evolution Credits: 3 (3-0-0)
Also Offered As: BZ 575.
Course Description: Molecular, biological mechanisms of evolutionary change: mutation; selection; gene expression/regulation; changes in whole-genome architecture.
Prerequisite: BZ 220 and BZ 350.
Registration Information: Credit not allowed for both BSPM 575 and BZ 575.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 576 Bioinformatics Credits: 3 (3-0-0)
Also Offered As: MIP 576.
Course Description: Technical computing across platforms using bioinformatics tools in molecular analysis.
Prerequisite: BC 463 or BZ 310 or BZ 350 or CM 501 or CS 155 or ERHS 332 or MIP 275 or MIP 300 or MIP 450 or STAT 307 or ERHS 307.
Registration Information: Credit not allowed for both BSPM 576 and MIP 576.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 584 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 587 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 592 Seminar Credits: Var[1-3] (0-0-0)
Course Description: Major questions and theory pertinent to understanding current and relevant science topics.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 594 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 596 Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 710 Techniques in Molecular Biology and Genetics Credits: 3 (0-4-1)
Also Offered As: CM 710.
Course Description: Genetic manipulation of bacteria, bacteriophage, and yeast including experiments in molecular cloning and gene expression.
Prerequisite: BC 463 or BZ 346 or BZ 350 or MIP 450 or SOCR 330.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for laboratory and recitation. Credit not allowed for both BSPM 710 and CM 710.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 740 Plant Molecular Genetics Credits: 3 (3-0-0)
Also Offered As: SOCR 740.
Course Description: Advances in study of organization and function of nuclear and organellar genomes, gene expression in higher plants, and plant-microbe interactions.
Prerequisite: BC 351 and SOCR 330.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both BSPM 740 and SOCR 740.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 784 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 787 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 792 Seminar Credits: Var[1-2] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 794 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Minor in Entomology

Requirements
Effective Fall 2017

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Lower Division		
Select one group from the following:		7-8
Group A:		
BZ 110	Principles of Animal Biology (GT-SC2)	
BZ 120	Principles of Plant Biology (GT-SC1)	
Group B:		
LIFE 102	Attributes of Living Systems (GT-SC1)	
LIFE 103	Biology of Organisms-Animals and Plants	
Upper Division		
BSPM 302	Applied and General Entomology	2
Select one from the following:		1-2
BSPM 303A	Entomology Laboratory: General	
BSPM 303B	Entomology Laboratory: Horticultural	
BSPM 303C	Entomology Laboratory: Agricultural	
Select 12-13 credits from the following:		12-13
BSPM 423	Evolution and Classification of Insects	
BSPM 445	Aquatic Insects	
BSPM 451	Integrated Pest Management	
BSPM 462/ MIP 462/BZ 462	Parasitology and Vector Biology	
BSPM 487	Internship	

or BSPM 495	Independent Study	
Program Total Credits:		22-25

Minor in Plant Health

Requirements

Effective Spring 2012

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
BSPM 302	Applied and General Entomology	2
Select one from the following:		1-2
BSPM 303A	Entomology Laboratory: General	
BSPM 303B	Entomology Laboratory: Horticultural	
BSPM 303C	Entomology Laboratory: Agricultural	
BSPM 308	Ecology and Management of Weeds	3
BSPM 310	Understanding Pesticides	3
BSPM 361	Elements of Plant Pathology	3
Select a minimum of 9-10 credits from the following (including the selections of BSPM 487 or BSPM 495 or BZ/LIFE courses below):		9-10
BSPM 365	Integrated Tree Health Management	
BSPM 423	Evolution and Classification of Insects	
BSPM 445	Aquatic Insects	
BSPM 450	Molecular Plant-Microbe Interaction	
BSPM 451	Integrated Pest Management	
BSPM 462/ MIP 462/BZ 462	Parasitology and Vector Biology	
BSPM 487	Internship	
or BSPM 495	Independent Study	
BZ 120	Principles of Plant Biology (GT-SC1) [1]	
or LIFE 102	Attributes of Living Systems (GT-SC1)	
LIFE 103	Biology of Organisms-Animals and Plants [1]	
Program Total Credits:		21-23

[1] May be taken as electives by students in majors that are not in the biological or agricultural sciences.

Master of Science in Bioagricultural Sciences

Effective Fall 2007

The M.S. degree requires 30-32 credits beyond the undergraduate degree. Course selection depends on each student's focus within Bioagricultural Sciences and must be approved by the student's graduate committee.

Master of Science in Bioagricultural Sciences, Plan B, Pest Management Specialization

Requirements

Effective Fall 2009

Code	Title	Credits
Core Requirements		
BSPM 551	Advanced Integrated Pest Management	4
Select 9 credits from the following:		9
BSPM 502A	Topics in Plant Pathology: Plant Viruses	
or BSPM 502B	Topics in Plant Pathology: Plant Bacteriology	
or BSPM 502F	Topics in Plant Pathology: Plant Disease Epidemiology	
BSPM 507	Insect Behavior	
BSPM 509	Herbicide Selectivity and Action	
BSPM 510	Insect-Plant Disease Relationships	
BSPM 521	Forest Health Issues	
BSPM 523	Advanced Evolution/Classification of Insects	
BSPM 528	Invasive Plants/Weeds–Ecosystems to Molecules	
BSPM 550	Molecular Plant-Microbe Interactions	
BSPM 556	Biological Control of Plant Pests	
BSPM 792	Seminar	1
BSPM 792	Seminar (present one seminar)	2
Degree-supporting non-departmental electives		9
Broad Education Requirements		
500-700 level course [1]		3
Additional Requirements		
BSPM 698	Research [2]	6
Program Total Credits:		34

A minimum of 34 credits are required to complete this program.

[1] Choose from various courses such as teaching, internships, independent study, communication classes, second language, etc., with approval by advisor and committee.

[2] Includes a scholarly paper on topic related to specialization and approved by the student's graduate committee.

Master of Science in Bioagricultural Sciences, Plan A, Entomology Specialization

Effective Fall 2007

The M.S. degree requires 30-32 credits beyond the undergraduate degree. Course selection depends on each student's focus within Bioagricultural Sciences and must be approved by the student's graduate committee.

Master of Science in Bioagricultural Sciences, Plan A, Plant Pathology Specialization

Effective Fall 2007

The M.S. degree requires 30-32 credits beyond the undergraduate degree. Course selection depends on each student's focus within Bioagricultural Sciences and must be approved by the student's graduate committee.

Master of Science in Bioagricultural Sciences, Plan A, Weed Science Specialization

Effective Fall 2007

The M.S. degree requires 30-32 credits beyond the undergraduate degree. Course selection depends on each student's focus within Bioagricultural Sciences and must be approved by the student's graduate committee.

Ph.D. in Bioagricultural Sciences

Effective Fall 2007

The Ph.D. degree requires 72 credits beyond the undergraduate degree. Course selection depends on each student's focus within Bioagricultural Sciences and must be approved by the student's graduate committee.

Ph.D. in Bioagricultural Sciences, Entomology Specialization

Effective Fall 2007

The Ph.D. degree requires 72 credits beyond the undergraduate degree. Course selection depends on each student's focus within Bioagricultural Sciences and must be approved by the student's graduate committee.

Ph.D. in Bioagricultural Sciences, Plant Pathology Specialization

Effective Fall 2007

The Ph.D. degree requires 72 credits beyond the undergraduate degree. Course selection depends on each student's focus within Bioagricultural Sciences and must be approved by the student's graduate committee.

Ph.D. in Bioagricultural Sciences, Weed Science Specialization

Effective Fall 2007

The Ph.D. degree requires 72 credits beyond the undergraduate degree. Course selection depends on each student's focus within Bioagricultural Sciences and must be approved by the student's graduate committee.

Department of Horticulture and Landscape Architecture

University Services Center
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hortla.agsci.colostate.edu (http://hortla.agsci.colostate.edu)

Professor Jessica Davis, Department Head

Undergraduate Majors

- Environmental Horticulture
  - Landscape Business Concentration
  - Landscape Design and Contracting Concentration
  - Nursery and Landscape Management Concentration
  - Turf Management Concentration
- Horticulture
  - Floriculture Concentration
  - Horticultural Business Management Concentration
  - Horticultural Food Crops Concentration
    - Production Option
    - Seed Science Option
  - Horticultural Science Concentration
  - Horticultural Therapy Concentration
  - Viticulture and Enology Concentration (No new students are being accepted to this concentration.)
- Landscape Architecture

Minors

A Horticulture or Environmental Horticulture minor will serve to broaden the academic background of students seeking employment in interdisciplinary job markets associated with plant sciences or the art and science of environmental horticulture. A minor will allow students a maximum breadth and depth in the field while utilizing a limited number of requirements.

- Environmental Horticulture
- Horticulture

Graduate
Graduate Programs in Horticulture

The department offers graduate programs leading to Master of Science and Doctor of Philosophy degrees. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Horticulture (http://hortla.agsci.colostate.edu).

Master's Programs

Master of Science in Horticulture, Plan A*
Master of Science in Horticulture, Plan B*
Master of Landscape Architecture, Plan C (M.L.A.) (No new students are being accepted into this program.)

Ph.D.

Ph.D. in Horticulture*

* Please see department for program of study.

Courses

Subjects in this department include: Horticulture (HORT) and Landscape Architecture (LAND).

Horticulture (HORT)

HORT 100 Horticultural Science Credits: 4 (3-2-0)
Course Description: Principles of plant science and related disciplines as the base and context for the introduction of horticultural practices.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Required field trips. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A.

HORT 171 Environmental Issues in Agriculture (GT-SS3) Credits: 3 (2-0-1)
Also Offered As: SOCR 171.
Course Description: Historical development of agriculture, environmental consequences of modern food production and other cultural approaches to agriculture.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Credit not allowed for both HORT 171 and SOCR 171.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

HORT 221 Landscape Plants Credits: 4 (2-4-0)
Course Description: Identification, landscape features, cultural requirements, and landscape use of coniferous and deciduous trees and shrubs, vines, and evergreens.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Required field trips.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

HORT 231 Landscape Graphics Studio Credits: 4 (2-4-0)
Course Description: Mechanical and freehand graphic techniques for landscape design. Use of pencil, ink, and colored markers. Plan, sectional, and perspective views.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HORT 232 Principles of Landscape Design Credits: 4 (2-4-0)
Course Description: Basic concepts in the art and process of landscape design.
Prerequisite: HORT 231.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

HORT 260 Plant Propagation Credits: 4 (3-2-0)
Course Description: Theories, principles, and techniques of sexual and asexual propagation.
Prerequisite: BZ 120, may be taken concurrently or HORT 100, may be taken concurrently or LIFE 103, may be taken concurrently.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

HORT 270 Fundamentals of Horticultural Therapy Credits: 2 (2-0-0)
Course Description: Theory and practice of horticultural therapy in health care and human services; applications, settings, and professional career topics.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 277 Introduction to Enology Credit: 1 (1-0-0)
Course Description: Methods/criteria to evaluate, compare, and describe aroma and flavor characteristics in sound commercial wines; identification of common wine defects.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 310 Greenhouse Management Credits: 4 (3-2-0)
Course Description: Design and use of enclosed structures to manipulate controlled environments, effects on growth as applied to crops, production, and marketing costs.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

HORT 321 Nursery Production and Management Credits: 4 (3-2-0)
Course Description: Nursery industry organization, management, equipment, field and container production, storage, shipping, marketing, and business management practices.
Prerequisite: BZ 120 or HORT 100 or LIFE 103.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

HORT 322 Herbaceous Plants Credits: 3 (2-2-0)
Course Description: Identification, landscape features, cultural requirements, and uses of ornamental annual, perennial, and bulb plants.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online. Required field trips.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

HORT 328 Interior Plantscaping Credits: 3 (2-2-0)
Course Description: Interior plant culture, plant identification, interiorscape design and concepts for running an interior plantscaping business.
Prerequisite: BZ 120 or HORT 100.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 330 Computers for Landscape Design Credits: 2 (1-2-0)
Course Description: Applications and techniques of computer software utilized in small-scale landscape design-build.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 331 Landscape Design Credits: 2 (2-0-0)
Course Description: Fundamentals of landscape design theory and plant composition as presented in simple problems.
Prerequisite: None.
Registration Information: For non-design majors only.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HORT 335 Landscape Structures Credits: 4 (2-4-0)
Course Description: Design and construction methods for structures commonly used in residential landscaping. Preparation of construction documents.
Prerequisite: CON 131 and HORT 232.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 336 Landscape Grading and Drainage Studio Credits: 4 (2-4-0)
Course Description: Basic design principles for grading, drainage, and earth forms for small-scale projects.
Prerequisite: (HORT 221 and HORT 322 and HORT 335) and (MATH 118).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HORT 341 Turfgrass Management Credits: 3 (2-2-0)
Course Description: Principles and practices of turfgrass propagation and maintenance.
Prerequisite: HORT 100, may be taken concurrently.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 344 Organic Greenhouse Production Credit: 1 (1-0-0)
Course Description: Fundamentals of greenhouse production using organic production methods.
Prerequisite: HORT 310.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

HORT 345 Diagnosis and Treatment in Organic Fields Credits: 2 (0-4-0)
Also Offered As: SOCR 345.
Course Description: Field experience in diagnosis of pest and nutrient problems on organic farms and development of treatment recommendations.
Prerequisite: (BSPM 302 or BSPM 308 or BSPM 361) and (HORT 100 or SOCR 100) and (SOCR 240).
Registration Information: Credit not allowed for both HORT 345 and SOCR 345. Required field trips.
Term Offered: Summer (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

HORT 367 Landscape Irrigation Credits: 3 (2-2-0)
Course Description: Practical design of sprinkler and trickle irrigation systems for commercial and residential landscapes.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: HORT 367, HORT 368, LAND 368.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 368 Landscape Irrigation and Water Conservation Credits: 3 (2-2-0)
Also Offered As: LAND 368.
Course Description: Practical approaches and methods of irrigation, water conservation, and water management in the designed landscape.
Prerequisite: HORT 100 or LAND 110.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: HORT 367, HORT 368, LAND 368.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 370 Landscape Irrigation Credit: 1 (1-0-0)
Course Description: Necessary skills to design and manage irrigation systems used in the landscape industry.
Prerequisite: HORT 100, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 377 Horticultural Methods for Therapy Programs Credit: 1 (1-0-0)
Course Description: Horticultural methods for health care and human service settings, including indoor and outdoor growing techniques, management and plant selection.
Prerequisite: HORT 100 or HORT 270.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 382 Origins of Agriculture in the Andes of Peru Credits: 3 (0-0-3)
Course Description: Study abroad experience focused on understanding the agricultural, biological, cultural, and geographical diversity of the Andes region of Peru.
Prerequisite: HORT 100 or BZ 120 or LIFE 103.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 401 Medicinal and Value-Added Uses of Plants Credits: 3 (3-0-0)
Course Description: Chemical, biochemical and ethnobotanical perspective on the medicinal and value-added uses of plants.
Prerequisite: BZ 120 or HORT 100 or LIFE 103.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 410 Postharvest Biology and Technology Credits: 3 (3-0-0)
Course Description: Storage and quality maintenance of harvested fruits and vegetables.
Prerequisite: (BZ 120 or HORT 100 or LIFE 103) and (BZ 440).
Registration Information: Offered as an online course only. Credit not allowed for both HORT 410 and HORT 481A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 412 Floriculture Crops Credits: 4 (3-0-1)
Course Description: Commercial production and marketing of bedding plants, potted container crops, and cut flowers.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Required field trips. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 421 Horticultural Therapy Techniques Credits: 2 (2-0-0)
Course Description: Clinical skills in horticultural therapy; communication, safety, leadership, therapeutic relationships, adaptation of tools and activities.
Prerequisite: HORT 270.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 423 Horticultural Therapy Programming Credits: 2 (2-0-0)
Course Description: Methods for individual treatment planning, intervention, documentation, and reporting within therapy, social, and vocational HT programs.
Prerequisite: HORT 421.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 424 Topics in Organic Agriculture Credits: 3 (3-0-0)
Also Offered As: SOCR 424.
Course Description: Examination of issues specific to organic food production systems and marketing.
Prerequisite: (AREC 202 or ECON 202) and (SOCR 240 and AREC 328) and (HORT 100 or SOCR 100) and (HORT 171 or SOCR 171).
Registration Information: Credit not allowed for both HORT 424 and SOCR 424.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 425 Horticultural Therapy Management Credits: 3 (2-0-1)
Course Description: Horticultural therapy program and site design, proposals, funding, marketing, management, and evaluation.
Prerequisite: HORT 423.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 431 Planting Design Studio Credits: 4 (2-4-0)
Course Description: Functional and aesthetic values of plant materials; their creative use in landscape design.
Prerequisite: HORT 221 and HORT 336 and HORT 322.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HORT 432 Intensive Landscape Design Studio Credits: 5 (2-6-0)
Course Description: Site planning and design for landscape projects of a limited scale. Problems of increasing complexity. Emphasis on real sites and clients.
Prerequisite: HORT 487 and HORT 431.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 441 Turfgrass Science Credits: 3 (3-0-0)
Course Description: Examination of turfgrass management practices from a scientific perspective; discussion of advanced turfgrass management technologies.
Prerequisite: BZ 120 or HORT 100 or SOCR 240.
Registration Information: Required field trips. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 451 Vegetable Crop Management Credits: 3 (2-0-1)
Course Description: Physiological, environmental, and cultural aspects of vegetable crop production, including conventional and certified organic approaches.
Prerequisite: BZ 120 or BZ 440 or HORT 100 or LIFE 103 or SOCR 100.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online. Credit allowed for only one of the following: HORT 450A, HORT 451, or HORT 480A2. Credit allowed for only one of the following: HORT 450B, HORT 451, or HORT 480A2.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 452 Viticulture-Grape Production Credit: 1 (1-0-0)
Course Description: Grape production in temperate zone climates.
Prerequisite: BZ 120 or HORT 100 or LIFE 103 or SOCR 100.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 453 Principles of Fruit Crop Management Credits: 3 (2-0-1)
Course Description: Understanding the fundamentals of fruit tree biology is essential to making sound orchard management and business decisions in the tree fruit industry. Explore the basics of tree and small fruit production, including site, cultivar and rootstock selection, cropping trends and cultural practices such as planting, pruning, training, irrigation, nutrition, harvesting, and postharvest handling and technology of specific temperate fruit crops.
Prerequisite: BZ 120 or BZ 440 or HORT 100 or LIFE 103 or SOCR 100.
Registration Information: Sections may be offered: Online. Credit not allowed for both HORT 450C and HORT 453. Credit not allowed for both HORT 450D and HORT 453.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 454 Horticulture Crop Production and Management Credits: 2 (2-0-0)
Course Description: Production and management of horticulture crops.
Prerequisite: HORT 310 or HORT 451 or HORT 453.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 460 Plant Breeding Credits: 3 (2-0-1)
Also Offered As: SOCR 460.
Course Description: Theory and practice of plant breeding using principles of genetics and related sciences.
Prerequisite: BZ 350, may be taken concurrently or LIFE 201A, may be taken concurrently or SOCR 330, may be taken concurrently.
Registration Information: Must register for lecture and recitation. Credit not allowed for both HORT 460 and SOCR 460.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 461 Plant Breeding Laboratory Credit: 1 (0-2-0)
Also Offered As: SOCR 461.
Course Description: Techniques and procedures used in public and commercial plant breeding programs.
Prerequisite: HORT 460, may be taken concurrently or SOCR 460, may be taken concurrently.
Registration Information: Credit not allowed for both HORT 461 and SOCR 461.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 462 Viticulture Practices in Grape Production Credits: 3 (3-0-0)
Course Description: Biology of grape vines and cultural practices including planning, training, pest control, pruning, and harvesting; special emphasis on Colorado.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 464A Arboriculture Credits: 3 (2-2-0)
Course Description: Practices used by arborists and landscape managers to plant, appraise and maintain landscape trees.
Prerequisite: HORT 100 and SOCR 240.
Registration Information: Sections may be offered: Online. Credit not allowed for both HORT 464A and HORT 464B. Required field trips.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HORT 465 Landscape Estimating Credits: 3 (2-2-0)
Course Description: Landscape construction estimating and bidding, contract documentation and other business practices relevant to landscape design-build and contracting.
Prerequisite: (MATH 117) and (MATH 118) and (MATH 124 or MATH 125 or MATH 141 or MATH 155) and (HORT 221).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HORT 466 Urban and Community Forestry Credits: 3 (3-0-0)
Also Offered As: F 466.
Course Description: Policies and management of publicly and privately owned community forests in urbanized areas.
Prerequisite: F 310 or RS 310 or HORT 221.
Registration Information: Credit not allowed for both HORT 466 and F 466.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 476 Environmental Plant Stress Physiology Credits: 3 (3-0-0)
Course Description: Plant growth, development and physiology, major sources of stress in plants, global issues in environment and plant stress.
Prerequisite: BZ 440.
Registration Information: Credit not allowed for both HORT 476 and HORT 576. Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 477 Enology-History and Winemaking Credits: 3 (3-0-0)
Course Description: History and development of the wine industry; mechanics of various processes and factors affecting wine quality and consumer acceptance.
Prerequisite: CHEM 107, may be taken concurrently and CHEM 108, may be taken concurrently or CHEM 111, may be taken concurrently and CHEM 112, may be taken concurrently.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 479 Professional Landscape Practices Credits: 2 (2-0-0)
Course Description: Business skills involved in a successful career in the green industry.
Prerequisite: HORT 100 and HORT 465.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 486A Practicum: Floriculture Credits: 2 (0-4-0)
Course Description: Directed experience in applications of floriculture technique. Fall: pest, energy, and production. Spring: production and experimentation.
Prerequisite: HORT 310.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 486B Practicum: General Credits: Var[1-6] (0-0-0)
Course Description: Directed experiences in applications of horticulture techniques and procedures.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 487 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 511 Green Roof Culture Credits: 2 (2-0-0)
Course Description: Understand the relevance of green roofs in North America, especially the process, from concept to project completion and maintenance.
Prerequisite: HORT 100 to 199 - at least 3 credits.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 515 Urban Horticulture Credits: 3 (3-0-0)
Also Offered As: AGRI 515.
Course Description: Investigate and evaluate the techniques of incorporating food production systems in the urban and peri-urban environment.
Prerequisite: HORT 451 or HORT 453.
Registration Information: Credit not allowed for both AGRI 515 and HORT 515. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 521 Horticulture and Human Health and Well-Being Credits: 3 (3-0-0)
Course Description: Impact of principles and practices of horticulture on human health and well-being.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Bachelor's degree required. Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 522 Horticulture and Human Health Issues Credits: 3 (3-0-0)
Course Description: Horticulture is an essential instrument of public health, but often professionals in these fields view themselves as opponents. Examine issues arising in the production of foods for human consumption that human health professionals often encounter. Overcome the barriers that divide horticulture and human health professionals.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 523 Screening Crops for Human Health Traits Credits: 3 (3-0-0)
Course Description: Principle and methods of screening food crops for traits related to human health.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Written consent of instructor. Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 524 Food Pharmacology, Horticulture, and Health Credits: 3 (3-0-0)
Course Description: Application of the principles of pharmacology to the production of food combinations that promote human health. Horticultural food crops are emphasized.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Written consent of instructor. Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 571 Soil-Plant-Water Relations/Water Stress Credits: 3 (3-0-0)
Course Description: Movement of water in the soil-plant-atmosphere continuum. Instrumentation for measuring plant-water relations. Plant responses to drought and salinity.
Prerequisite: BZ 440.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 575 Plant Germplasm Conservation Credits: 2 (2-0-0)
Course Description: Principles, concepts, and methodology for collection, conservation, and utilization of plant genetic resources.
Prerequisite: HORT 460 or SOCR 460.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 576 Advanced Environmental Plant Stress Physiology Credits: 4 (3-0-1)
Course Description: Advanced aspects of plant growth, development and physiology, major sources of stress in plants, global issues in environment and plant stress.
Prerequisite: BZ 440.
Registration Information: Must register for lecture and recitation. Credit not allowed for both HORT 576 and HORT 476.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 578 Phytochemicals and Probiotics for Health Credits: 3 (2-0-1)
Also Offered As: FTEC 578.
Course Description: Examination of phytochemicals and probiotic organisms important in human health.
Prerequisite: BC 351.
Registration Information: Senior standing. Must register for lecture and recitation. Credit not allowed for both FTEC 578 and HORT 578.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 579 Mass Spectrometry Omics-Methods and Analysis Credits: 3 (3-0-0)
Course Description: A survey of experimental designs and workflows to generate, computationally process and analyze metabolite and protein data using mass spectrometry. Course format includes lecture, computer homework assignments with real data, literature review, and student presentations.
Prerequisite: BC 351.
Registration Information: Senior standing. Credit not allowed for both HORT 579 and HORT 581A3.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 588 Supervised Extension Practices Credits: Var[1-18] (0-0-0)
Course Description: Field experiences in extension practices in horticulture.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 601 Topics in Root and Rhizosphere Biology Credits: 2 (1-0-1)
Course Description: In-depth overview of the biology of roots and the rhizosphere processes related to roots.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: One course in plant physiology; one course in biochemistry. Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 675 Plant Stress Physiology Credits: 3 (3-0-0)
Course Description: Research concepts based on physiological, biochemical, and molecular mechanisms controlling environmental stresses in plants.
Prerequisite: BZ 440.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 792 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Landscape Architecture (LAND)

LAND 110 Introduction to Landscape Architecture Credits: 3 (1-2-1)
Course Description: Introductory theories, methods, and applications of landscape studies.
Prerequisite: None.
Registration Information: Must register for lecture, laboratory, and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B.

LAND 120 History of the Designed Landscape Credits: 3 (3-0-0)
Course Description: Major monuments and spaces from ancient Middle East through classical antiquity, the Renaissance, and Western tradition.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 200 Topics in Landscape Theory and Garden Design Credits: 3 (3-0-0)
Course Description: Landscape theory and design principles in garden design. Students will be engaged through online discussions and will record weekly exercises and course material with the development of a sketchbook and blog/website postings.
Prerequisite: None.
Registration Information: This is a partial semester course. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 220 Fundamentals of Ecology (GT-SC2) Credits: 3 (3-0-0)
Also Offered As: LIFE 220.
Course Description: Interrelationships among organisms and their environments.
Prerequisite: (BIO 100 to 199 - at least 3 credits or BZ 100 to 199 - at least 3 credits or LIFE 100 to 199 - at least 3 credits or HORT 100) and (MATH 100 to 199 - at least 3 credits).
Registration Information: Credit allowed for only one of the following: LAND 220/LIFE 220, or LIFE 320. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

LAND 230 Drawing the Landscape Credits: 4 (2-4-0)
Course Description: Visual communication techniques; exploration of symbology, model building, design development drawing, and construction documentation draughting.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 240 Fundamentals of Landscape Design Process Credits: 4 (1-4-1)
Course Description: Initiation of formal exploration of design elements, materials, and principles, and introduction of design process as a defensible methodology.
Prerequisite: LAND 230.
Registration Information: Must register for lecture, laboratory and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 241 Environmental Analysis Credits: 3 (1-4-0)
Course Description: Exploration and understanding of natural and cultural landscapes through analytical simulation techniques.
Prerequisite: LAND 230.
Registration Information: Must have concurrent registration in LAND 240. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 357 Omnibus Field Studies Credits: 4 (0-8-0)
Course Description: Theories and methods for the analysis, design, and planning of garden and landscape scale environments.
Prerequisite: None.
Registration Information: 3 credits in landscape drawing and analysis.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 360 Basic Landscape Design and Construction Credits: 3 (0-6-0)
Course Description: Site programming analysis, design, and construction, including skill development in specifying earthwork, drainage, and vegetative composition.
Prerequisite: LAND 240.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 361 Digital Methods Credits: 3 (2-2-0)
Course Description: Landscape research, analysis, and design with ARCVIEW, AutoCAD, Microstation, and Photoshop.
Prerequisite: LAND 360, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 362 Form and Expression in Garden Design Credits: 3 (0-6-0)
Course Description: Formal decision making for site scale environments, including creative processes for form-giving, and generation of experimental solutions.
Prerequisite: LAND 361.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 363 Advanced Landscape Site Engineering Credits: 4 (2-4-0)
Course Description: Understanding and documenting the built environment with emphasis on construction and surveying as integral parts of design process.
Prerequisite: LAND 360.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 364 Design and Nature Credits: 4 (1-6-0)
Course Description: Computer-aided processes for siting, organizing, and evaluating cultural activities within ecologically fragile, landscape-scale environments.
Prerequisite: LAND 361.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 365 Landscape Contract Drawing and Specifications Credits: 3 (2-2-0)
Course Description: Construction details, design development, and construction documentation emphasizing implementation of design projects.
Prerequisite: LAND 363.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 366 Landscape Design Expression Credits: 4 (0-8-0)
Course Description: Idea, values, and process landscape form applied to interactions of natural, cultural systems at the site and community scale; design competitions.
Prerequisite: LAND 365.
Registration Information: Credit not allowed for both LAND 366 and LAND 376.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 368 Landscape Irrigation and Water Conservation Credits: 3 (2-2-0)
Also Offered As: HORT 368.
Course Description: Practical approaches and methods of irrigation, water conservation, and water management in the designed landscape.
Prerequisite: LAND 110 or HORT 100.
Registration Information: Credit not allowed for both LAND 368 and HORT 367 or HORT 368. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 376 Landscape Design and Visualization Credits: 4 (0-8-0)
Course Description: Precedents, ideas, values and processes of landscape form applied to landscape systems at the site and community scale; design competitions.
Prerequisite: LAND 362.
Registration Information: Credit not allowed for both LAND 376 and LAND 366. Required field trips.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LAND 392 Seminar-Designed Landscapes-Theory and Criticism Credits: 2 (0-0-2)
Course Description: Readings, discussions, and writing in landscape architectural design theory; critical analysis of the designed and constructed landscape.
Prerequisite: LAND 365.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

LAND 444 Ecology of Landscapes Credits: 3 (3-0-0)
Course Description: Theories, methods, and practices for interpreting, describing, and representing natural and human modified landscapes.
Prerequisite: LAND 220 or LIFE 220 or LIFE 320.
Registration Information: Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 446 Urban Design Credits: 4 (0-8-0)
Course Description: Designing the urban landscape, including precedent exploration about overall image, materials, and structure of the city and its components.
Prerequisite: LAND 366.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 447 Comprehensive Landscape Design Credits: 4 (0-8-0)
Course Description: Terminal studio; research, analysis, and synthesis for comprehensive project identified by student and approved in advance by faculty committee.
Prerequisite: LAND 446.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 449 Professional Practice Credit: 1 (1-0-0)
Course Description: Theory and skills of landscape architectural professional practice including functional, human, business, legal, and political aspects.
Prerequisite: LAND 447, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 454 Landscape Field Studies Credits: 5 (1-6-1)
Course Description: Field observation of spatial and temporal landscape patterns resulting from natural and cultural processes and interactions.
Prerequisite: LAND 366.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 455 Travel Abroad-European Landscape Architecture Credits: 5 (1-6-1)
Course Description: Exploration of major theoretical platforms in design through drawing, photographing, and measuring landscape architecture precedents in Europe.
Prerequisite: LAND 362.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 495A Independent Study: Design Projects Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LAND 495B Independent Study: Field Service Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LAND 496 Group Study Credits: Var[1-8] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LAND 510 Virtual Design Methods Credits: 3 (2-2-0)
Course Description: Exploration and application of advanced computing technology and methods for analyzing and organizing natural and cultural landscapes.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 520 Geographic Information Systems Credits: 3 (1-4-0)
Course Description: Theories and applications of geographic information systems in spatial analysis and land planning.
Prerequisite: LAND 241.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 560 Structure of Landscape Patterns Credits: 3 (2-2-0)
Course Description: Mechanisms and concepts in landscape structure for planning, design, and environmental management.
Prerequisite: LIFE 320.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 610 Topics in Garden Design Credits: 4 (2-6-0)
Course Description: Garden design theories, methods, and operations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 620 Topics in Park Design Credits: 4 (2-6-0)
Course Description: Ideas, values, and processes of landscape form applied to interactions of natural and cultural systems for park and recreation applications.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 630 Topics in Urban Design Credits: 4 (2-6-0)
Course Description: History and application of urban design principles, practices, and policies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 640 Major Landscape Change Credits: 4 (2-6-0)
Course Description: Addresses social and ecological resilience of large-scale landscapes through theory and application.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 670 Landscape Architecture Studio Option Credits: 4 (1-6-1)
Course Description: Ideas, values, and processes of landscape architectural studio practice.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Course may be taken up to 5 times for credit. Must register for lecture, laboratory, and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 695A Landscape Architectural Independent Study: Design Projects Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 695B Landscape Architectural Independent Study: Field Service Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 698 Research Credits: Var[1-5] (0-0-0)
Course Description: Guided research experience in landscape architecture.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Major in Environmental Horticulture

Environmental horticulturists provide solutions necessary to achieve aesthetically pleasing, functional, and environmentally sound outdoor spaces. They also design and manage private and public landscapes, such as golf courses, botanical gardens, and parks. In addition, they may develop the entrepreneurial skills necessary to successfully operate a nursery, garden center, tree care, landscape design, and build or landscape management firm. Four concentrations are offered in the Environmental Horticulture major—Landscape Business, Landscape Design and Contracting, Nursery and Landscape Management, and Turf Management.

Learning Outcomes

Successful students will demonstrate:

- Management and leadership skills necessary for a successful career in the green industry
- Technical competencies in their understanding of growth and development of horticultural plants and landscapes, including development as influenced by manipulation of horticulture technologies, such as fertility and water management, and integrated pest management for all aspects of landscape horticulture
- Skills to assess site issues, provide creative environmentally sound solutions and manage designed, and built landscapes
- Analytical and problem solving skills that allow identification of problems related to the management or production of horticultural crops and landscapes, as well as strategies to solve them

Potential Occupations

Graduates of the Environmental Horticulture major will find career opportunities in a multitude of fields in the green industry. Emerging demand for environmental solutions and green technologies will position our students for careers in a wide variety of areas including: landscape design and construction, sports turf management, retail and wholesale nursery and garden center management; golf course superintendence, arborists, plant propagation, landscape project management, landscape management, landscape estimating, green industry account management, irrigation design and water resource management, arboriculture, botanic gardens or arboreta, or landscape business management and entrepreneurship.

Concentrations

- Landscape Business Concentration
- Landscape Design and Contracting Concentration
- Nursery and Landscape Management Concentration
- Turf Management Concentration

Major in Environmental Horticulture, Landscape Business Concentration

The Landscape Business concentration prepares individuals for careers in business management, production, operations, account management, entrepreneurship, landscape management, and project management opportunities in the green industry. This concentration focuses on both horticulture and business. Students will develop skills in estimating project costs, plant selection and care, as well as business management techniques. Students completing this concentration will also earn a minor in Business Administration through the College of Business. This concentration is fully accredited by the National Association of Landscape Professionals (NALP). Additionally, students are required to complete an internship, furthering their learning opportunities.

Requirements
Effective Fall 2013

Freshman

		AUCC	Credits
AGRI 192 or 292	Orientation to Agricultural Systems Transfer Seminar		1
BUS 150 or CS 110	Business Computing Concepts and Applications Personal Computing		3-4
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	4
CO 150	College Composition (GT-CO2)	1A	3
HORT 100	Horticultural Science	3A	4
HORT 330	Computers for Landscape Design		2
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 125	Numerical Trigonometry (GT-MA1)	1B	1
SPCM 200	Public Speaking		3
Arts and Humanities		3B	3
Electives			1-2
	Total Credits		28

Sophomore

ACT 205	Fundamentals of Accounting		3
AREC 202 or ECON 202	Agricultural and Resource Economics (GT-SS1) Principles of Microeconomics (GT-SS1)	3C	3
HORT 221	Landscape Plants		4
HORT 331	Landscape Design		2
HORT 487	Internship		3
LSPA 100 or 106	First-Year Spanish I First-Year Spanish Review		3-5
LSPA 101	First-Year Spanish II		5
SOCR 240	Introductory Soil Science		4
Historical Perspectives		3D	3
	Total Credits		30-32

Junior

BUS 205	Legal and Ethical Issues in Business		3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
FIN 305	Fundamentals of Finance		3
HORT 310	Greenhouse Management	4B	4
HORT 321	Nursery Production and Management	4A	4
HORT 322	Herbaceous Plants		3
HORT 370	Landscape Irrigation		1
JTC 300	Professional and Technical Communication (GT-CO3)	2	3
LSPA 200	Second-Year Spanish I (GT-AH4)	3B	3
MGT 305	Fundamentals of Management		3
SOCR 370	Irrigation Principles		2
	Total Credits		32

Senior

AREC 328	Small Agribusiness Management	3
Select one group from the following:		3
Group A:		
BSPM 308	Ecology and Management of Weeds	

Group B:			
BSPM 302	Applied and General Entomology		
BSPM 303B	Entomology Laboratory: Horticultural		
BUS 405A	Contemporary Business Topics: Entrepreneurship		3
HORT 341	Turfgrass Management		3
HORT 464A	Arboriculture	4C	3
HORT 465	Landscape Estimating		3
HORT 479	Professional Landscape Practices		2
MKT 305	Fundamentals of Marketing		3
Diversity and Global Awareness		3E	3
Electives			2-4
	Total Credits		28-30
	Program Total Credits:		120

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					1
AGRI 192	Orientation to Agricultural Systems				
AGRI 292	Transfer Seminar				
Select one course from the following:					3-4
BUS 150	Business Computing Concepts and Applications				
CS 110	Personal Computing				
HORT 100	Horticultural Science			3A	4
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 125	Numerical Trigonometry (GT-MA1)	X		1B	1
Elective					2
	Total Credits				13
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	4
CO 150	College Composition (GT-CO2)	X		1A	3
HORT 330	Computers for Landscape Design				2
SPCM 200	Public Speaking				3
Arts and Humanities				3B	3
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 205	Fundamentals of Accounting	X			3
Select one course from the following:		X			3
AREC 202	Agricultural and Resource Economics (GT-SS1)			3C	
ECON 202	Principles of Microeconomics (GT-SS1)			3C	
HORT 221	Landscape Plants				4
Select one course from the following:					3-5
LSPA 100	First-Year Spanish I				
LSPA 106	First-Year Spanish Review				
	Total Credits				13
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
HORT 331	Landscape Design				2
HORT 487	Internship				3
LSPA 101	First-Year Spanish II	X			5

SOCR 240	Introductory Soil Science	X			4
Historical Perspectives				3D	3
	Total Credits				17
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 205	Legal and Ethical Issues in Business				3
ECON 204	Principles of Macroeconomics (GT-SS1)			3C	3
HORT 310	Greenhouse Management			4B	4
HORT 322	Herbaceous Plants				3
LSPA 200	Second-Year Spanish I (GT-AH4)			3B	3
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
FIN 305	Fundamentals of Finance	X			3
HORT 321	Nursery Production and Management			4A	4
HORT 370	Landscape Irrigation				1
JTC 300	Professional and Technical Communication (GT-CO3)			2	3
MGT 305	Fundamentals of Management	X			3
SOCR 370	Irrigation Principles				2
HORT 221 must be completed by the end of Semester 6.		X			
	Total Credits				16
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
AREC 328	Small Agribusiness Management	X			3
Select three credits from the following courses:		X			3
BSPM 308	Ecology and Management of Weeds				
BSPM 302	Applied and General Entomology				
BSPM 303B	Entomology Laboratory: Horticultural				
HORT 341	Turfgrass Management	X			3
HORT 464A	Arboriculture	X		4C	3
HORT 465	Landscape Estimating	X			3
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 405A	Contemporary Business Topics: Entrepreneurship	X			3
HORT 479	Professional Landscape Practices	X			2
MKT 305	Fundamentals of Marketing	X			3
Diversity and Global Awareness		X		3E	3
Electives		X			4
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Environmental Horticulture, Landscape Design and Contracting Concentration

The Landscape Design and Contracting concentration prepares students for careers in the design-build profession for residential, commercial, and public properties. Landscape designers and contractors create, build, and manage landscape projects and work in close collaboration with other design and contracting professionals. Students will develop skills to provide environmental solutions, creating projects that minimize the impact on the environment.

They also acquire skills to manage multifaceted projects of all scales, including site design, estimating of job and labor costs, construction methods and techniques, plant selection and care, as well as business management skills. Experiential learning opportunities lead to projects allowing our

students to work with clients and realize built works prior to graduating. Additionally, students are required to complete an internship, furthering their learning opportunities. This concentration is fully accredited by the National Association of Landscape Professionals (NALP). Graduates of this concentration are recognized by the Colorado State Board of Landscape Architects, allowing our students to become eligible for landscape architecture licensure.

Requirements
Effective Fall 2015

Freshman

		AUCC	Credits
AGRI 192 or 292	Orientation to Agricultural Systems Transfer Seminar		1
BUS 150 or CS 110	Business Computing Concepts and Applications Personal Computing		3-4
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	4
CO 150	College Composition (GT-CO2)	1A	3
HORT 100	Horticultural Science	3A	4
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 125	Numerical Trigonometry (GT-MA1)	1B	1
SPCM 200	Public Speaking		3
Arts and Humanities		3B	6
Historical Perspectives		3D	3
Electives			2-3
	Total Credits		33

Sophomore

ACT 205	Fundamentals of Accounting		3
CON 131	Graphic Communications for Construction		2
CON 261	Construction Surveying		3
HORT 221	Landscape Plants		4
HORT 231	Landscape Graphics Studio		4
HORT 232	Principles of Landscape Design		4
HORT 487	Internship		3-6
LAND 120	History of the Designed Landscape		3
SOCR 240	Introductory Soil Science		4
Electives			3
	Total Credits		33-36

Junior

AREC 202 or ECON 202	Agricultural and Resource Economics (GT-SS1) Principles of Microeconomics (GT-SS1)	3C	3
HORT 322	Herbaceous Plants		3
HORT 335	Landscape Structures		4
HORT 336	Landscape Grading and Drainage Studio		4
HORT 370	Landscape Irrigation		1
HORT 465	Landscape Estimating		3
SOCR 370	Irrigation Principles		2
Advanced Writing		2	3
Spanish[1]			5
Electives			1
	Total Credits		29

Senior

BSPM 302	Applied and General Entomology		2
BSPM 303B	Entomology Laboratory: Horticultural		1
HORT 341	Turfgrass Management		3
HORT 431	Planting Design Studio	4A	4
HORT 432	Intensive Landscape Design Studio	4B,4C	5
HORT 464A	Arboriculture		3
HORT 479	Professional Landscape Practices		2
Diversity and Global Awareness		3E	3
Business Electives[2]			3
Electives			4
	Total Credits		30
	Program Total Credits:		125-128

1 One semester.

2 Select from department list.

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					1
AGRI 192	Orientation to Agricultural Systems				
AGRI 292	Transfer Seminar				
Select one course from the following:					3-4
BUS 150	Business Computing Concepts and Applications				
CS 110	Personal Computing				
HORT 100	Horticultural Science	X		3A	4
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 125	Numerical Trigonometry (GT-MA1)	X		1B	1
Historical Perspectives				3D	3
Elective					3
	Total Credits				17
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	4
CO 150	College Composition (GT-CO2)	X		1A	3
SPCM 200	Public Speaking				3
Arts and Humanities				3B	6
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 205	Fundamentals of Accounting				3
CON 131	Graphic Communications for Construction	X			2
HORT 221	Landscape Plants				4
HORT 231	Landscape Graphics Studio	X			4
SOCR 240	Introductory Soil Science	X			4
	Total Credits				17
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
CON 261	Construction Surveying				3
HORT 232	Principles of Landscape Design	X			4

HORT 487	Internship				3-6
LAND 120	History of the Designed Landscape				3
Elective					3
HORT 221 must be completed by the end of Semester 4.		X			
	Total Credits				16-19
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
AREC 202	Agricultural and Resource Economics (GT-SS1)			3C	
ECON 202	Principles of Microeconomics (GT-SS1)			3C	
HORT 322	Herbaceous Plants	X			3
HORT 335	Landscape Structures	X			4
HORT 465	Landscape Estimating				3
Elective					1
	Total Credits				14
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
HORT 336	Landscape Grading and Drainage Studio	X			4
HORT 370	Landscape Irrigation				1
SOCR 370	Irrigation Principles				2
Advanced Writing				2	3
Spanish					5
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
BSPM 302	Applied and General Entomology	X			2
BSPM 303B	Entomology Laboratory: Horticultural	X			1
HORT 341	Turfgrass Management	X			3
HORT 431	Planting Design Studio	X		4A	4
HORT 464A	Arboriculture	X			3
Electives					4
HORT 465 and HORT 487 must be completed by the end of Semester 7.		X			
	Total Credits				17
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
HORT 432	Intensive Landscape Design Studio	X		4B,4C	5
HORT 479	Professional Landscape Practices	X			2
Diversity and Global Awareness		X		3E	3
Business Elective		X			3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				13
	Program Total Credits:				125-128

Major in Environmental Horticulture, Nursery and Landscape Management Concentration

Nursery and Landscape Management provides extensive training in landscape plant culture and use; and also develops skills needed to start and manage a nursery, garden center, arboriculture, or landscape management firm. Nursery specialists produce trees, shrubs, groundcovers, and herbaceous perennials for the landscape industry.

Graduates become nursery and landscape managers who oversee and manage general landscape operations; choose the type and quantity of horticultural plants to be grown; select and purchase seed, fertilizers, and pest control chemicals; hire employees, direct and coordinate work activities; manage record-keeping, and implement marketing plans. Supporting courses are taught in plant and soil science, pest management, business management, horticulture and plant materials. An internship is required to ensure graduates have practical experience.

Requirements
Effective Fall 2013

Freshman

		AUCC	Credits
AGRI 192 or 292	Orientation to Agricultural Systems Transfer Seminar		1
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	3
BUS 150 or CS 110	Business Computing Concepts and Applications Personal Computing		3-4
BZ 120	Principles of Plant Biology (GT-SC1)	3A	4
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
HORT 100	Horticultural Science	3A	4
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
Electives			3-4
	Total Credits		30

Sophomore

BZ 223	Plant Identification		3
HORT 221	Landscape Plants		4
HORT 260	Plant Propagation		4
SOCR 240	Introductory Soil Science		4
SPCM 200	Public Speaking		3
Advanced Writing		2	3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
	Total Credits		30

Junior

BSPM 302	Applied and General Entomology		2
BSPM 303B	Entomology Laboratory: Horticultural		1
CHEM 245	Fundamentals of Organic Chemistry		4
HORT 310	Greenhouse Management	4B	4
HORT 321	Nursery Production and Management	4A	4
HORT 322	Herbaceous Plants		3
HORT 331	Landscape Design		2
HORT 341	Turfgrass Management		3
HORT 487[1]	Internship		3
Arts and Humanities			3
Electives			1
	Total Credits		30

Senior

AREC 328	Small Agribusiness Management		3
BSPM 308	Ecology and Management of Weeds		3
BSPM 361	Elements of Plant Pathology		3

BZ 440	Plant Physiology		3
HORT 370	Landscape Irrigation		1
HORT 464A	Arboriculture	4C	3
HORT 465	Landscape Estimating		3
SOCR 370	Irrigation Principles		2
Electives			9
	Total Credits		30
	Program Total Credits:		120

[1] For internship requirement, refer to departmental policy.

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					1
AGRI 192	Orientation to Agricultural Systems				
AGRI 292	Transfer Seminar				
Select one course from the following:					3-4
BUS 150	Business Computing Concepts and Applications				
CS 110	Personal Computing				
HORT 100	Horticultural Science			3A	4
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	X		1B	1
Electives					4
	Total Credits				15

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
AREC 202	Agricultural and Resource Economics (GT-SS1)			3C	3
BZ 120	Principles of Plant Biology (GT-SC1)			3A	4
CHEM 107	Fundamentals of Chemistry (GT-SC2)			3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)			3A	1
CO 150	College Composition (GT-CO2)	X		1A	3
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 223	Plant Identification				3
HORT 221	Landscape Plants				4
SPCM 200	Public Speaking				3
Arts and Humanities				3B	3
Diversity and Global Awareness				3E	3
	Total Credits				16

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
HORT 260	Plant Propagation				4
SOCR 240	Introductory Soil Science				4
Advanced Writing				2	3
Historical Perspectives				3D	3
	Total Credits				14

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BSPM 302	Applied and General Entomology				2
BSPM 303B	Entomology Laboratory: Horticultural				1
HORT 310	Greenhouse Management			4B	4

HORT 322	Herbaceous Plants				3
HORT 341	Turfgrass Management				3
Arts and Humanities				3B	3
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 245	Fundamentals of Organic Chemistry				4
HORT 321	Nursery Production and Management			4A	4
HORT 331	Landscape Design				2
HORT 487	Internship				3
Elective					1
	Total Credits				14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
AREC 328	Small Agribusiness Management	X			3
BSPM 308	Ecology and Management of Weeds	X			3
HORT 464A	Arboriculture	X		4C	3
HORT 465	Landscape Estimating	X			3
Elective					3
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BSPM 361	Elements of Plant Pathology	X			3
BZ 440	Plant Physiology	X			3
HORT 370	Landscape Irrigation	X			1
SOCR 370	Irrigation Principles	X			2
Electives		X			6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Environmental Horticulture, Turf Management Concentration

The Turf Management concentration trains students for management opportunities ranging from sod production to the establishment and maintenance of private and public grounds. Turfgrass managers are supervisors for golf courses, ski resorts, sports fields, and parks departments. Turfgrass professionals manage and train personnel, draw up work contracts, and allocate labor and financial resources efficiently. Graduates develop expertise in production and maintenance of ornamental and functional turfgrass areas with supplemental courses in nursery and landscape management, plant and soil science, business management, and irrigation design. An internship is required to ensure graduates have practical experience, furthering their learning opportunities.

Requirements Effective Fall 2013

Freshman

		AUCC	Credits
AGRI 192 or 292	Orientation to Agricultural Systems Transfer Seminar		1
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	3
BZ 120	Principles of Plant Biology (GT-SC1)	3A	4
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
HORT 100	Horticultural Science	3A	4
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1

Diversity and Global Awareness		3E	3
Elective			3
	Total Credits		29
Sophomore			
BUS 150 or CS 110	Business Computing Concepts and Applications Personal Computing		3-4
CHEM 245	Fundamentals of Organic Chemistry		4
HORT 221	Landscape Plants		4
HORT 487	Internship		3
SOCR 240	Introductory Soil Science		4
SPCM 200	Public Speaking		3
Arts and Humanities		3B	6
	Total Credits		27-28
Junior			
BSPM 361	Elements of Plant Pathology		3
BZ 440	Plant Physiology		3
HORT 321	Nursery Production and Management	4A	4
HORT 341	Turfgrass Management		3
HORT 464A	Arboriculture		3
SOCR 350	Soil Fertility Management		3
Advanced Writing		2	3
Historical Perspectives		3D	3
Electives[1]			8
	Total Credits		33
Senior			
BSPM 302	Applied and General Entomology		2
BSPM 303B	Entomology Laboratory: Horticultural		1
BSPM 308	Ecology and Management of Weeds	4B	3
HORT 370	Landscape Irrigation		1
HORT 441	Turfgrass Science	4C	3
HORT 465	Landscape Estimating		3
MGT 305	Fundamentals of Management		3
SOCR 370	Irrigation Principles		2
Electives[1]			12-13
	Total Credits		30-31
	Program Total Credits:		120

[1] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					1
AGRI 192	Orientation to Agricultural Systems				
AGRI 292	Transfer Seminar				
BZ 120	Principles of Plant Biology (GT-SC1)		X	3A	4
HORT 100	Horticultural Science			3A	4

MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	X		1B	1
Diversity and Global Awareness				3E	3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
AREC 202	Agricultural and Resource Economics (GT-SS1)			3C	3
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)			3A	1
CO 150	College Composition (GT-CO2)	X		1A	3
Elective					3
	Total Credits				14
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3-4
BUS 150	Business Computing Concepts and Applications				
CS 110	Personal Computing				
CHEM 245	Fundamentals of Organic Chemistry				4
HORT 221	Landscape Plants				4
Arts and Humanities				3B	3
	Total Credits				14
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
HORT 487	Internship				3
SOCR 240	Introductory Soil Science	X			4
SPCM 200	Public Speaking				3
Arts and Humanities				3B	3
HORT 100 must be completed by the end of Semester 4.		X			
	Total Credits				13
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
HORT 341	Turfgrass Management				3
HORT 464A	Arboriculture				3
SOCR 350	Soil Fertility Management				3
Advanced Writing				2	3
Electives					4
BZ 120 must be completed by the end of Semester 5.		X			
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
BSPM 361	Elements of Plant Pathology				3
BZ 440	Plant Physiology				3
HORT 321	Nursery Production and Management			4A	4
Historical Perspectives				3D	3
Electives					4
HORT 221 must be completed by the end of Semester 6.		X			
	Total Credits				17
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
BSPM 302	Applied and General Entomology	X			2
BSPM 303B	Entomology Laboratory: Horticultural	X			1
BSPM 308	Ecology and Management of Weeds	X		4B	3
HORT 465	Landscape Estimating	X			3

Electives					6
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
HORT 370	Landscape Irrigation	X			1
HORT 441	Turfgrass Science	X		4C	3
MGT 305	Fundamentals of Management	X			3
SOCR 370	Irrigation Principles	X			2
Electives		X			7
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				16
	Program Total Credits:				120

Major in Horticulture

Horticulture is the application of scientific principles in the growing, marketing, processing, and utilizing of fruits, vegetables, flower and foliage plants, trees, shrubs, and turf grasses. The major requires a strong grounding in botany, chemistry, and horticulture. There are five concentrations in the Horticulture major: Floriculture, Horticultural Business Management, Horticultural Food Crops, Horticultural Science, and Horticultural Therapy.

Learning Outcomes

Successful students will demonstrate:

- Technical competence that includes understanding plant growth and development as influenced by the manipulations of horticulture technologies such as greenhouse management, fertility management, integrated pest management, etc.
- Management and leadership skills that will allow them to become an entry-level supervisor in a specific business or research program.
- Problem solving skills such as identifying the significance of a problem, researching realistic solutions using current literature, and organizing the materials to develop appropriate recommendations and actions.

Potential Occupations

Horticulture is both a production and service industry. Well-educated horticulturists have the best opportunity for obtaining positions and moving up in the industry. The industry will be looking for professionals who can manage greenhouses, nurseries, and floral outlets, buy and sell supplies, plant material, and equipment, or edit journals and newsletters. Meeting the nutritional needs of the world population is an important challenge. Researchers are needed to develop improved fruit and vegetable varieties. Other professionals are needed to improve production and transportation methods and to develop and market better fertilizers. Within this field, students can exercise their talents and interests in computers, construction, engineering, chemistry, physics, social services, or business management. Participation in internships and cooperative education opportunities is highly recommended to enhance practical training and development. Graduates who go on for advanced studies can attain more responsible positions with the possibility of rising to top professional levels.

Some examples include: biotechnologist, extension specialist, floriculturist, fruit and vegetable grower, grape producer, greenhouse supplies/seed and plant material sales representative, greenhouse production manager, horticultural therapist, interior plant maintenance technician, marketing representative, plant breeder, produce buyer.

Concentrations and Options

- Floriculture Concentration
- Horticultural Business Management Concentration
- Horticultural Food Crops Concentration
  - Production Option
  - Seed Science Option
- Horticultural Science Concentration
- Horticultural Therapy Concentration
- Viticulture and Enology Concentration (No new students are being accepted to this concentration.)

Major in Horticulture, Floriculture Concentration

Floriculture emphasizes greenhouse-grown flower crops. Students study propagation, production, utilization, and improvement of plants, and are prepared to grow quality greenhouse products. Courses include the production, use, and marketing of cut flowers, bedding, and potted plants, which give this concentration its focus. Students are also required to take a practicum and an internship in their junior and/or senior years. A number of opportunities exist in floriculture-related professions including greenhouse production, all phases of retail and wholesale floral business, greenhouse supply sales, greenhouse construction and computerized environmental control, plant breeding and plant research.

Requirements Effective Fall 2019

Freshman

		AUCC	Credits
AGRI 192 or 292	Orientation to Agricultural Systems Transfer Seminar		1

BZ 120	Principles of Plant Biology (GT-SC1)	3A	4
CO 150	College Composition (GT-CO2)	1A	3
HORT 100	Horticultural Science	3A	4
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
Select one group from the following:			5-9
Group A:			
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	
Group B:			
CHEM 111	General Chemistry I (GT-SC2)	3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	
CHEM 113	General Chemistry II		
CHEM 114	General Chemistry Lab II		
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Electives			0-4
	Total Credits		30

Sophomore

AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	3
BZ 223	Plant Identification		3
HORT 260	Plant Propagation		4
SOCR 240	Introductory Soil Science		4
SPCM 200	Public Speaking		3
Select one course from the following:			3-4
BUS 150	Business Computing Concepts and Applications		
CS 110	Personal Computing		
Arts and Humanities		3B	3
Historical Perspectives		3D	3
Electives			3-4
	Total Credits		30

Junior

BSPM 302	Applied and General Entomology		2
BSPM 303B	Entomology Laboratory: Horticultural		1
BSPM 361	Elements of Plant Pathology		3
CHEM 245	Fundamentals of Organic Chemistry		4
HORT 310	Greenhouse Management	4B	4
HORT 322	Herbaceous Plants		3
HORT 486A[1]	Practicum: Floriculture		2
HORT 487[2]	Internship		3
Horticulture Electives (see list below)			3-4
Advanced Writing		2	3
	Total Credits		28-29

Senior

BZ 440	Plant Physiology		3
HORT 412	Floriculture Crops		4
HORT 454	Horticulture Crop Production and Management	4A,4C	2
HORT 486A[3]	Practicum: Floriculture		2

MGT 305	Fundamentals of Management	3
SOCR 330	Principles of Genetics	3
AREC 3XX or AREC 4XX		3
Horticulture Electives (see list below)		3-4
Electives[4]		7-9
	Total Credits	31-32
	Program Total Credits:	120

Horticulture Electives

Code	Title	Credits
HORT 321	Nursery Production and Management	4
HORT 331	Landscape Design	2
HORT 341	Turfgrass Management	3
HORT 401	Medicinal and Value-Added Uses of Plants	3
HORT 441	Turfgrass Science	3
HORT 451	Vegetable Crop Management	3
HORT 452	Viticulture-Grape Production	1
HORT 453	Principles of Fruit Crop Management	3
HORT 460/SOCR 460	Plant Breeding	3
HORT 464A	Arboriculture	3
HORT 476	Environmental Plant Stress Physiology	3
HORT 571	Soil-Plant-Water Relations/Water Stress	3

1 All junior-level floriculture majors are required to register for at least two credits of HORT 486A for one term.

2 For internship requirements, refer to departmental policy.

3 All senior-level floriculture majors are required to register for at least two credits of HORT 486A for one term.

4 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
BZ 120	Principles of Plant Biology (GT-SC1)			3A	4
CO 150	College Composition (GT-CO2)			1A	3
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)			1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)			1B	1
Select one course from the following:					1
AGRI 192	Orientation to Agricultural Systems				
AGRI 292	Transfer Seminar				
Select one group from the following:					5
Group A:					
CHEM 107	Fundamentals of Chemistry (GT-SC2)			3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)			3A	
Group B:					
CHEM 111	General Chemistry I (GT-SC2)			3A	
CHEM 112	General Chemistry Lab I (GT-SC1)			3A	
	Total Credits				16

Semester 2		Critical	Recommended	AUCC	Credits
HORT 100	Horticultural Science			3A	4
Select one group from the following:					4
Group A:					
Electives (If CHEM 107 and CHEM 108 selected in Semester 1.)					
Group B:					
CHEM 113	General Chemistry II				
CHEM 114	General Chemistry Lab II				
Arts and Humanities				3B	3
Diversity and Global Awareness				3E	3
CO 150, AUCC 1B (Quantitative Reasoning), and BZ 120 must be completed by the end of Semester 2.		X			
	Total Credits				14

Sophomore

Semester 3		Critical	Recommended	AUCC	Credits
AREC 202	Agricultural and Resource Economics (GT-SS1)			3C	3
BZ 223	Plant Identification				3
SOCR 240	Introductory Soil Science				4
Arts and Humanities				3B	3
Historical Perspectives				3D	3
	Total Credits				16

Semester 4		Critical	Recommended	AUCC	Credits
HORT 260	Plant Propagation				4
SPCM 200	Public Speaking				3
Select one course from the following:					3-4
BUS 150	Business Computing Concepts and Applications				
CS 110	Personal Computing				
Electives					3-4
	Total Credits				14

Junior

Semester 5		Critical	Recommended	AUCC	Credits
BSPM 302	Applied and General Entomology				2
BSPM 303B	Entomology Laboratory: Horticultural				1
HORT 310	Greenhouse Management	X		4B	4
HORT 322	Herbaceous Plants				3
Horticulture Elective (See Department List on Concentration Requirements tab)					3-4
	Total Credits				13-14

Semester 6		Critical	Recommended	AUCC	Credits
BSPM 361	Elements of Plant Pathology				3
CHEM 245	Fundamentals of Organic Chemistry				4
HORT 486A	Practicum: Floriculture				2
HORT 487	Internship				3
Advanced Writing				2	3
	Total Credits				15

Senior

Semester 7		Critical	Recommended	AUCC	Credits
HORT 412	Floriculture Crops				4
MGT 305	Fundamentals of Management				3
SOCR 330	Principles of Genetics				3
Horticulture Elective (See Department List on Concentration Requirements tab)					3-4
Elective					3
	Total Credits				16-17

Semester 8		Critical	Recommended	AUCC	Credits
BZ 440	Plant Physiology	X			3
HORT 454	Horticulture Crop Production and Management	X		4A,4C	2
HORT 486A	Practicum: Floriculture	X			2
AREC 3XX or AREC 4XX		X			3
Electives		X			4-6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				14-16
	Program Total Credits:				120

Major in Horticulture, Horticultural Business Management Concentration

Horticultural Business Management provides the broadest horticultural background available. The curriculum consists of a core of business, computer, and economics courses. In Horticulture, students choose a special emphasis, or take an array of courses that may lead to greater job opportunities. Graduates have the knowledge to manage a horticulture business or work in market-associated positions. Opportunities exist in the sale of facilities, plant material, equipment, and supplies involved in all aspects of horticulture, or as buyers of horticulture products in the U.S. or in international markets. With careful selection of business courses, Horticulture graduates can complete a minor in Business Administration with one additional course.

Requirements Effective Fall 2019

Freshman

		AUCC	Credits
AGRI 192 or 292	Orientation to Agricultural Systems Transfer Seminar		1
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	3
BZ 120	Principles of Plant Biology (GT-SC1)	3A	4
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
HORT 100	Horticultural Science	3A	4
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
Elective			3
	Total Credits		29

Sophomore

ACT 205	Fundamentals of Accounting		3
CHEM 245	Fundamentals of Organic Chemistry		4
HORT 260	Plant Propagation		4
SOCR 240	Introductory Soil Science		4
SPCM 200	Public Speaking		3
Select one course from the following:			3-4
BUS 150	Business Computing Concepts and Applications		
CS 110	Personal Computing		
Advanced Writing		2	3
Electives			5-6
	Total Credits		30

Junior

BZ 440	Plant Physiology		3
MGT 305	Fundamentals of Management		3
MKT 305	Fundamentals of Marketing		3
STAT 204	Statistics for Business Students		3
Select one course from the following:			3
AREC 375	Agricultural Law		
BUS 205	Legal and Ethical Issues in Business		
Select one course from the following:			3
AREC 408	Agricultural Finance		
FIN 305	Fundamentals of Finance		
BSPM 3XX or BSPM 4XX			5

HORT 3XX or HORT 4XX			6
	Total Credits		29

Senior

HORT 310	Greenhouse Management	4B	4
HORT 454	Horticulture Crop Production and Management	4A,4C	2
HORT 476	Environmental Plant Stress Physiology		3
Agricultural Economics, Business, or Economics Upper-Division[1]			3
HORT 3XX or HORT 4XX			6
Arts and Humanities		3B	6
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Electives[2]			2
	Total Credits		32
	Program Total Credits:		120

[1] Select any upper-division (300- to 400-level) course not required or selected elsewhere in the program from the following subject codes: ACT, AREC, BUS, CIS, FIN, MGT, MKT, REL; or ECON 335, ECON 340, ECON 346.

[2] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					1
AGRI 192	Orientation to Agricultural Systems				
AGRI 292	Transfer Seminar				
AREC 202	Agricultural and Resource Economics (GT-SS1)			3C	3
BZ 120	Principles of Plant Biology (GT-SC1)			3A	4
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)			1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)			1B	1
Elective					3
	Total Credits				14

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)			3A	1
CO 150	College Composition (GT-CO2)			1A	3
ECON 204	Principles of Macroeconomics (GT-SS1)			3C	3
HORT 100	Horticultural Science			3A	4
CO 150 and AUCC 1B (Quantitative Reasoning) must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 205	Fundamentals of Accounting				3
SOCR 240	Introductory Soil Science				4
Select one course from the following:					3-4
BUS 150	Business Computing Concepts and Applications				
CS 110	Personal Computing				
Electives					5-6

BZ 120 must be completed by the end of Semester 3.		X			
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 245	Fundamentals of Organic Chemistry				4
HORT 260	Plant Propagation				4
SPCM 200	Public Speaking				3
Advanced Writing				2	3
	Total Credits				14
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
MGT 305	Fundamentals of Management				3
STAT 204	Statistics for Business Students				3
Select one course from the following:					3
AREC 375	Agricultural Law				
BUS 205	Legal and Ethical Issues in Business				
BSPM 3XX or 4XX					2
HORT 3XX or 4XX					3
ACT 205 and ECON 204 must be completed by the end of Semester 5.		X			
	Total Credits				14
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 440	Plant Physiology	X			3
MKT 305	Fundamentals of Marketing				3
Select one course from the following:					3
AREC 408	Agricultural Finance				
FIN 305	Fundamentals of Finance				
BSPM 3XX or 4XX					3
HORT 3XX or 4XX					3
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
HORT 310	Greenhouse Management			4B	4
Arts and Humanities				3B	3
Diversity and Global Awareness				3E	3
Agricultural Economics, Business or Economics Upper-Division					3
HORT 3XX or 4XX					3
	Total Credits				16
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
HORT 454	Horticulture Crop Production and Management	X		4A,4C	2
HORT 476	Environmental Plant Stress Physiology	X			3
HORT 3XX or 4XX		X			3
Arts and Humanities		X		3B	3
Historical Perspectives		X		3D	3
Elective		X			2
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				16
	Program Total Credits:				120

Major in Horticulture, Horticultural Food Crops Concentration

The Horticultural Food Crops concentration focuses on systems related to production of fruits and vegetables. Specific courses include fruit and vegetable production, irrigation practices, soil fertility, propagation, breeding, and related plant pest management courses. Students must choose either the Production or Seed Science option. Those interested in organic food crop production can major in Horticulture in the Horticultural Food Crops concentration and pursue the Organic Agriculture Interdisciplinary Minor. A number of opportunities exist in horticultural food crops-related professions including greenhouse production, all phases of the retail and wholesale business, greenhouse supply sales, greenhouse construction, seed production and sales, plant breeding and plant research.

Options

- Production Option
- Seed Science Option

Major in Horticulture, Horticultural Food Crops Concentration, Production Option

Requirements
Effective Fall 2019

Freshman

		AUCC	Credits
AGRI 192 or 292	Orientation to Agricultural Systems Transfer Seminar		1
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	3
BZ 120	Principles of Plant Biology (GT-SC1)	3A	4
CO 150	College Composition (GT-CO2)	1A	3
HORT 100	Horticultural Science	3A	4
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
Select one group from the following:			5-9
Group A:			
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	
Group B:			
CHEM 111	General Chemistry I (GT-SC2)	3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	
CHEM 113	General Chemistry II		
CHEM 114	General Chemistry Lab II		
Electives			3-7
	Total Credits		30

Sophomore

CHEM 245	Fundamentals of Organic Chemistry		4
HORT 260	Plant Propagation		4
SOCR 240	Introductory Soil Science		4
SPCM 200	Public Speaking		3
Select one course from the following:			3
STAT 201	General Statistics		
STAT 301	Introduction to Statistical Methods		
Arts and Humanities		3B	6
Historical Perspectives		3D	3
Diversity and Global Awareness		3E	3
	Total Credits		30

Junior

BSPM 302	Applied and General Entomology		2
BSPM 303B	Entomology Laboratory: Horticultural		1
BSPM 361	Elements of Plant Pathology		3
BZ 440	Plant Physiology		3
HORT 310	Greenhouse Management	4B	4
SOCR 330	Principles of Genetics		3
SOCR 350	Soil Fertility Management		3
Select one course from the following:			3-4
BUS 150	Business Computing Concepts and Applications		
CS 110	Personal Computing		
Select one course from the following:			3
HORT 486B	Practicum: General		
HORT 487	Internship		
Advanced Writing		2	3
	Total Credits		28-29

Senior

BSPM 308	Ecology and Management of Weeds		3
HORT 451	Vegetable Crop Management		3
HORT 453	Principles of Fruit Crop Management		3
HORT 454	Horticulture Crop Production and Management	4A,4C	2
HORT 460/SOCR 460	Plant Breeding		3
HORT 476	Environmental Plant Stress Physiology		3
SOCR 370	Irrigation Principles		2
Electives[1]			12-13
	Total Credits		31-32
	Program Total Credits:		120

[1] Select enough elective credits to bring the program total to minimum of 120 credits, of which at least 42 credits must be upper division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 120	Principles of Plant Biology (GT-SC1)			3A	4
CO 150	College Composition (GT-CO2)			1A	3
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)			1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)			1B	1
Select one course from the following:					1
AGRI 192	Orientation to Agricultural Systems				
AGRI 292	Transfer Seminar				
Select one group from the following:					5
Group A:					
CHEM 107	Fundamentals of Chemistry (GT-SC2)			3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)			3A	
Group B:					
CHEM 111	General Chemistry I (GT-SC2)			3A	
CHEM 112	General Chemistry Lab I (GT-SC1)			3A	
	Total Credits				16

Semester 2		Critical	Recommended	AUCC	Credits
AREC 202	Agricultural and Resource Economics (GT-SS1)			3C	3
HORT 100	Horticultural Science			3A	4
Select one group from the following:					4
Group A:					
Electives (If CHEM 107 and CHEM 108 selected in Semester 1.)					
Group B:					
CHEM 113	General Chemistry II				
CHEM 114	General Chemistry Lab II				
Electives					3
CO 150, AUCC 1B (Quantitative Reasoning), and BZ 120 must be completed by the end of Semester 2.					
	Total Credits				14

Sophomore

Semester 3		Critical	Recommended	AUCC	Credits
CHEM 245	Fundamentals of Organic Chemistry				4
SOCR 240	Introductory Soil Science	X			4
SPCM 200	Public Speaking				3
Arts and Humanities				3B	3
	Total Credits				14

Semester 4		Critical	Recommended	AUCC	Credits
HORT 260	Plant Propagation				4
Select one course from the following:					3
STAT 201	General Statistics				
STAT 301	Introduction to Statistical Methods				
Arts and Humanities				3B	3
Diversity and Global Awareness				3E	3
Historical Perspectives				3D	3
	Total Credits				16

Junior

Semester 5		Critical	Recommended	AUCC	Credits
BSPM 302	Applied and General Entomology				2
BSPM 303B	Entomology Laboratory: Horticultural				1
HORT 310	Greenhouse Management	X		4B	4
SOCR 350	Soil Fertility Management	X			3
Select one course from the following:					3-4
BUS 150	Business Computing Concepts and Applications				
CS 110	Personal Computing				
	Total Credits				13-14

Semester 6		Critical	Recommended	AUCC	Credits
BSPM 361	Elements of Plant Pathology				3
BZ 440	Plant Physiology	X			3
SOCR 330	Principles of Genetics	X			3
Select one course from the following:					3
HORT 486B	Practicum: General				
HORT 487	Internship				
Advanced Writing				2	3
	Total Credits				15

Senior

Semester 7		Critical	Recommended	AUCC	Credits
BSPM 308	Ecology and Management of Weeds	X			3
HORT 451	Vegetable Crop Management				3

HORT 453	Principles of Fruit Crop Management				3
HORT 460/ SOCR 460	Plant Breeding	X			3
Electives					3
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
HORT 454	Horticulture Crop Production and Management	X		4A,4C	2
HORT 476	Environmental Plant Stress Physiology	X			3
SOCR 370	Irrigation Principles	X			2
Electives		X			9-10
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				16-17
	Program Total Credits:				120

Major in Horticulture, Horticultural Food Crops Concentration, Seed Science Option

Requirements
Effective Fall 2019

Freshman

		AUCC	Credits
AGRI 192 or 292	Orientation to Agricultural Systems Transfer Seminar		1
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	3
BZ 120	Principles of Plant Biology (GT-SC1)	3A	4
CO 150	College Composition (GT-CO2)	1A	3
HORT 100	Horticultural Science	3A	4
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
Select one group from the following:			5-9
Group A:			
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	
Group B:			
CHEM 111	General Chemistry I (GT-SC2)	3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	
CHEM 113	General Chemistry II		
CHEM 114	General Chemistry Lab II		
Arts and Humanities		3B	3
Elective			0-4
	Total Credits		30

Sophomore

BZ 223	Plant Identification		3
CHEM 245	Fundamentals of Organic Chemistry		4
HORT 260	Plant Propagation		4
SOCR 240	Introductory Soil Science		4

SPCM 200	Public Speaking		3
Select one course from the following:			3
STAT 201	General Statistics		
STAT 301	Introduction to Statistical Methods		
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
	Total Credits		30

Junior

BSPM 302	Applied and General Entomology		2
BSPM 303B	Entomology Laboratory: Horticultural		1
BSPM 361	Elements of Plant Pathology		3
BZ 440	Plant Physiology		3
SOCR 330	Principles of Genetics		3
Select one course from the following:			3-4
BUS 150	Business Computing Concepts and Applications		
CS 110	Personal Computing		
Select one course from the following:			3
HORT 486B	Practicum: General		
HORT 487	Internship		
Select 6-7 credits from the following:			6-7
HORT 310	Greenhouse Management	4B	
HORT 321	Nursery Production and Management		
HORT 341	Turfgrass Management		
HORT 412	Floriculture Crops		
HORT 452	Viticulture-Grape Production		
HORT 453	Principles of Fruit Crop Management		
Advanced Writing		2	3
	Total Credits		27-29

Senior

BSPM 308	Ecology and Management of Weeds		3
HORT 451	Vegetable Crop Management		3
HORT 454	Horticulture Crop Production and Management	4A,4C	2
HORT 460/SOCR 460	Plant Breeding	4B	3
HORT 476	Environmental Plant Stress Physiology		3
Electives[1]			17-19
	Total Credits		31-33
	Program Total Credits:		120

[1] At least 7 elective credits must be upper division (300- 400-level). Select enough elective credits to bring program total to minimum of 120, of which at least 42 must be upper-division.

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 120	Principles of Plant Biology (GT-SC1)			3A	4
CO 150	College Composition (GT-CO2)			1A	3
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)			1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)			1B	1

Select one course from the following:					1
AGRI 192	Orientation to Agricultural Systems				
AGRI 292	Transfer Seminar				
Select one group from the following:					5
Group A:					
CHEM 107	Fundamentals of Chemistry (GT-SC2)			3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)			3A	
Group B:					
CHEM 111	General Chemistry I (GT-SC2)			3A	
CHEM 112	General Chemistry Lab I (GT-SC1)			3A	
	Total Credits				16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
AREC 202	Agricultural and Resource Economics (GT-SS1)			3C	3
HORT 100	Horticultural Science			3A	4
Select one group from the following:					4
Group A:					
Electives (If CHEM 107 and CHEM 108 selected in Semester 1.)					
Group B:					
CHEM 113	General Chemistry II				
CHEM 114	General Chemistry Lab II				
CO 150, AUCC 1B (Quantitative Reasoning), and BZ 120 must be completed by the end of Semester 2.		X			
Arts and Humanities				3B	3
	Total Credits				14
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 223	Plant Identification				3
CHEM 245	Fundamentals of Organic Chemistry				4
SOCR 240	Introductory Soil Science	X			4
SPCM 200	Public Speaking				3
	Total Credits				14
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
HORT 260	Plant Propagation				4
Select one course from the following:					3
STAT 201	General Statistics				
STAT 301	Introduction to Statistical Methods				
Arts and Humanities				3B	3
Diversity and Global Awareness				3E	3
Historical Perspectives				3D	3
	Total Credits				16
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BSPM 302	Applied and General Entomology				2
BSPM 303B	Entomology Laboratory: Horticultural				1
Select one course from the following:					3-4
BUS 150	Business Computing Concepts and Applications				
CS 110	Personal Computing				
Select 6-7 credits from the following:					6-7
HORT 310	Greenhouse Management			4B	
HORT 321	Nursery Production and Management				
HORT 341	Turfgrass Management				
HORT 412	Floriculture Crops				

HORT 452	Viticulture-Grape Production				
HORT 453	Principles of Fruit Crop Management				
	Total Credits				12-14
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
BSPM 361	Elements of Plant Pathology				3
BZ 440	Plant Physiology	X			3
SOCR 330	Principles of Genetics				3
Select one course from the following:					3
HORT 486B	Practicum: General				
HORT 487	Internship				
Advanced Writing				2	3
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
BSPM 308	Ecology and Management of Weeds	X			3
HORT 451	Vegetable Crop Management	X			3
HORT 460/ SOCR 460	Plant Breeding	X		4B	3
Electives					6
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
HORT 454	Horticulture Crop Production and Management	X		4A,4C	2
HORT 476	Environmental Plant Stress Physiology	X			3
Electives		X			11-13
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				16-18
	Program Total Credits:				120

Major in Horticulture, Horticultural Science Concentration

Horticultural Science graduates conduct research to discover new information about plant growth, development, and environmental response. This research can lead to new plant varieties and production methods. The curriculum consists of a solid foundation in the basic natural sciences as well as in agricultural sciences and prepares students for technical and scientific careers in laboratory, greenhouse, or field research. Exceptional students participate in individual research projects coordinated by professors. Graduates in this area often continue their education.

Requirements Effective Fall 2019

Freshman

		AUCC	Credits
BZ 120	Principles of Plant Biology (GT-SC1)	3A	4
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CO 150	College Composition (GT-CO2)	1A	3
HORT 100	Horticultural Science	3A	4
MATH 124[1]	Logarithmic and Exponential Functions (GT-MA1)	1B	1
MATH 125[1]	Numerical Trigonometry (GT-MA1)	1B	1
MATH 126	Analytic Trigonometry (GT-MA1)	1B	1
Select one course from the following:			1
AGRI 192	Orientation to Agricultural Systems		
AGRI 292	Transfer Seminar		

Arts and Humanities		3B	3
Social and Behavioral Sciences		3C	3
	Total Credits		30
Sophomore			
HORT 260	Plant Propagation		4
PH 121	General Physics I (GT-SC1)	3A	5
PH 122	General Physics II (GT-SC1)	3A	5
SPCM 200	Public Speaking		3
Select one course from the following:			3-4
BUS 150	Business Computing Concepts and Applications		
CS 110	Personal Computing		
Advanced Writing		2	3
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
	Total Credits		29-30
Junior			
BZ 440	Plant Physiology		3
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	4
SOCR 240	Introductory Soil Science		4
SOCR 330	Principles of Genetics		3
STAT 301	Introduction to Statistical Methods		3
Select one group from the following:			5-8
Group A:			
CHEM 245	Fundamentals of Organic Chemistry		
CHEM 246	Fundamentals of Organic Chemistry Laboratory		
Group B:			
CHEM 341	Modern Organic Chemistry I		
CHEM 343	Modern Organic Chemistry II		
CHEM 344	Modern Organic Chemistry Laboratory		
HORT XXX[2]			5
Arts and Humanities		3B	3
Electives			0-3
	Total Credits		33
Senior			
BC 351	Principles of Biochemistry		4
BSPM 302	Applied and General Entomology		2
BSPM 303B	Entomology Laboratory: Horticultural		1
BSPM 361	Elements of Plant Pathology		3
HORT 310	Greenhouse Management	4B	4
HORT 454	Horticulture Crop Production and Management	4A,4C	2
HORT 476	Environmental Plant Stress Physiology		3
HORT 495	Independent Study		2
HORT XXX[2]			6
Elective[2]			0-1
	Total Credits		27-28
	Program Total Credits:		120

[1] The equivalent to MATH 117 and MATH 118, if needed, may be taken using elective credits.

[2] Students must select at least 12 credits of upper division (300- to 400-level) horticulture elective and/or free elective courses to bring the program total of upper division credits to a minimum of 42. Select enough elective credits to bring the program total to 120 credits.

Major Completion Map

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
BZ 120	Principles of Plant Biology (GT-SC1)			3A	4
CO 150	College Composition (GT-CO2)			1A	3
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)			1B	1
MATH 125	Numerical Trigonometry (GT-MA1)			1B	1
Select one course from the following:					1
AGRI 192	Orientation to Agricultural Systems				
AGRI 292	Transfer Seminar				
	Total Credits				15

Semester 2		Critical	Recommended	AUCC	Credits
CHEM 113	General Chemistry II				3
CHEM 114	General Chemistry Lab II				1
HORT 100	Horticultural Science			3A	4
MATH 126	Analytic Trigonometry (GT-MA1)			1B	1
Arts and Humanities				3B	3
Social and Behavioral Sciences				3C	3
CO 150 and AUCC 1B (Quantitative Reasoning) must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		Critical	Recommended	AUCC	Credits
PH 121	General Physics I (GT-SC1)	X		3A	5
SPCM 200	Public Speaking				3
Select one course from the following:					3-4
BUS 150	Business Computing Concepts and Applications				
CS 110	Personal Computing				
Diversity and Global Awareness				3E	3
BZ 120 must be completed by the end of Semester 3.		X			
	Total Credits				14-15

Semester 4		Critical	Recommended	AUCC	Credits
HORT 260	Plant Propagation				4
PH 122	General Physics II (GT-SC1)			3A	5
Advanced Writing				2	3
Historical Perspectives				3D	3
CHEM 113 must be completed by the end of Semester 4.		X			
	Total Credits				15

Junior

Semester 5		Critical	Recommended	AUCC	Credits
MATH 155	Calculus for Biological Scientists I (GT-MA1)	X		1B	4
SOCR 330	Principles of Genetics				3
Select one group from the following:					5-6
Group A:					
CHEM 245	Fundamentals of Organic Chemistry				
CHEM 246	Fundamentals of Organic Chemistry Laboratory				

Group B:					
CHEM 341	Modern Organic Chemistry I				
CHEM 343	Modern Organic Chemistry II				
Arts and Humanities				3B	3
Elective					0-1
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 440	Plant Physiology				3
SOCR 240	Introductory Soil Science				4
STAT 301	Introduction to Statistical Methods				3
If Group B taken Semester 5, take the following:					0-2
CHEM 344	Modern Organic Chemistry Laboratory				
HORT XXX					5
Elective					0-2
CHEM 245 and CHEM 341 must be completed by the end of Semester 6.		X			
	Total Credits				17
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 351	Principles of Biochemistry				4
BSPM 302	Applied and General Entomology	X			2
BSPM 303B	Entomology Laboratory: Horticultural	X			1
HORT 310	Greenhouse Management			4B	4
HORT 495	Independent Study				2
HORT XXX					2
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BSPM 361	Elements of Plant Pathology	X			3
HORT 454	Horticulture Crop Production and Management	X		4A,4C	2
HORT 476	Environmental Plant Stress Physiology	X			3
HORT XXX		X			4
Electives		X			0-1
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12-13
	Program Total Credits:				120

Major in Horticulture, Horticultural Therapy Concentration

The Horticultural Therapy concentration combines horticulture courses with the study of therapy/human sciences, leading to careers in health care and human services. Horticultural Therapy students gain the skills necessary to establish, manage, and work in a range of program types such as mental health, vocational, correctional, rehabilitative, wellness, educational, community-based and long term care.

Requirements Effective Fall 2019

Freshman

		AUCC	Credits
AGRI 192 or 292	Orientation to Agricultural Systems Transfer Seminar		1
BZ 120	Principles of Plant Biology (GT-SC1)	3A	4
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	4
CO 150	College Composition (GT-CO2)	1A	3
HDFS 101	Individual and Family Development (GT-SS3)	3C	3
HORT 100	Horticultural Science	3A	4

MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
PSY 100	General Psychology (GT-SS3)	3C	3
Arts and Humanities		3B	3
Electives			3
	Total Credits		31

Sophomore

HORT 260	Plant Propagation		4
HORT 270	Fundamentals of Horticultural Therapy		2
SOCR 240	Introductory Soil Science		4
SPCM 200	Public Speaking		3
Horticultural Science Courses (see list below)			4
Therapy/Human Science courses (see list below)			6
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
	Total Credits		29

Junior

HORT 310	Greenhouse Management	4B	4
HORT 421	Horticultural Therapy Techniques		2
HORT 423	Horticultural Therapy Programming		2
PSY 310	Basic Counseling Skills		3
PSY 320	Abnormal Psychology		3
Select one group from the following:			3
Group A:			
BSPM 302	Applied and General Entomology		
BSPM 303B	Entomology Laboratory: Horticultural		
Group B:			
BSPM 361	Elements of Plant Pathology		
Horticulture Science courses (see list below)			3
Therapy/Human Science Courses (see list below)			6
Advanced Writing		2	3
Electives			2
	Total Credits		31

Senior

HORT 377	Horticultural Methods for Therapy Programs		1
HORT 425	Horticultural Therapy Management		3
HORT 454	Horticulture Crop Production and Management	4A,4C	2
HORT 487	Internship		3
Select one course from the following:			3
SOWK 300	Research in Applied Professions		
STAT 311	Statistics for Behavioral Sciences I		
Horticulture Science Courses (see list below)			5
Therapy/Human Science Courses (see list below)			6
Historical Perspectives		3D	3
Electives[1]			3
	Total Credits		29
	Program Total Credits:		120

Horticultural Science Courses

Code	Title	Credits
HORT 221	Landscape Plants	4
HORT 310	Greenhouse Management	4
HORT 321	Nursery Production and Management	4
HORT 322	Herbaceous Plants	3
HORT 331	Landscape Design	2
HORT 344	Organic Greenhouse Production	1
HORT 401	Medicinal and Value-Added Uses of Plants	3
HORT 412	Floriculture Crops	4
HORT 451	Vegetable Crop Management	3
HORT 453	Principles of Fruit Crop Management	3

Therapy/Human Science Courses

Code	Title	Credits
HDFS 201	Perspectives in Gerontology	3
HDFS 310	Infant and Child Development in Context	3
HDFS 311	Adolescent/Early Adult Development in Context	3
HDFS 332	Death, Dying, and Grief	3
OT 110	Introduction to Occupational Therapy	3
OT 215	Medical Terminology	1
OT 355	The Disability Experience in Society	2
PSY 315	Social Psychology	3
PSY 316	Environmental Psychology	3
PSY 460	Child Exceptionality and Psychopathology	3
PSY 465	Adolescent Psychology	3
SOC 342	Leisure and Society	3
SOC 352	Criminology	3

[1] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
BZ 120	Principles of Plant Biology (GT-SC1)			3A	4
CO 150	College Composition (GT-CO2)			1A	3
HORT 100	Horticultural Science		X	3A	4
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)			1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)			1B	1
Select one course from the following:					1
AGRI 192	Orientation to Agricultural Systems				
AGRI 292	Transfer Seminar				
	Total Credits				15

Semester 2		Critical	Recommended	AUCC	Credits
CHEM 107	Fundamentals of Chemistry (GT-SC2)			3A	4
HDFS 101	Individual and Family Development (GT-SS3)			3C	3
PSY 100	General Psychology (GT-SS3)			3C	3
Arts and Humanities				3B	3
Elective					3
CO 150 and AUCC 1B (Quantitative Reasoning) must be completed by the end of Semester 2.		X			
	Total Credits				16

Sophomore

Semester 3		Critical	Recommended	AUCC	Credits
HORT 270	Fundamentals of Horticultural Therapy				2
SPCM 200	Public Speaking				3
Horticultural Science Course (See List on Concentration Requirements Tab)					4
Therapy/Human Science Course (See List on Concentration Requirements Tab)					3
Diversity and Global Awareness				3E	3
CHEM 107 and BZ 120 must be completed by the end of Semester 3.		X			
	Total Credits				15

Semester 4		Critical	Recommended	AUCC	Credits
HORT 260	Plant Propagation				4
SOCR 240	Introductory Soil Science				4

Arts and Humanities				3B	3
Therapy.Human Science Course (See List on Concentration Requirements Tab)					3
PSY 100 must be completed by the end of Semester 4.		X			
	Total Credits				14
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
HORT 310	Greenhouse Management	X		4B	4
PSY 320	Abnormal Psychology				3
Select one group from the following:					3
Group A:					
BSPM 302	Applied and General Entomology				
BSPM 303B	Entomology Laboratory: Horticultural				
Group B:					
BSPM 361	Elements of Plant Pathology				
Therapy/Human Science Course (See List on Concentration Requirements Tab)					3
Advanced Writing				2	3
HORT 270 must be completed by the end of Semester 5.		X			
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
HORT 421	Horticultural Therapy Techniques				2
HORT 423	Horticultural Therapy Programming	X			2
PSY 310	Basic Counseling Skills				3
Horticultural Science Course (See List on Concentration Requirements Tab)					3
Therapy/Human Science Course (See List on Concentration Requirements Tab)					3
Elective					2
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
HORT 425	Horticultural Therapy Management	X			3
Select one course from the following:					3
SOWK 300	Research in Applied Professions				
STAT 311	Statistics for Behavioral Sciences I				
Historical Perspectives				3D	3
Horticultural Science Courses (See List on Concentration Requirements Tab)					5
	Total Credits				14
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
HORT 377	Horticultural Methods for Therapy Programs	X			1
HORT 454	Horticulture Crop Production and Management	X		4A,4C	2
HORT 487	Internship	X			3
Therapy/Human Science Courses (See List on Concentration Requirements Tab)		X			6
Elective		X			3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Horticulture, Viticulture and Enology Concentration

Requirements Effective Fall 2019

No new students are being accepted to this concentration.

Freshman

		AUCC	Credits
AGRI 192 or 292	Orientation to Agricultural Systems Transfer Seminar		1
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	3
BZ 120	Principles of Plant Biology (GT-SC1)	3A	4
CO 150	College Composition (GT-CO2)	1A	3
HORT 100	Horticultural Science	3A	4
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
Select one group from the following:			5-9
Group A:			
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	
Group B:			
CHEM 111	General Chemistry I (GT-SC2)	3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	
CHEM 113	General Chemistry II		
CHEM 114	General Chemistry Lab II		
Arts and Humanities		3B	3
Electives			0-4
	Total Credits		30

Sophomore

CHEM 245	Fundamentals of Organic Chemistry		4
HORT 260	Plant Propagation		4
HORT 452	Viticulture-Grape Production		1
LIFE 205	Microbial Biology		3
SOCR 240	Introductory Soil Science		4
SPCM 200	Public Speaking		3
STAT 301	Introduction to Statistical Methods		3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
	Total Credits		31

Junior

BSPM 302	Applied and General Entomology		2
BSPM 303B	Entomology Laboratory: Horticultural		1
BSPM 361	Elements of Plant Pathology		3
BZ 440	Plant Physiology		3
FTEC 400	Food Safety		3
HORT 277	Introduction to Enology		1
HORT 487	Internship		2
MKT 305	Fundamentals of Marketing		3

SOCR 330	Principles of Genetics		3
SOCR 350	Soil Fertility Management		3
Select one course from the following:			3-4
BUS 150	Business Computing Concepts and Applications		
CS 110	Personal Computing		
Advanced Writing		2	3
	Total Credits		30-31

Senior

BSPM 308	Ecology and Management of Weeds		3
HORT 310	Greenhouse Management	4B	4
HORT 453	Principles of Fruit Crop Management		3
HORT 454	Horticulture Crop Production and Management	4A,4C	2
HORT 462	Viticulture Practices in Grape Production	4B	3
HORT 476	Environmental Plant Stress Physiology		3
HORT 477	Enology-History and Winemaking		3
HORT 487	Internship		2
SOCR 370	Irrigation Principles		2
Electives[1]			3-4
	Total Credits		28-29
	Program Total Credits:		120

[1] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 120	Principles of Plant Biology (GT-SC1)			3A	4
CO 150	College Composition (GT-CO2)			1A	3
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)			1B	1
Select one course from the following:					1
AGRI 192	Orientation to Agricultural Systems				
AGRI 292	Transfer Seminar				
Select one group from the following:					5
Group A:					
CHEM 107	Fundamentals of Chemistry (GT-SC2)			3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)			3A	
Group B:					
CHEM 111	General Chemistry I (GT-SC2)			3A	
CHEM 112	General Chemistry Lab I (GT-SC1)			3A	
	Total Credits				16

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
AREC 202	Agricultural and Resource Economics (GT-SS1)			3C	3
HORT 100	Horticultural Science			3A	4
Select one group from the following:					4
Group A:					
Electives (If CHEM 107 and CHEM 108 selected in Semester 1.)					
Group B:					
CHEM 113	General Chemistry II	X			

CHEM 114	General Chemistry Lab II				
Arts and Humanities				3B	3
CO 150, AUCC 1B (Quantitative Reasoning), and BZ 120 must be completed by the end of Semester 2.		X			
	Total Credits				14
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 245	Fundamentals of Organic Chemistry				4
HORT 452	Viticulture-Grape Production				1
SOCR 240	Introductory Soil Science				4
Arts and Humanities				3B	3
Historical Perspectives				3D	3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
HORT 260	Plant Propagation				4
LIFE 205	Microbial Biology				3
SPCM 200	Public Speaking				3
STAT 301	Introduction to Statistical Methods				3
Diversity and Global Awareness				3E	3
SOCR 240 must be completed by the end of Semester 4.		X			
	Total Credits				16
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BSPM 302	Applied and General Entomology				2
BSPM 303B	Entomology Laboratory: Horticultural				1
FTEC 400	Food Safety				3
HORT 277	Introduction to Enology				1
SOCR 350	Soil Fertility Management	X			3
Select one course from the following:					3-4
BUS 150	Business Computing Concepts and Applications				
CS 110	Personal Computing				
Advanced Writing				2	3
AREC 202 must be completed by the end of Semester 5.		X			
	Total Credits				16-17
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
BSPM 361	Elements of Plant Pathology				3
BZ 440	Plant Physiology	X			3
HORT 487	Internship				2
MKT 305	Fundamentals of Marketing				3
SOCR 330	Principles of Genetics	X			3
	Total Credits				14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
BSPM 308	Ecology and Management of Weeds	X			3
HORT 310	Greenhouse Management			4B	4
HORT 453	Principles of Fruit Crop Management				3
HORT 462	Viticulture Practices in Grape Production	X		4B	3
HORT 477	Enology-History and Winemaking	X			3
	Total Credits				16
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
HORT 454	Horticulture Crop Production and Management	X		4A,4C	2
HORT 476	Environmental Plant Stress Physiology	X			3

HORT 487	Internship	X	2
SOCR 370	Irrigation Principles	X	2
Electives		X	3-4
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X	
	Total Credits		12-13
	Program Total Credits:		120

Major in Landscape Architecture

Studying Landscape Architecture at CSU is an adventure. Taking part in a challenging course of study, students prepare themselves for careers in a field whose enormous potential has only begun to be recognized. Landscape Architecture students study design as accomplished landscape architects see it: shaping spaces as well as planning and preserving them.

Landscape architects lead the stewardship, planning, and design of built and natural environments. Throughout the program, emphasis is on the relationship between design, nature, and society: the impact of environments on the individual as well as the impact of users on the environment. Registration laws for landscape architects in 49 states encourage graduation from programs such as that offered at CSU, which is accredited by the Landscape Architecture Accreditation Board of the American Society of Landscape Architects.

Landscape architects must analyze the natural elements of a site including the climate, soil, slope of the land, drainage, sunlight, and vegetation. Computer-aided design (CAD) has become an essential tool for landscape architects. Landscape architects often work with building architects, surveyors, engineers, and urban planners and collaborate with environmental scientists, foresters, and other professionals to find the best way to conserve or restore natural resources. Knowledge of appropriate local, state, or federal regulations such as those protecting wetlands or historic resources is essential.

Nature, culture, form, and space are the classic elements of landscape architecture with which students work in a series of design studies and related courses. Coursework focuses on a variety of landscape projects that grow more complex as the curriculum proceeds. The courses include subjects such as site design, landscape design and construction, surveying, landscape ecology, and urban and regional planning. Other courses specific to the major are history of the designed landscape, plant and soil science, geology, and professional practice. Students are also encouraged to take advantage of summer travel courses available to study highly-valued ecological/cultural sites in Colorado and designed landscapes in Europe.

CSU offers the only nationally accredited undergraduate professional landscape architecture program in Colorado, via the Landscape Architectural Accreditation Board (http://www.asla.org/accreditationlaab.aspx) (LAAB).

Learning Outcomes

Successful students will demonstrate:

- Basic problem solving skills and knowledge for comprehensive landscape design that include the following characteristics:
  a. Research of natural systems, cultural systems, users, and precedents
  b. Analysis of related site systems and users
  c. Synthesis, the articulation of formal responses to research and analysis findings
- Technical competency in basic landscape architectural methods and communication, including organization of writing, project development, representation, and documentation
- Fundamental knowledge and skills appropriate to public and private entry-level landscape architecture including:
  a. Application of digital media
  b. Technology applications for analysis and design
  c. Landscape design
  d. Representation for analysis and design

Potential Occupations

Many types of organizations and individuals hire landscape architects – from real estate development firms starting new projects, municipalities constructing airports or parks, to home owners desiring garden designs. Many landscape architects are employed by government agencies doing site design for buildings, parks, and other public assets. Others are involved in park and recreation planning in national parks and forests, and restoration of environmentally damaged landscapes. Employment of landscape architects is expected to increase faster than the average for all occupations through the year 2015. Starting in 1998, average salaries for landscape architects exceeded average salaries of architects. Anticipated growth in construction is expected to increase demand for landscape architectural services over the long run. Participation in internships and cooperative education opportunities is highly recommended to enhance practical training and development. Graduates who go on for advanced studies can attain more responsible positions with the possibility of rising to top professional levels.

Some examples include: design consultant, landscape designer and contractor, private practice business, construction supervisor, land or environmental planner, urban designer, historic preservationist, golf course architect, resort planner.

Requirements
Effective Fall 2010

Freshman

		AUCC	Credits
BZ 120	Principles of Plant Biology (GT-SC1)	3A	4
CO 150	College Composition (GT-CO2)	1A	3
LAND 110	Introduction to Landscape Architecture	3B	3
LAND 120	History of the Designed Landscape		3
LAND 230	Drawing the Landscape		4
LAND 240	Fundamentals of Landscape Design Process		4
LAND 241	Environmental Analysis		3
MATH 126	Analytic Trigonometry (GT-MA1)	1B	1
Arts and Humanities		3B	3
Quantitative Reasoning		1B	2
	Total Credits		30

Sophomore

CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	4
GEOL 120 or 122	Exploring Earth - Physical Geology (GT-SC2) The Blue Planet - Geology of Our Environment (GT-SC2)	3A	3
GEOL 121	Introductory Geology Laboratory (GT-SC1)	3A	1
LAND 220/LIFE 220	Fundamentals of Ecology (GT-SC2)	3A	3
LAND 360	Basic Landscape Design and Construction	4A	3
LAND 361	Digital Methods		3
LAND 362	Form and Expression in Garden Design	4B	3
LAND 363	Advanced Landscape Site Engineering		4
Select one course from the following:			5
LAND 454	Landscape Field Studies		
LAND 455	Travel Abroad-European Landscape Architecture		
NR 220	Natural Resource Ecology and Measurements		
PSY 100	General Psychology (GT-SS3)	3C	3
Diversity and Global Awareness		3E	3
	Total Credits		35

Junior

AREC 202 or ECON 202	Agricultural and Resource Economics (GT-SS1) Principles of Microeconomics (GT-SS1)	3C	3
LAND 364	Design and Nature		4
LAND 365	Landscape Contract Drawing and Specifications		3
LAND 366	Landscape Design Expression		4
LAND 444	Ecology of Landscapes		3
NR 319 or 323	Geospatial Applications in Natural Resources Remote Sensing and Image Interpretation		3-4
PHIL 345	Environmental Ethics		3
SOCR 240	Introductory Soil Science		4
SPCM 200	Public Speaking		3
	Total Credits		30-31

Senior

BZ 223 or HORT 221	Plant Identification Landscape Plants		3-4
HORT 368/LAND 368	Landscape Irrigation and Water Conservation		3
LAND 392	Seminar-Designed Landscapes-Theory and Criticism		2

LAND 446	Urban Design		4
LAND 447	Comprehensive Landscape Design	4C	4
LAND 449	Professional Practice	4C	1
Advanced Writing		2	3
Arts and Humanities		3B	3
Historical Perspectives		3D	3
Electives			4
	Total Credits		30-31
	Program Total Credits:		125-127

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 120	Principles of Plant Biology (GT-SC1)			3A	4
CO 150	College Composition (GT-CO2)			1A	3
LAND 110	Introduction to Landscape Architecture			3B	3
LAND 230	Drawing the Landscape	X			4
Mathematics				1B	2
	Total Credits				16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
LAND 120	History of the Designed Landscape				3
LAND 240	Fundamentals of Landscape Design Process	X			4
LAND 241	Environmental Analysis				3
MATH 126	Analytic Trigonometry (GT-MA1)			1B	1
Arts and Humanities				3B	3
CO 150, AUCC 1B (Quantitative Reasoning), and BZ 120 must be completed by the end of Semester 2.		X			
	Total Credits				14

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	4
Select one course from the following:					3
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)			3A	
GEOL 122	The Blue Planet - Geology of Our Environment (GT-SC2)			3A	
GEOL 121	Introductory Geology Laboratory (GT-SC1)			3A	1
LIFE 220/ LAND 220	Fundamentals of Ecology (GT-SC2)			3A	3
LAND 360	Basic Landscape Design and Construction	X		4A	3
LAND 361	Digital Methods	X			3
	Total Credits				17
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
LAND 362	Form and Expression in Garden Design	X		4B	3
LAND 363	Advanced Landscape Site Engineering	X			4
PSY 100	General Psychology (GT-SS3)			3C	3
Diversity and Global Awareness				3E	3
	Total Credits				13
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					5
LAND 454	Landscape Field Studies				
LAND 455	Travel Abroad-European Landscape Architecture				

NR 220	Natural Resource Ecology and Measurements				
	Total Credits				5
Junior					
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
AREC 202	Agricultural and Resource Economics (GT-SS1)			3C	
ECON 202	Principles of Microeconomics (GT-SS1)			3C	
LAND 364	Design and Nature				4
LAND 365	Landscape Contract Drawing and Specifications	X			3
Select one course from the following:					3-4
NR 319	Geospatial Applications in Natural Resources				
NR 323	Remote Sensing and Image Interpretation				
SPCM 200	Public Speaking				3
LAND 220/ LIFE 220 must be completed by the end of Semester 6.		X			
	Total Credits				16-17
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
LAND 366	Landscape Design Expression	X			4
LAND 444	Ecology of Landscapes				3
PHIL 345	Environmental Ethics				3
SOCR 240	Introductory Soil Science				4
	Total Credits				14
Senior					
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3-4
BZ 223	Plant Identification				
HORT 221	Landscape Plants				
LAND 392	Seminar-Designed Landscapes-Theory and Criticism	X			2
LAND 446	Urban Design	X			4
Advanced Writing				2	3
Electives					4
	Total Credits				16-17
Semester 9		**Critical**	**Recommended**	**AUCC**	**Credits**
HORT 368/ LAND 368	Landscape Irrigation and Water Conservation	X			3
LAND 447	Comprehensive Landscape Design	X		4C	4
LAND 449	Professional Practice	X		4C	1
Arts and Humanities		X		3B	3
Historical Perspectives		X		3D	3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				14
	Program Total Credits:				125-127

Minor in Environmental Horticulture

A minor in Environmental Horticulture will serve to broaden the academic background of students seeking employment in interdisciplinary job markets associated with plant sciences or the art and science of environmental horticulture. A minor will allow students a maximum breadth and depth in the field while utilizing a limited number of requirements.

Requirements Effective Spring 2017

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Lower Division		
Select two courses from the following:		8
HORT 100	Horticultural Science	
HORT 221	Landscape Plants	
HORT 231	Landscape Graphics Studio	
Upper Division		
Select two courses from the following:		6
HORT 341	Turfgrass Management	
HORT 464A	Arboriculture	
HORT 465	Landscape Estimating	
Select a minimum of seven credits (six must be upper division) from the following:		7
HORT 260	Plant Propagation	
HORT 232	Principles of Landscape Design	
HORT 321	Nursery Production and Management	
HORT 322	Herbaceous Plants	
HORT 331	Landscape Design	
HORT 335	Landscape Structures	
HORT 336	Landscape Grading and Drainage Studio	
HORT 441	Turfgrass Science	
LAND 120	History of the Designed Landscape	
Program Total Credits:		21

Minor in Horticulture

Requirements Effective Fall 2019

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Lower Division		
HORT 100	Horticultural Science	4
HORT 260	Plant Propagation	4
Upper Division		
HORT 310	Greenhouse Management	4
HORT 454	Horticulture Crop Production and Management	2
Select two courses (for a minimum of 7 credits) from the following:		7
HORT 322	Herbaceous Plants	
HORT 401	Medicinal and Value-Added Uses of Plants	
HORT 412	Floriculture Crops	
HORT 451	Vegetable Crop Management	
HORT 452	Viticulture-Grape Production	
HORT 453	Principles of Fruit Crop Management	
HORT 460/ SOCR 460	Plant Breeding	
HORT 462	Viticulture Practices in Grape Production	
Program Total Credits:		21

Master of Landscape Architecture, Plan C (M.L.A.)

Students are not currently being accepted into this program of study.

Requirements Effective Fall 2016

First Year		Credits
Select one from the following:		4
LAND 630	Topics in Urban Design	
LAND 640	Major Landscape Change	
Select one from the following:		3
LAND 510	Virtual Design Methods	
LAND 520	Geographic Information Systems	
LAND 610	Topics in Garden Design	4
Focus Area Electives (see list below):[1]		9
	Total Credits	20
Second Year		
Select one from the following:		4
LAND 630	Topics in Urban Design	
LAND 640	Major Landscape Change	
Select one from the following:		3
LAND 510	Virtual Design Methods	
LAND 520	Geographic Information Systems	
LAND 620	Topics in Park Design	4
Focus Area Electives (see list below)[1]		9
	Total Credits	20
	Program Total Credits:	40

A minimum of 40 credits are required to complete this program.

Focus Area Electives

Code	Title	Credits
Cultural and Historic Landscapes		
ANTH 500	Development of Anthropological Theory	3
ANTH 515	Culture and Environment	3
ANTH 530	Human-Environment Interactions	3
AREC 572	Social Benefit Cost Analysis	3
HIST 503	Historical Method: Preservation	3
Landscape Ecology		
BZ 561	Landscape Ecology	3
ECOL 505	Foundations of Ecology	3
ECOL 571	Advanced Topics in Ecology	1-3
ECOL 592	Interdisciplinary Seminar in Ecology	1-3

ECOL 610	Ecosystem Ecology	3
ECOL 620	Applications in Landscape Ecology	4
FW 465	Managing Human-Wildlife Conflicts	3
NR 522	Wilderness Ecosystem Planning	3
NR 578	Ecology of Disturbed Lands	3
Landscape Restoration and Reclamation		
BZ 561	Landscape Ecology	3
BZ 572	Phytoremediation	3
CIVE 549	Drainage and Wetland Engineering	3
ECOL 505	Foundations of Ecology	3
ECOL 592	Interdisciplinary Seminar in Ecology	1-3
NR 515	Natural Resources Policy and Biodiversity	3
NR 561	Habitat Evaluation Procedures	2
NR 578	Ecology of Disturbed Lands	3
Regional and Community Planning		
AREC 547	Public Lands Planning and Management	3
ECON 540/AREC 540	Environmental and Natural Resource Economics	3
ECON 541/AREC 541	Environmental Economics	3
FW 465	Managing Human-Wildlife Conflicts	3
NR 505	Concepts in GIS	4
NR 506	GIS Methods for Resource Management	4
NRRT 550	Ecotourism	3
Remote Sensing/GIS		
NR 503	Remote Sensing and Image Analysis	4
NR 504	Computer Analysis of Remote Sensing Data	4
NR 505	Concepts in GIS	4
NR 506	GIS Methods for Resource Management	4
NR 512	Spatial Statistical Modeling-Natural Resources	3
NR 621		3
Semi-Arid/Western Landscapes		
AREC 542	Applied Advanced Water Resource Economics	3
CIVE 520	Physical Hydrology	3
CIVE 522	Engineering Hydrology	3
CIVE 524/WR 524	Modeling Watershed Hydrology	3
CIVE 544	Water Resources Planning and Management	3
WR 516	Cumulative Effects and Watershed Analysis	3

[1] A minimum of nine of the elective credits must be in regular graduate courses in the focus area.

Department of Soil and Crop Sciences

Dr. Matthew Wallenstein, Department Head

Plant Sciences Building, Room C127

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soilcrop.agsci.colostate.edu (http://soilcrop.colostate.edu)

Undergraduate

Majors

- Major in Soil and Crop Sciences
  - Agronomic Production Management Concentration
  - Applied Information Technology Concentration
  - International Soil and Crop Sciences Concentration
  - Plant Biotechnology, Genetics, and Breeding Concentration
  - Soil Ecology Concentration
  - Soil Restoration and Conservation Concentration

Minors

- Minor in Soil Resources and Conservation
- Minor in Soil Science
- Organic Agriculture Interdisciplinary Minor

Graduate

Graduate Programs in Soil and Crop Sciences

Programs in crop science, soil science, or plant genetics lead to Master of Science and Doctor of Philosophy degrees. Students interested in graduate work should refer to the Graduate and Professional

Bulletin and the Department of Soil and Crop Sciences. (http://soilcrop.agsci.colostate.edu)

Master's Programs

Master of Science in Soil and Crop Sciences, Plan A*
Master of Science in Soil and Crop Sciences, Plan B*

Ph.D.

Ph.D. in Soil and Crop Sciences*

* Please see department for program of study.

Courses
Soil and Crop Sciences (SOCR)

SOCR 100 General Crops Credits: 4 (3-2-0)
Course Description: Production and adaptation of cultivated crops; principles affecting growth, development, management, and utilization.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 171 Environmental Issues in Agriculture (GT-SS3) Credits: 3 (2-0-1)
Also Offered As: HORT 171.
Course Description: Historical development of agriculture; environmental consequences of modern food production and other cultural approaches to agriculture.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Credit not allowed for both SOCR 171 and HORT 171.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

SOCR 177 Applied Information Technology in Agriculture Credit: 1 (1-0-0)
Course Description: Introduction to database and project management, GIS/GPS and remote sensing, as they apply to agriculture, the environment, and business management.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 192 Water in the West Credits: 3 (0-0-3)
Course Description: History and current status of water resources management and policy in the western United States.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 200 Seed Anatomy and Identification Credit: 1 (0-2-0)
Course Description: Principles of seed anatomy including reproduction, identification, and seed characteristics of plant families.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 201 Seed Development and Metabolism Credit: 1 (0-2-0)
Course Description: Basic processes controlling seed development, maturation, dormancy, storage, germination, and how these factors relate to seedling growth.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 240 Introductory Soil Science Credits: 4 (3-2-0)
Course Description: Formation, properties, and management of soils emphasizing soil conditions that affect plant growth.
Prerequisite: CHEM 107 or CHEM 111.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 300 Seed Purity Analysis Credits: 2 (0-4-0)
Course Description: Fundamentals for determining physical purity of a seed lot using established rules and procedures.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 301 Seed Germination and Viability Credits: 2 (0-4-0)
Course Description: Seed viability tests including standard germination and tetrazolium, seed viability, dormancy, parameters of viability and evaluation.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 310 Agronomic Plant and Seed Identification Credits: 2 (0-4-0)
Course Description: Evaluate characteristics needed to identify agronomic plant and seed species.
Prerequisite: BZ 104 or BZ 110 or BZ 120 or HORT 100 or LIFE 102 or SOCR 100.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 311 Seed Quality--Seed Production and Genetics Credit: 1 (1-0-0)
Course Description: Importance of seed production and genetics to seed quality. The value of seed quality to field crop production.
Prerequisite: None.
Registration Information: Offered as an online course only. Credit not allowed for both SOCR 311 and SOCR 380A2.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 320 Forage and Pasture Management Credits: 3 (3-0-0)
Course Description: Fundamentals of establishment, management, and utilization of cultivated forages including hay, silage, and pasture production.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 322 Principles of Microclimatology Credits: 3 (3-0-0)
Course Description: Principles of microclimatology including energy balance concepts for soil and vegetation surfaces, and their application.
Prerequisite: PH 100 to 499 - at least 3 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 330 Principles of Genetics Credits: 3 (3-0-0)
Course Description: Transmission, population, and molecular genetics; practical applications.
Prerequisite: BZ 110 or BZ 120 or LIFE 102.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 331 Genetics Laboratory Credit: 1 (0-3-0)
Course Description: Experimental techniques in transmission and molecular genetics.
Prerequisite: SOCR 330, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 341 Microbiology for Sustainable Agriculture Credit: 1 (1-0-0)
Course Description: Functional roles and management of soil organisms in organic agriculture, emphasis on ecological interactions with plants and plant pathogens.
Prerequisite: SOCR 240.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 343 Composting Principles and Practices Credit: 1 (1-0-0)
Course Description: Fundamentals of compost production, use, and regulation.
Prerequisite: SOCR 240 and SOCR 350.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 344 Crop Development Techniques Credits: 2 (2-0-0)
Course Description: Conventional and transgenic approaches to crop variety development.
Prerequisite: BZ 120 or LIFE 102 or LIFE 103.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 345 Diagnosis and Treatment in Organic Fields Credits: 2 (0-4-0)
Also Offered As: HORT 345.
Course Description: Field experience in diagnosis of pest and nutrient problems on organic farms and development of treatment recommendations.
Prerequisite: (BSPM 302 or BSPM 308 or BSPM 361) and (HORT 100 or SOCR 100) and (SOCR 240).
Registration Information: Credit not allowed for both SOCR 345 and HORT 345. Required field trips.
Term Offered: Summer (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 350 Soil Fertility Management Credits: 3 (3-0-0)
Course Description: Managing soil fertility and fertilizers to meet plant nutrient requirements in an environmentally sound manner with emphasis on nutrient cycling.
Prerequisite: (CHEM 107 and CHEM 108 or CHEM 111 and CHEM 112) and (SOCR 240).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 351 Soil Fertility Laboratory Credit: 1 (0-2-0)
Course Description: Soil chemical analyses and development of fertilizer recommendations for crops.
Prerequisite: SOCR 350, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 370 Irrigation Principles Credits: 2 (2-0-0)
Course Description: Determination of irrigation water requirements based on the estimation of storage and movement of water in the soil-plant-atmospheric system.
Prerequisite: (HORT 100 or SOCR 100 or BZ 120) and (SOCR 240).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 371 Irrigation of Field Crops Credit: 1 (1-0-0)
Course Description: Management of irrigation systems for field crops with emphasis on irrigation methods, irrigation scheduling and strategies for water conservation.
Prerequisite: SOCR 370.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 377 Geographic Information Systems in Agriculture Credits: 3 (2-2-0)
Course Description: Introduction to geographic information systems and global positioning systems with applications to agriculture.
Prerequisite: SOCR 100 to 499 - at least 3 credits or CS 100 to 499 - at least 3 credits.
Registration Information: Credit not allowed for both SOCR 377 and SOCR 577. Required field trips.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

SOCR 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 400 Soils and Global Change: Science and Impacts Credits: 3 (2-2-0)
Course Description: Foundations on the science of global change and its impact on soil processes and biota.
Prerequisite: (SOCR 240) and (LIFE 220 or LIFE 320).
Registration Information: Required field trips. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 401 Greenhouse Gas Mitigation, Land Use, and Mgmt Credits: 3 (2-3-0)
Course Description: Introduction to greenhouse gas estimation methods and mitigation project development in the land use sector.
Prerequisite: SOCR 240.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 410 Seed Processes: Storage and Deterioration Credit: 1 (0-0-1)
Course Description: Environmental conditions and management factors influencing storage and deterioration of seeds, including physiological and biochemical changes.
Prerequisite: BZ 104 or BZ 105 or BZ 120.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 412 Seed Processes: Separation and Conditioning Credit: 1 (1-0-0)
Course Description: Understanding the physical process required to separate pure seed from contaminants and maintain viability.
Prerequisite: BZ 104 or BZ 105 or BZ 120.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 413 Seed Vigor Concepts and Testing Credits: 2 (2-0-0)
Course Description: Provide a basic understanding of the concept of seed vigor, methods for seed vigor testing, and the relationship of crop performance.
Prerequisite: SOCR 200 or SOCR 201.
Registration Information: Offered as an online course only. Credit not allowed for both SOCR 413 and SOCR 481A1.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 415 Pollinator Management in Agroecosystems Credits: 2 (2-0-0)
Also Offered As: BSPM 415.
Course Description: Fundamental concepts of pollinator biology and management, sustainable crop-pollinator interactions, regional and global issues on pollinator management and conservation, best management practices for commercially managed pollinators.
Prerequisite: HORT 100 or SOCR 100.
Registration Information: Junior standing. Credit not allowed for both SOCR 415 and BSPM 415. Required field trips.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 420 Crop and Soil Management Systems I Credits: 3 (3-0-0)
Course Description: Principles of crop, soil management emphasizing environmental factors influencing crop growth and development, interactions with soil organic matter.
Prerequisite: (HORT 100 or SOCR 100) and (SOCR 240).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 421 Crop and Soil Management Systems II Credits: 4 (3-2-0)
Course Description: Principles of crop and soil management with emphasis on soil erosion control, water conservation, and plant-water relationships.
Prerequisite: (HORT 100 or SOCR 100) and (SOCR 240).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 424 Topics in Organic Agriculture Credits: 3 (3-0-0)
Also Offered As: HORT 424.
Course Description: Examination of issues specific to organic food production systems and marketing.
Prerequisite: (AREC 202 or ECON 202) and (AREC 328 and SOCR 240) and (HORT 100 or SOCR 100) and (SOCR 171 or HORT 171).
Registration Information: Credit not allowed for both SOCR 424 and HORT 424.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 430 Applications of Plant Biotechnology Credits: 3 (3-0-0)
Course Description: Current and potential applications of DNA-based biotechnology in crop agriculture and other plant disciplines.
Prerequisite: SOCR 330.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 440 Pedology Credits: 4 (2-3-1)
Course Description: Process of soil formation, characterization, classification of soils; soil survey methods.
Prerequisite: None.
Registration Information: Must register for lecture, laboratory and recitation.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

SOCR 441 Soil Ecology Credits: 3 (2-3-0)
Course Description: An integrative, hands-on experience in the theory and application of ecology principles to the soil environment.
Prerequisite: SOCR 455.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 442 Forest and Range Soils Credits: 3 (3-0-0)
Course Description: Soil and water relationships in forest and rangeland ecosystems; significant properties in their management.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 455 Soil Microbiology Credits: 3 (3-0-0)
Course Description: Microbial activities in agricultural, forest, and grassland soils; in soil-plant relationships; and in maintenance of environmental quality.
Prerequisite: MIP 300 or SOCR 240.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 456 Soil Microbiology Laboratory Credit: 1 (0-3-0)
Course Description: Techniques used in study of ecology and activities of soil microorganisms.
Prerequisite: SOCR 455, may be taken concurrently.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 460 Plant Breeding Credits: 3 (2-0-1)
Also Offered As: HORT 460.
Course Description: Theory and practice of plant breeding using principles of genetics and related sciences.
Prerequisite: BZ 350, may be taken concurrently or LIFE 201A, may be taken concurrently or SOCR 330, may be taken concurrently.
Registration Information: Must register for lecture and recitation. Credit not allowed for both SOCR 460 and HORT 460.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 461 Plant Breeding Laboratory Credit: 1 (0-2-0)
Also Offered As: HORT 461.
Course Description: Techniques and procedures used in public and commercial plant breeding programs.
Prerequisite: SOCR 460, may be taken concurrently or HORT 460, may be taken concurrently.
Registration Information: Credit not allowed for both SOCR 461 and HORT 461.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 467 Soil and Environmental Chemistry Credits: 3 (3-0-0)
Course Description: Fundamental principles of soil chemistry with respect to environmental reactions between soils and other natural materials and priority pollutants.
Prerequisite: CHEM 335.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 470 Soil Physics Credits: 3 (3-0-0)
Course Description: Physical properties of soils emphasizing mechanical composition, moisture, aeration, temperature, and structure related to management, plant growth.
Prerequisite: SOCR 240 or GEOL 232.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 471 Soil Physics Laboratory Credit: 1 (0-3-0)
Course Description: Familiarization of techniques and equipment used in evaluation of soil physical properties.
Prerequisite: SOCR 470, may be taken concurrently.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

SOCR 475 Global Challenges in Plant and Soil Science Credits: 3 (3-0-0)
Course Description: Evaluation of case studies to define problems and develop solutions to address global challenges in plant and soil science.
Prerequisite: (SOCR 240 or GEOL 122) and (LIFE 102 or BZ 120).
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 486 Practicum Credits: Var[1-4] (0-0-0)
Course Description: Directed experiences in the application of soil and crop science principles.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 487 Internship Credits: Var[1-12] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 490 Hydrus-1D Workshop Credit: 1 (0-0-1)
Course Description: Using Hydrus-1D software for flow and transport of water, heat, and chemicals in soil.
Prerequisite: SOCR 470.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 492 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 498 Undergraduate Research Credits: Var[1-6] (0-0-0)
Course Description: Research in soil and crop sciences.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 500 Environmental Measurement Laboratory Credit: 1 (0-2-0)
Course Description: A hands-on instrumentation lab for making environmental, weather, and soil measurements using low-cost microcontroller boards and sensors.
Prerequisite: PH 110.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 522 Micrometeorology Credits: 3 (3-0-0)
Course Description: Microenvironments; physics of environmental variables; plant canopy microclimate; evapotranspiration; surface-atmosphere exchange; instrumentation.
Prerequisite: PH 100 to 499 - at least 3 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 530 Scientific Writing Credit: 1 (1-0-0)
Also Offered As: BSPM 530.
Course Description: Skills necessary to prepare complete scientific journal articles including writing, editing, and literature searching and assessment.
Prerequisite: None.
Registration Information: Credit not allowed for both SOCR 530 and BSPM 530.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 535 Origin and Evolution of Cultivated Plants Credits: 3 (3-0-0)
Course Description: Origin of crops from viewpoints of archaeology, history, botany, and taxonomy, and continued evolution of plants under cultivation.
Prerequisite: SOCR 330.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 540 Soil-Plant-Nutrient Relationships Credits: 3 (3-0-0)
Course Description: Soil and plant factors affecting nutrient uptake, mechanistic models of uptake, availability and functions of essential elements, diagnostic techniques.
Prerequisite: SOCR 350.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 550 Advanced Soil Genesis Credits: 3 (3-0-0)
Course Description: Modern concepts of specific mechanisms involved in formation of genetic soil groups and their relationship to environmental factors.
Prerequisite: SOCR 440.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 567 Environmental Soil Chemistry Credits: 4 (3-0-1)
Course Description: The chemistry of terrestrial environments and the interactions of soil constituents with bacteria, nutrients, and pollutants.
Prerequisite: CHEM 335.
Registration Information: Credit not allowed for SOCR 467 and SOCR 567.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 570 Plant Breeding for Drought Tolerance Credit: 1 (1-0-0)
Course Description: Principles and practices of evaluation, selection and cultivar development for crops in drought-stress environments with an emphasis on agronomic crops.
Prerequisite: SOCR 330 and SOCR 460.
Registration Information: Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 571 Foundations of Soil Science Credits: 2 (2-0-0)
Course Description: Importance of soils in ecology and earth system science with regard to the study and management of the soil resource.
Prerequisite: SOCR 240.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 577 Principles/Components: Precision Agriculture Credits: 3 (2-2-0)
Course Description: Principles and components of precision agriculture, including GPS, GIS, remote sensing, and their applications in soil and crop management.
Prerequisite: SOCR 100 to 499 - at least 3 credits or CS 100 to 499 - at least 3 credits.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both SOCR 577 and SOCR 377. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 620 Modeling Ecosystem Biogeochemistry Credits: 3 (2-3-0)
Course Description: Design and build biogeochemical process and ecosystem models with GUI-based software. Analyze and test models and interpret experimental data.
Prerequisite: (ECOL 505 or LAND 220 or LIFE 220 or SOCR 240) and (MATH 155 or MATH 160).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 640 Crop Physiology Credit: 1 (1-0-0)
Course Description: Developmental, physiological, and biochemical determinants of crop yields as controlled by genetic and environmental effects.
Prerequisite: BZ 440.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 650 Research Proposal Development Credit: 1 (1-0-0)
Course Description: Skills to develop and write an effective scientific research proposal.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 670 Terrestrial Ecosystems Isotope Ecology Credits: 3 (2-2-0)
Course Description: Isotope distribution in biogeochemical cycles, research topics in biosphere-atmosphere interactions; lab experience with isotope techniques.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 675 Presentations for Scientific Audiences Credit: 1 (1-0-0)
Course Description: Organization and presentation of scientific information to audiences in oral and poster format.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 720 Advanced Plant Breeding Credits: 4 (4-0-0)
Course Description: Systems of mating and selection in plants to maximize genetic gain. Evaluation of heterosis, germplasm diversity, strategies, and new technologies.
Prerequisite: (SOCR 460 or HORT 460) and (STAT 100 to 499 - at least 3 credits).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 720A Advanced Plant Breeding: Methods Credits: 2 (2-0-0)
Course Description: Historical perspectives in plant breeding, plant reproduction, genetic gain, breeding and selection systems in self- and cross-pollinated plants.
Prerequisite: (SOCR 460 or HORT 460) and (STAT 100 to 799 - at least 3 credits).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 720B Advanced Plant Breeding: Tools Credits: 2 (2-0-0)
Course Description: Plant breeding strategies, genotype x environment interaction, field plot and genomic tools, breeding for pest resistance, stress tolerance, quality.
Prerequisite: (SOCR 460 or HORT 460) and (STAT 100 to 799 - at least 3 credits).
Restriction: Must not be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 725 Quantitative Inheritance in Plant Breeding Credits: 3 (2-2-0)
Course Description: Quantitative genetic structure of populations, recognition of genetic, environmental variance. Methods of dealing with quantitatively inherited traits.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 730 Topics in Plant Breeding and Genetics Credit: 1 (1-0-0)
Course Description: Current literature regarding mechanisms used for plant improvement.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 731 Plant Breeding Data Management Credit: 1 (1-0-0)
Course Description: Principles and best practices for optimal data management for plant breeding and other data-intensive research programs.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken three credits in computer science.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 740 Plant Molecular Genetics Credits: 3 (3-0-0)
Also Offered As: BSPM 740.
Course Description: Advances in study of organization and function of nuclear and organellar genomes, gene expression in higher plants, and plant-microbe interactions.
Prerequisite: BC 351 and SOCR 330.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both SOCR 740 and BSPM 740.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 755 Advanced Soil Microbiology Credits: 3 (3-0-0)
Course Description: Ecology of soil microorganisms emphasizing population and activity relationships, nitrogen fixation, and microbe-pesticide interactions.
Prerequisite: MIP 624 or SOCR 455.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 760 Advanced Soil Chemistry Credits: 3 (3-0-0)
Course Description: Surface chemistry of soils, electrical double layer models of surface charge and potential, colloid stability, computer modeling of adsorption.
Prerequisite: (CHEM 100 to 481 - at least 4 courses and CS 100 to 481 - at least 1 course) and (MATH 141 or MATH 155 or MATH 160).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 770 Advanced Soil Physics Credits: 4 (3-2-0)
Course Description: Description and analysis of principles of storage and movement of water, solutes, heat, and gases in soils.
Prerequisite: MATH 261 or SOCR 470.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 792 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 796 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

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Want to develop the science, practices, and technology of feeding the world while minimizing the environmental impact of agriculture?

The Major in Soil and Crop Sciences provides hands-on training and expert instruction that will equip students to solve current global challenges in soil, plant, and environmental sciences.

The demand for students with a fundamental understanding of soil and crop sciences combined with technical and data skills has never been greater. Our graduates go on to exciting careers in industry, government, entrepreneurship, and academia, with 84% employed within 6 months of graduation.

We offer six concentrations that enable each student to align their coursework with their specific interests.

Concentrations

- Agronomic Production Management Concentration
- Applied Information Technology Concentration
- International Soil and Crop Sciences Concentration
- Plant Biotechnology, Genetics, and Breeding Concentration
- Soil Ecology Concentration
- Soil Restoration and Conservation Concentration

Students do not have to choose a concentration, but are given the flexibility to tailor the curriculum to their individual interests.

Minors

- Minor in Soil Resources and Conservation
- Minor in Soil Science
- Organic Agriculture Interdisciplinary Minor

Learning Outcomes

Successful students will achieve:

- Technical competencies, including knowledge and understanding of soil and crop science principles, the ability to apply these principles to specific issues, and the ability to synthesize information (both technical and non-technical) to meet identified needs.
- Problem solving skills, such as identifying a problem, collecting data, summarizing information, and drawing conclusions.
- Professional interpersonal and communication skills, such as presenting a topic with logical development, technical understanding, mechanical and technique correctness, and accurate documentation of sources.

Potential Occupations

The demand for students with training in soil and crop sciences has never been greater. The agricultural sector is undergoing rapid change as we enter the era of big data and embrace new technologies.

Requirements Effective Fall 2011

Freshman

		AUCC	Credits
AGRI 192 or 292	Orientation to Agricultural Systems Transfer Seminar		1
Select one from the following:			3
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	
AREC or ECON Social/Behavioral Sciences[1]		3C	
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
PH 110	Physics of Everyday Phenomena (GT-SC2)	3A	3
PHIL 110	Logic and Critical Thinking (GT-AH3)	3B	3
SOCR 100	General Crops		4
Biology Electives[2]			4
	Total Credits		29

Sophomore

CHEM 245	Fundamentals of Organic Chemistry		4
CHEM 246	Fundamentals of Organic Chemistry Laboratory		1
FSHN 125 or 150	Food and Nutrition in Health Survey of Human Nutrition		2-3
LAND 220/LIFE 220	Fundamentals of Ecology (GT-SC2)	3A	3
SOCR 240	Introductory Soil Science		4
SPCM 200	Public Speaking		3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Technical Electives[3]			7-8
	Total Credits		30-32

Junior

Select one group from the following:		4-5
Group A:		
BZ 440	Plant Physiology	
BZ 441	Plant Physiology Laboratory	
Group B:		

GEOL 120	Exploring Earth - Physical Geology (GT-SC2)	3A	
GEOL 121	Introductory Geology Laboratory (GT-SC1)	3A	
JTC 300	Professional and Technical Communication (GT-CO3)	2	3
SOCR 330	Principles of Genetics		3
Soil and Crop Science Electives[4]			6
STAT *** Statistics[5]			3
Technical Electives[3]			10
	Total Credits		29-30

Senior

SOCR 421	Crop and Soil Management Systems II	4A,4B,4C	4
SOCR 486 or 487	Practicum Internship		1
SOCR 492	Seminar	4A	1
Soil and Crop Science Electives[4]			4
Historical Perspectives		3D	3
Technical Electives[3]			8
Electives[6]			8-11
	Total Credits		29-32
	Program Total Credits:		120

1. Select from the list of courses in category 3C in the All-University Core Curriculum (AUCC).
2. Select from the list of biology courses in category 3A after consultation with advisor.
3. Select from the Colleges of Agricultural Sciences, Business, Engineering, Natural Resources, Natural Sciences, and/or Veterinary Medicine and Biomedical Sciences in consultation with advisor.
4. Select course(s) with the SOCR subject code.
5. Select a course with the STAT subject code.
6. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					1
AGRI 192	Orientation to Agricultural Systems				
AGRI 292	Transfer Seminar				
CHEM 107	Fundamentals of Chemistry (GT-SC2)			3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)			3A	1
CO 150	College Composition (GT-CO2)			1A	3
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	X		1B	1
SOCR 100	General Crops		X		4
	Total Credits				16

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
PH 110	Physics of Everyday Phenomena (GT-SC2)			3A	3
PHIL 110	Logic and Critical Thinking (GT-AH3)			3B	3
AREC or ECON AUCC 3C (Social and Behavioral Sciences)					3
Biology Elective (AUCC 3A)		X			4
Chem 107, CHEM 108, CO 150, and AUCC 1B (Quantitative Reasoning) must be completed by the end of Semester 2.		X			
BZ 110, BZ 120, or LIFE 102 are strongly recommended to fulfill Biology Elective requirement.			X		
	Total Credits				13

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 245	Fundamentals of Organic Chemistry				4
CHEM 246	Fundamentals of Organic Chemistry Laboratory				1
SOCR 240	Introductory Soil Science				4
SPCM 200	Public Speaking				3
Technical Elective (See allowable subject codes on Program Requirements Tab)					3
	Total Credits				15

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					2-3
FSHN 125	Food and Nutrition in Health				
FSHN 150	Survey of Human Nutrition				
LAND 220/ LIFE 220	Fundamentals of Ecology (GT-SC2)			3A	3
Arts and Humanities				3B	3
Diversity and Global Awareness				3E	3
Technical Electives (See allowable subject codes on Program Requirements Tab)					4
SOCR 240 is strongly recommended to be completed by the end of Semester 4.			X		
Biology Electives must be completed by the end of Semester 4.		X			
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
JTC 300	Professional and Technical Communication (GT-CO3)			2	3
SOCR 330	Principles of Genetics		X		3
STAT*** Statistics					3
Soil and Crop Sciences Elective					3
Technical Elective (See allowable subject codes on Program Requirements Tab)					3
BZ 120, LIFE 102, or LIFE 103 (if taking BZ 440) must be completed by the end of Semester 5.		X			
	Total Credits				15

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one group from the following:					4-5
Group A:					
BZ 440	Plant Physiology				
BZ 441	Plant Physiology Laboratory				
Group B:					
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)			3A	
GEOL 121	Introductory Geology Laboratory (GT-SC1)			3A	
Soil and Crop Sciences Elective					3
Technical Electives (See allowable subject codes on Program Requirements Tab)					7
SOCR 240 must be completed by the end of Semester 6.		X			
	Total Credits				14

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
SOCR 421	Crop and Soil Management Systems II	X		4A,4B,4C	4
Select one course from the following:					1
SOCR 486	Practicum				
SOCR 487	Internship				

SOCR 492	Seminar		X	4A	1
Historical Perspectives				3D	3
Technical Elective (See allowable subject codes on Program Requirements Tab)					3
Elective					3
	Total Credits				15

Semester 8	**Critical**	**Recommended**	**AUCC**	**Credits**
Soil and Crop Sciences Electives	X			4
Technical Electives (See allowable subject codes on Program Requirements Tab)	X			5
Electives	X			8
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X			
Total Credits				17
Program Total Credits:				120

Major in Soil and Crop Sciences, Agronomic Production Management Concentration

Prepare to launch a career in production agriculture or agribusiness by combining business and economics with technical soil and crop sciences. Students gain hands-on experience with cutting-edge tools such as precision agriculture and biotechnology. Graduates may go on to careers as agronomic business managers in seed, chemical, and fertilizer companies, agricultural cooperatives and agricultural consultant services.

Requirements Effective Fall 2019

Freshman

		AUCC	**Credits**
AGRI 192 or 292	Orientation to Agricultural Systems Transfer Seminar		1
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	3
BZ 120	Principles of Plant Biology (GT-SC1)	3A	4
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
SOCR 100	General Crops		4
Historical Perspectives		3D	3
Electives			4
	Total Credits		30

Sophomore

BZ 223	Plant Identification		3
LAND 220/LIFE 220	Fundamentals of Ecology (GT-SC2)	3A	3
PH 110	Physics of Everyday Phenomena (GT-SC2)	3A	3
PHIL 110	Logic and Critical Thinking (GT-AH3)	3B	3
SOCR 240	Introductory Soil Science		4
SPCM 200	Public Speaking		3
Diversity and Global Awareness		3E	3
Electives			8
	Total Credits		30

Junior

BZ 440	Plant Physiology		3
BZ 441	Plant Physiology Laboratory		2
Select one from the following:			3
BUS 300	Business Writing and Communication (GT-CO3)	2	
CO 300	Writing Arguments (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
SOCR 330	Principles of Genetics		3
SOCR 350	Soil Fertility Management		3
SOCR 351	Soil Fertility Laboratory		1
SOCR 370	Irrigation Principles		2
Select one course from the following:			3
STAT 201	General Statistics		
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
Agricultural and Resource Economics Elective[1]			3
Department Electives (select from list below)			6
Arts and Humanities			3
	Total Credits		32

Senior

BSPM 302	Applied and General Entomology		2
BSPM 303C	Entomology Laboratory: Agricultural		1
BSPM 308	Ecology and Management of Weeds		3
BSPM 361	Elements of Plant Pathology		3
Select two courses from the following:			6-7
SOCR 320	Forage and Pasture Management		
SOCR 322	Principles of Microclimatology		
SOCR 430	Applications of Plant Biotechnology		
SOCR 440	Pedology		
SOCR 455	Soil Microbiology		
SOCR 460/HORT 460	Plant Breeding		
SOCR 371	Irrigation of Field Crops		1
SOCR 377	Geographic Information Systems in Agriculture		3
SOCR 421	Crop and Soil Management Systems II	4A,4B,4C	4
SOCR 486 or 487	Practicum Internship		1
SOCR 492	Seminar	4A	1
Agricultural and Resource Economics Elective[1]			3
Department Electives (select from list below)			0-4
	Total Credits		28-32
	Program Total Credits:		120

Department Electives

Soil and Crop Sciences electives are required for the Agronomic Production Management Concentration. Choose any combination of the following suggested courses to meet this requirement.

Code	Title	Credits
BC 463	Molecular Genetics	3
BSPM 450	Molecular Plant-Microbe Interaction	3
BSPM 451	Integrated Pest Management	3
BZ 346	Population and Evolutionary Genetics	3
BZ 441	Plant Physiology Laboratory	2
BZ 476	Genetics of Model Organisms	3
FSHN 125	Food and Nutrition in Health	2
FSHN 150	Survey of Human Nutrition	3
HORT 401	Medicinal and Value-Added Uses of Plants	3

HORT 424/SOCR 424	Topics in Organic Agriculture	3
HORT 451	Vegetable Crop Management	3
MIP 300	General Microbiology	3
MIP 450	Microbial Genetics	3
SOCR 200	Seed Anatomy and Identification	1
SOCR 201	Seed Development and Metabolism	1
SOCR 300	Seed Purity Analysis	2
SOCR 301	Seed Germination and Viability	2
SOCR 410	Seed Processes: Storage and Deterioration	1
SOCR 412	Seed Processes: Separation and Conditioning	1

[1] Select from department list of Agricultural and Resource Economics Electives.

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					1
AGRI 192	Orientation to Agricultural Systems				
AGRI 292	Transfer Seminar				
BZ 120	Principles of Plant Biology (GT-SC1)			3A	4
CO 150	College Composition (GT-CO2)			1A	3
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	X		1B	1
SOCR 100	General Crops				4
	Total Credits				15

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
AREC 202	Agricultural and Resource Economics (GT-SS1)			3C	3
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)			3A	1
Historical Perspectives				3D	3
Electives					4
CO 150 and AUCC 1B (Quantitative Reasoning) must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 223	Plant Identification				3
LAND 220/ LIFE 220	Fundamentals of Ecology (GT-SC2)			3A	3
PH 110	Physics of Everyday Phenomena (GT-SC2)			3A	3
Diversity and Global Awareness				3E	3
Elective					3
	Total Credits				15

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
PHIL 110	Logic and Critical Thinking (GT-AH3)			3B	3
SOCR 240	Introductory Soil Science	X			4
SPCM 200	Public Speaking				3
Electives					5
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
BUS 300	Business Writing and Communication (GT-CO3)			2	
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	

SOCR 330	Principles of Genetics	X			3
SOCR 350	Soil Fertility Management				3
SOCR 351	Soil Fertility Laboratory				1
Agricultural and Resource Economics Elective (See List on Concentration Requirements Tab)					3
Department Elective (See List on Concentration Requirements Tab)					3
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 440	Plant Physiology				3
BZ 441	Plant Physiology Laboratory				2
SOCR 370	Irrigation Principles				2
Select one course from the following:					3
STAT 201	General Statistics				
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
Arts and Humanities				3B	3
Department Elective (See List on Concentration Requirements Tab)					3
	Total Credits				16
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
BSPM 302	Applied and General Entomology	X			2
BSPM 303C	Entomology Laboratory: Agricultural	X			1
BSPM 308	Ecology and Management of Weeds	X			3
SOCR 371	Irrigation of Field Crops	X			1
SOCR 377	Geographic Information Systems in Agriculture	X			3
SOCR 421	Crop and Soil Management Systems II	X		4A,4B,4C	4
SOCR 492	Seminar	X		4A	1
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BSPM 361	Elements of Plant Pathology	X			3
Select two courses from the following:		X			6-7
SOCR 320	Forage and Pasture Management				
SOCR 322	Principles of Microclimatology				
SOCR 430	Applications of Plant Biotechnology				
SOCR 440	Pedology				
SOCR 455	Soil Microbiology				
SOCR 460/ HORT 460	Plant Breeding				
Select one course from the following:		X			1
SOCR 486	Practicum				
SOCR 487	Internship				
Agricultural and Resource Economics Elective (See List on Concentration Requirements Tab)		X			3
Department Elective (See List on Concentration Requirements Tab)		X			0-4
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				13-17
	Program Total Credits:				120-124

Major in Soil and Crop Sciences, Applied Information Technology Concentration

Big data and precision tools are revolutionizing agriculture. Companies are eager for students that combine a strong background in soil and crop sciences with technical and professional skills. Students in this concentration utilize advanced information technology to drive decision-making in crop production, soil and environmental management, and in developing new technologies. Coursework in computer science, data analytics, and GIS/GPS prepares students for exciting and well-paid careers.

Requirements Effective Fall 2018

Freshman

		AUCC	Credits
AGRI 192 or 292	Orientation to Agricultural Systems Transfer Seminar		1
BUS 150 or CS 110	Business Computing Concepts and Applications Personal Computing		3-4
BZ 120	Principles of Plant Biology (GT-SC1)	3A	4
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	1
CIS 200	Business Information Systems		3
CO 150	College Composition (GT-CO2)	1A	3
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
PH 110	Physics of Everyday Phenomena (GT-SC2)	3A	3
SOCR 100	General Crops		4
SOCR 177	Applied Information Technology in Agriculture		1
	Total Credits		30-31

Sophomore

AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	3
CIS 210	Information Technology in Business		3
CIS 240	Application Design and Development		3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
PHIL 110	Logic and Critical Thinking (GT-AH3)	3B	3
SOCR 240	Introductory Soil Science		4
SPCM 200	Public Speaking		3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
	Total Credits		31

Junior

CO 300 or JTC 300	Writing Arguments (GT-CO3) Professional and Technical Communication (GT-CO3)	2	3
LIFE 220 or 320	Fundamentals of Ecology (GT-SC2) Ecology	3A	3
CIS 320	Project Management for Information Systems		3
FSHN 125 or 150	Food and Nutrition in Health Survey of Human Nutrition		2-3
NR 322	Introduction to Geographic Information Systems		4
NR 323/GR 323	Remote Sensing and Image Interpretation		3
STAT 301 or 307	Introduction to Statistical Methods Introduction to Biostatistics		3

SOCR Electives[1,2]			3
Electives[1]			5-6
	Total Credits		29-31

Senior

AREC 478	Agricultural Policy		3
CIS 355	Business Database Systems		3
NR 423/GR 323	Applications of Global Positioning Systems		1
SOCR 377	Geographic Information Systems in Agriculture	4A,4B,4C	3
SOCR 487	Internship	4A	6
SOCR 492	Seminar	4A,4C	1
SOCR Electives[1,2]			6
Electives[1]			4-7
	Total Credits		27-30
	Program Total Credits:		120

[1] Of the 9 SOCR elective credits and 17-18 general elective credits, 12 must be upper division (300- and 400-level). Select enough elective credits to bring program total to 120, of which 42 must be upper division.

[2] Select from courses with the SOCR subject code, in consultation with advisor.

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					1
AGRI 192	Orientation to Agricultural Systems				
AGRI 292	Transfer Seminar				
Select one course from the following:					3-4
BUS 150	Business Computing Concepts and Applications	X			
CS 110	Personal Computing	X			
BZ 120	Principles of Plant Biology (GT-SC1)	X		3A	4
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	X		1B	1
SOCR 100	General Crops				4
	Total Credits				15

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)			3A	1
CIS 200	Business Information Systems	X			3
CO 150	College Composition (GT-CO2)			1A	3
PH 110	Physics of Everyday Phenomena (GT-SC2)			3A	3
SOCR 177	Applied Information Technology in Agriculture				1
CO 150 and AUCC 1B (Quantitative Reasoning) must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
AREC 202	Agricultural and Resource Economics (GT-SS1)			3C	3
CIS 210	Information Technology in Business	X			3
CIS 240	Application Design and Development				3
Arts and Humanities				3B	3

Diversity and Global Awareness				3E	3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 141	Calculus in Management Sciences (GT-MA1)	X		1B	3
PHIL 110	Logic and Critical Thinking (GT-AH3)			3B	3
SOCR 240	Introductory Soil Science	X			4
SPCM 200	Public Speaking				3
Historical Perspectives				3D	3
	Total Credits				16
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
LIFE 220	Fundamentals of Ecology (GT-SC2)			3A	
LIFE 320	Ecology				
NR 322	Introduction to Geographic Information Systems				4
NR 323/GR 323	Remote Sensing and Image Interpretation				3
Select one course from the following:					3
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
SOCR Elective (See List on Concentration Requirements Tab)					3
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
CIS 320	Project Management for Information Systems				3
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
Select one course from the following:					2-3
FSHN 125	Food and Nutrition in Health				
FSHN 150	Survey of Human Nutrition				
Electives					5-6
AREC 202 must be completed by the end of Semester 6.		X			
	Total Credits				14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
AREC 478	Agricultural Policy				3
CIS 355	Business Database Systems				3
SOCR 377	Geographic Information Systems in Agriculture	X		4A,4B,4C	3
SOCR 492	Seminar	X		4A,4C	1
SOCR Elective (See List on Concentration Requirements Tab)					3
Elective					3
NR 322 must be completed by the end of Semester 7.		X			
	Total Credits				16
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
NR 423	Applications of Global Positioning Systems	X			1
SOCR 487	Internship	X		4A	6
SOCR Elective (See List on Concentration Requirements Tab)		X			3
Electives		X			3-4
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				13
	Program Total Credits:				120

Major in Soil and Crop Sciences, International Soil and Crop Sciences Concentration

Our world has never been more inter-connected. Many exciting opportunities to improve agriculture are spread around the globe. International corporations are seeking graduates with global agricultural literacy. Students in this concentration gain a deep understanding of the diversity of agriculture around the world, and graduate with the knowledge and skills to address global food production challenges.

Requirements Effective Fall 2015

Freshman

		AUCC	Credits
AGRI 192 or 292	Orientation to Agricultural Systems Transfer Seminar		1
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	3
BZ 120	Principles of Plant Biology (GT-SC1)	3A	4
Select one group from the following:			5-9
Group A:			
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	
Group B:			
CHEM 111	General Chemistry I (GT-SC2)	3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	
CHEM 113	General Chemistry II		
CHEM 114	General Chemistry Lab II		
CO 150	College Composition (GT-CO2)	1A	3
FSHN 125 or 150	Food and Nutrition in Health Survey of Human Nutrition		2-3
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
PHIL 110	Logic and Critical Thinking (GT-AH3)	3B	3
SOCR 100	General Crops		4
	Total Credits		28-33

Sophomore

Select one course from the following:			3
ANTH 100	Introductory Cultural Anthropology (GT-SS3)	3C	
SOC 100	General Sociology (GT-SS3)	3C	
SOC 105	Social Problems (GT-SS3)	3C	
AGRI 270/IE 270	World Interdependence-Population and Food (GT-SS3)	3E	3
ANEQ 101	Food Animal Science		4
LAND 220/LIFE 220	Fundamentals of Ecology (GT-SC2)	3A	3
PH 110	Physics of Everyday Phenomena (GT-SC2)	3A	3
POLS 131	Current World Problems (GT-SS1)	3E	3
POLS 232	International Relations (GT-SS1)	3E	3
SOCR 240	Introductory Soil Science		4
SPCM 200	Public Speaking		3
Historical Perspectives		3D	3
	Total Credits		32

Junior

JTC 300 or CO 301B	Professional and Technical Communication (GT-CO3) Writing in the Disciplines: Sciences (GT-CO3)	2	3

POLS 332/ECON 332	International Political Economy		3
Select two courses from the following:			6
ANTH 310	Peoples and Cultures of Africa		
ANTH 312	Modern Indian Culture and Society		
ANTH 314	Southeast Asian Cultures and Societies		
ANTH 446	New Orleans and the Caribbean		
SOC 320	Population-Natural Resources and Environment		
SOC 341	Sociology of Rural Life		
SOC 364	Food, Agriculture and Global Society		
SOC 366	Peoples and Institutions of Latin America		
SOCR 330	Principles of Genetics		3
SOCR 350	Soil Fertility Management		3
SOCR 351	Soil Fertility Laboratory		1
SOCR 370	Irrigation Principles		2
Select one course from the following:			3
STAT 201	General Statistics		
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
Arts and Humanities		3B	3
Electives			1-2
	Total Credits		28-29

Senior

AREC 460	Ag- and Resource-Based Economic Development		3
Select two of the following three groups:			6
Group A:			
BSPM 302	Applied and General Entomology		
BSPM 303C	Entomology Laboratory: Agricultural		
Group B:			
BSPM 308	Ecology and Management of Weeds		
Group C:			
BSPM 361	Elements of Plant Pathology		
BZ 440	Plant Physiology		3
SOCR 371	Irrigation of Field Crops		1
SOCR 421	Crop and Soil Management Systems II	4A,4B,4C	4
SOCR 475	Global Challenges in Plant and Soil Science		3
SOCR 486 or 487	Practicum Internship		1-3
SOCR 492	Seminar	4A	1
Electives[1]			4-10
	Total Credits		26-34
	Program Total Credits:		120-122

[1] Select enough elective credits to bring the program total to 120-122 credits, of which 42 must be upper division.

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					1
AGRI 192	Orientation to Agricultural Systems				
AGRI 292	Transfer Seminar				
BZ 120	Principles of Plant Biology (GT-SC1)	X		3A	4

CO 150	College Composition (GT-CO2)			1A	3
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	X		1B	1
SOCR 100	General Crops	X			4
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
AREC 202	Agricultural and Resource Economics (GT-SS1)			3C	3
Select one group from the following:					5-9
Group A:					
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)			3A	
Group B:					
CHEM 111	General Chemistry I (GT-SC2)	X		3A	
CHEM 112	General Chemistry Lab I (GT-SC1)			3A	
CHEM 113	General Chemistry II				
CHEM 114	General Chemistry Lab II				
Select one course from the following:					2-3
FSHN 125	Food and Nutrition in Health				
FSHN 150	Survey of Human Nutrition				
PHIL 110	Logic and Critical Thinking (GT-AH3)			3B	3
CO 150 and AUCC 1B (Quantitative Reasoning) must be completed by the end of Semester 2.		X			
	Total Credits				13
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
ANTH 100	Introductory Cultural Anthropology (GT-SS3)			3C	
SOC 100	General Sociology (GT-SS3)			3C	
SOC 105	Social Problems (GT-SS3)			3C	
ANEQ 101	Food Animal Science				4
LAND 220/ LIFE 220	Fundamentals of Ecology (GT-SC2)			3A	3
POLS 131	Current World Problems (GT-SS1)			3E	3
SPCM 200	Public Speaking				3
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
AGRI 270/IE 270	World Interdependence-Population and Food (GT-SS3)			3E	3
PH 110	Physics of Everyday Phenomena (GT-SC2)			3A	3
POLS 232	International Relations (GT-SS1)			3E	3
SOCR 240	Introductory Soil Science	X			4
Historical Perspectives				3D	3
BZ 120 must be completed by the end of Semester 4.		X			
	Total Credits				16
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
SOCR 330	Principles of Genetics				3
SOCR 350	Soil Fertility Management				3
SOCR 351	Soil Fertility Laboratory				1
Select one course from the following:					3
JTC 300	Professional and Technical Communication (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	

Arts and Humanities				3B	3
Elective					1-2
AREC 202 and POLS 232 must be completed by the end of Semester 5.		X			
	Total Credits				14
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
POLS 332/ ECON 332	International Political Economy				3
Select two courses from the following:					6
ANTH 310	Peoples and Cultures of Africa				
ANTH 312	Modern Indian Culture and Society				
ANTH 314	Southeast Asian Cultures and Societies				
ANTH 446	New Orleans and the Caribbean				
SOC 320	Population-Natural Resources and Environment				
SOC 341	Sociology of Rural Life				
SOC 364	Food, Agriculture and Global Society				
SOC 366	Peoples and Institutions of Latin America				
Select one course from the following:					3
STAT 201	General Statistics				
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
SOCR 370	Irrigation Principles				2
	Total Credits				14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
SOCR 371	Irrigation of Field Crops	X			1
SOCR 421	Crop and Soil Management Systems II	X		4A,4B,4C	4
Select two groups from the following:		X			6
Group A:					
BSPM 302	Applied and General Entomology				
BSPM 303C	Entomology Laboratory: Agricultural				
Group B:					
BSPM 308	Ecology and Management of Weeds				
Group C:					
BSPM 361	Elements of Plant Pathology				
SOCR 492	Seminar	X		4A	1
Electives					2-5
	Total Credits				17
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
AREC 460	Ag- and Resource-Based Economic Development	X			3
BZ 440	Plant Physiology	X			3
SOCR 475	Global Challenges in Plant and Soil Science	X			3
Select one course from the following:		X			1-3
SOCR 486	Practicum				
SOCR 487	Internship				
Electives		X			2-5
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15-17
	Program Total Credits:				120-122

Major in Soil and Crop Sciences, Plant Biotechnology, Genetics, and Breeding Concentration

Crop improvement, whether through traditional breeding or genetic engineering, is one of the most important drivers of agricultural improvements. New technologies enable us to develop crop varieties that are more nutritious, resilient to climate change, and disease resistant. Career opportunities are available in both the public and private sectors, including basic research, plant breeding, product development, sales, and many other areas.

Requirements Effective Fall 2019

Freshman

		AUCC	Credits
AGRI 192 or 292	Orientation to Agricultural Systems Transfer Seminar		1
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CO 150	College Composition (GT-CO2)	1A	3
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
LIFE 103	Biology of Organisms-Animals and Plants		4
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
MATH 125	Numerical Trigonometry (GT-MA1)	1B	1
MATH 126	Analytic Trigonometry (GT-MA1)	1B	1
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	4
SOCR 100	General Crops		4
	Total Credits		32

Sophomore

Select one from the following:			3
AGRI 116/IE 116	Plants and Civilizations (GT-SS3)	3E	
AGRI 270/IE 270	World Interdependence-Population and Food (GT-SS3)	3E	
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	3
CHEM 245	Fundamentals of Organic Chemistry		4
CHEM 246	Fundamentals of Organic Chemistry Laboratory		1
FSHN 125 or 150	Food and Nutrition in Health Survey of Human Nutrition		2-3
PH 110	Physics of Everyday Phenomena (GT-SC2)	3A	3
PHIL 110	Logic and Critical Thinking (GT-AH3)	3B	3
SOCR 240	Introductory Soil Science		4
SOCR 330	Principles of Genetics		3
SPCM 200	Public Speaking		3
Historical Perspectives		3D	3
	Total Credits		32-33

Junior

BC 351	Principles of Biochemistry		4
BZ 310	Cell Biology		4
JTC 300	Professional and Technical Communication (GT-CO3)	2	3
STAT 301 or 307	Introduction to Statistical Methods Introduction to Biostatistics		3
Select eight credits from the following:			8
BC 463	Molecular Genetics		
BSPM 450	Molecular Plant-Microbe Interaction		

BSPM 451	Integrated Pest Management		
BZ 346	Population and Evolutionary Genetics		
BZ 476	Genetics of Model Organisms		
HORT 401	Medicinal and Value-Added Uses of Plants		
HORT 424/SOCR 424	Topics in Organic Agriculture		
HORT 451	Vegetable Crop Management		
HORT 453	Principles of Fruit Crop Management		
MIP 300	General Microbiology		
MIP 450	Microbial Genetics		
Select two groups from the following:			6
Group A:			
BSPM 302	Applied and General Entomology		
BSPM 303C	Entomology Laboratory: Agricultural		
Group B:			
BSPM 308	Ecology and Management of Weeds		
Group C:			
BSPM 361	Elements of Plant Pathology		
Electives[1]			3
	Total Credits		31

Senior

BZ 440	Plant Physiology		3
SOCR 486	Practicum	4C	1
SOCR 492	Seminar	4A	1
Select one from the following:			3
HORT 460/SOCR 460	Plant Breeding	4A,4B,4C	
SOCR 430	Applications of Plant Biotechnology	4A,4B,4C	
Soil and Crop Electives			8
Select a minimum of 8 credits from the following suggested courses:			
SOCR 344	Crop Development Techniques		
SOCR 350	Soil Fertility Management		
SOCR 370	Irrigation Principles		
SOCR 377	Geographic Information Systems in Agriculture		
SOCR 410	Seed Processes: Storage and Deterioration		
SOCR 412	Seed Processes: Separation and Conditioning		
SOCR 421	Crop and Soil Management Systems II		
SOCR 455	Soil Microbiology		
SOCR 475	Global Challenges in Plant and Soil Science		
SOCR 495	Independent Study		
Arts and Humanities		3B	3
Electives[1]			5-6
	Total Credits		24-25
	Program Total Credits:		120

[1] Select enough elective credits to bring the program total to 120, with a minimum of 42 upper division credits.

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					1
AGRI 192	Orientation to Agricultural Systems				
AGRI 292	Transfer Seminar				

CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)			3A	1
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	4
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	X		1B	1
MATH 125	Numerical Trigonometry (GT-MA1)	X		1B	1
SOCR 100	General Crops				4
	Total Credits				16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II	X			3
CHEM 114	General Chemistry Lab II				1
CO 150	College Composition (GT-CO2)	X		1A	3
LIFE 103	Biology of Organisms-Animals and Plants	X			4
MATH 126	Analytic Trigonometry (GT-MA1)			1B	1
MATH 155	Calculus for Biological Scientists I (GT-MA1)			1B	4
AUCC 1B (Quantitative Reasoning) must be completed by the end of Semester 2.		X			
	Total Credits				16
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
AREC 202	Agricultural and Resource Economics (GT-SS1)			3C	3
CHEM 245	Fundamentals of Organic Chemistry				4
CHEM 246	Fundamentals of Organic Chemistry Laboratory				1
PH 110	Physics of Everyday Phenomena (GT-SC2)			3A	3
SOCR 240	Introductory Soil Science				4
LIFE 102 must be completed by the end of Semester 3.		X			
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
AGRI 116/ IE 116	Plants and Civilizations (GT-SS3)			3E	
AGRI 270/ IE 270	World Interdependence-Population and Food (GT-SS3)			3E	
Select one course from the following:					2-3
FSHN 125	Food and Nutrition in Health				
FSHN 150	Survey of Human Nutrition				
PHIL 110	Logic and Critical Thinking (GT-AH3)			3B	3
SOCR 330	Principles of Genetics				3
SPCM 200	Public Speaking				3
Historical Perspectives				3D	3
CHEM 245 must be completed by the end of Semester 4.		X			
	Total Credits				17
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 351	Principles of Biochemistry				4
Select two groups from the following:					6
Group A:					
BSPM 302	Applied and General Entomology				
BSPM 303C	Entomology Laboratory: Agricultural				
Group B:					
BSPM 308	Ecology and Management of Weeds				
Group C:					
BSPM 361	Elements of Plant Pathology				

Elective					3
Genetics or Horticulture Electives (See Department List on Concentration Requirements tab)					4
	Total Credits				17
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 310	Cell Biology				4
JTC 300	Professional and Technical Communication (GT-CO3)			2	3
Select one course from the following:					3
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
Genetics or Horticulture Electives (See Department List on Concentration Requirements tab)					4
SOCR 330 must be completed by the end of Semester 6.		X			
	Total Credits				14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
SOCR 430	Applications of Plant Biotechnology			4A,4B,4C	
SOCR 460/ HORT 460	Plant Breeding			4A,4B,4C	
SOCR 492	Seminar	X		4A	1
Arts and Humanities				3B	3
Soil and Crop Electives (See Department List on Concentration Requirements tab)					5
Elective					3
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 440	Plant Physiology	X			3
SOCR 486	Practicum	X		4C	1
Soil and Crop Elective (See Department List on Concentration Requirements tab)		X			3
Elective		X			3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				10
	Program Total Credits:				120

Major in Soil and Crop Sciences, Soil Ecology Concentration

Soils are the most complex and diverse habitats for life on earth. Soil health is critical to human well-being. The Soil Ecology concentration emphasizes the interdisciplinary nature of soils through the study of soil organisms, their interactions with each other, and the soil's physical and chemical environment. These interactions affect the cycling of elements - including carbon and nitrogen, release (or consumption) of greenhouse gases, water quality, soil formation and structure, and plant productivity. Career opportunities exist in academia, state and federal health and environmental agencies, natural resource agencies (water and soil), state and national parks services, private industries, and in the rapidly growing environmental consulting profession.

Requirements Effective Fall 2018

Freshman

		AUCC	Credits
AGRI 192	Orientation to Agricultural Systems		1
Select one from the following:			3
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	
AREC 240/ECON 240	Issues in Environmental Economics (GT-SS1)	3C	
CHEM 111	General Chemistry I (GT-SC2)	3A	4

CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CO 150	College Composition (GT-CO2)	1A	3
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	4
PHIL 110	Logic and Critical Thinking (GT-AH3)	3B	3
SOCR 100	General Crops		4
	Total Credits		31

Sophomore

CHEM 245	Fundamentals of Organic Chemistry		4
CHEM 246	Fundamentals of Organic Chemistry Laboratory		1
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)	3A	3
GEOL 121	Introductory Geology Laboratory (GT-SC1)	3A	1
LAND 220/LIFE 220 or LIFE 320	Fundamentals of Ecology (GT-SC2) Ecology	3A	3
PH 121	General Physics I (GT-SC1)	3A	5
SOCR 240	Introductory Soil Science		4
SPCM 200	Public Speaking		3
Select one course from the following:			3
STAT 201	General Statistics		
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
Arts and Humanities		3B	3
	Total Credits		30

Junior

BC 351	Principles of Biochemistry		4
CO 301B or JTC 300	Writing in the Disciplines: Sciences (GT-CO3) Professional and Technical Communication (GT-CO3)	2	3
Select one course from the following:			3-4
NR 319	Geospatial Applications in Natural Resources		
NR 322	Introduction to Geographic Information Systems		
SOCR 377	Geographic Information Systems in Agriculture		
SOCR 322	Principles of Microclimatology		3
SOCR 440	Pedology		4
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Technical Electives (select from list below)			6
	Total Credits		29-30

Senior

SOCR 421	Crop and Soil Management Systems II	4A,4B,4C	4
SOCR 455	Soil Microbiology		3
SOCR 456	Soil Microbiology Laboratory		1
SOCR 470	Soil Physics		3
SOCR 471	Soil Physics Laboratory		1
SOCR 486 or 487	Practicum Internship		1-3
SOCR 492	Seminar	4A	1

Technical Electives (select from list below)	10-13
Total Credits	29-30
Program Total Credits:	120

Soil Ecology Technical Electives Department List

Code	Title	Credits
Group 1: Ecology Technical Electives		
BSPM 308	Ecology and Management of Weeds	3
BSPM 526/BZ 526	Evolutionary Ecology	3
BSPM 570	Chemical Ecology	3
BSPM 571	Techniques in Chemical Ecology	1
BZ 348/MATH 348	Theory of Population and Evolutionary Ecology	4
BZ 353/NR 353	Global Change Ecology, Impacts and Mitigation	3
BZ 450	Plant Ecology	4
BZ 471	Stream Biology and Ecology	3
BZ 561	Landscape Ecology	3
F 311	Forest Ecology	3
FW 555	Conservation Biology	3
MIP 432/ESS 432	Microbial Ecology	3
MIP 433/ESS 433	Microbial Ecology Laboratory	1
NR 220	Natural Resource Ecology and Measurements	5
RS 478	Ecological Restoration	3
Group 2: Specialization Technical Electives		
BSPM 424/BZ 424	Principles of Systematic Zoology	3
BZ 212	Animal Biology-Invertebrates	4
BZ 223	Plant Identification	3
BZ 333	Introductory Mycology	4
MIP 300	General Microbiology	3
MIP 302	General Microbiology Laboratory	2
MIP 350	Microbial Diversity	3
MIP 450	Microbial Genetics	3
RS 420	Grass Taxonomy	3
SOCR 330	Principles of Genetics	3
SOCR 341	Microbiology for Sustainable Agriculture	1
SOCR 350	Soil Fertility Management	3
SOCR 351	Soil Fertility Laboratory	1

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
AGRI 192	Orientation to Agricultural Systems				1
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)			3A	1
CO 150	College Composition (GT-CO2)			1A	3
MATH 155	Calculus for Biological Scientists I (GT-MA1)	X		1B	4
SOCR 100	General Crops	X			4
	Total Credits				17

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
AREC 202	Agricultural and Resource Economics (GT-SS1)			3C	
AREC 240/ ECON 240	Issues in Environmental Economics (GT-SS1)			3C	
CHEM 113	General Chemistry II	X			3
CHEM 114	General Chemistry Lab II				1
LIFE 102	Attributes of Living Systems (GT-SC1)			3A	4
PHIL 110	Logic and Critical Thinking (GT-AH3)			3B	3
CO 150 and AUCC 1B (Quantitative Reasoning) must be completed by the end of Semester 2.		X			
	Total Credits				14

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 245	Fundamentals of Organic Chemistry				4
CHEM 246	Fundamentals of Organic Chemistry Laboratory				1
Select one course from the following:					3
LAND 220/ LIFE 220	Fundamentals of Ecology (GT-SC2)			3A	
LIFE 320	Ecology				

SOCR 240	Introductory Soil Science	X			4
Arts and Humanities				3B	3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)			3A	3
GEOL 121	Introductory Geology Laboratory (GT-SC1)			3A	1
PH 121	General Physics I (GT-SC1)			3A	5
SPCM 200	Public Speaking				3
Select one course from the following:					3
STAT 201	General Statistics				
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
CHEM 245 must be completed by the end of Semester 4.		X			
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 351	Principles of Biochemistry				4
SOCR 440	Pedology				4
Select one course from the following:					3-4
NR 319	Geospatial Applications in Natural Resources				
NR 322	Introduction to Geographic Information Systems				
SOCR 377	Geographic Information Systems in Agriculture				
Diversity and Global Awareness				3E	3
	Total Credits				14
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
SOCR 322	Principles of Microclimatology				3
Historical Perspectives				3D	3
Technical Electives (See Department List on Concentration Requirements tab)					6
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
SOCR 421	Crop and Soil Management Systems II	X		4A,4B,4C	4
SOCR 455	Soil Microbiology	X			3
SOCR 456	Soil Microbiology Laboratory	X			1
SOCR 470	Soil Physics	X			3
SOCR 471	Soil Physics Laboratory	X			1
SOCR 492	Seminar	X		4A	1
Technical Elective (See Department List on Concentration Requirements tab)					3
	Total Credits				16
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
SOCR 441	Soil Ecology	X		4C	3
Select one course from the following:		X			1
SOCR 486	Practicum				
SOCR 487	Internship				
Technical Electives (See Department List on Concentration Requirements tab)		X			10

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X	
Total Credits		14
Program Total Credits:		120

Major in Soil and Crop Sciences, Soil Restoration and Conservation Concentration

Globally, about half of our soils are degraded from erosion or pollution. Want to help restore our soils and prevent further degradation? This concentration focuses on the application of resource management techniques to basic soil and crop science principles. Exciting careers in industry, consulting, non-profit organizations, government, and research await.

Requirements Effective Fall 2015

Freshman

		AUCC	Credits
AGRI 192 or 292	Orientation to Agricultural Systems Transfer Seminar		1
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	3
BZ 120	Principles of Plant Biology (GT-SC1)	3A	4
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CO 150	College Composition (GT-CO2)	1A	3
LAND 220/LIFE 220	Fundamentals of Ecology (GT-SC2)	3A	3
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
SOCR 100	General Crops		4
	Total Credits		30

Sophomore

BSPM 308	Ecology and Management of Weeds		3
CHEM 245	Fundamentals of Organic Chemistry		4
PH 110	Physics of Everyday Phenomena (GT-SC2)	3A	3
PHIL 110	Logic and Critical Thinking (GT-AH3)	3B	3
SOCR 240	Introductory Soil Science		4
SPCM 200	Public Speaking		3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
	Total Credits		29

Junior

CHEM 334	Quantitative Analysis Laboratory		1
CHEM 335	Introduction to Analytical Chemistry		3
GR 304/WR 304	Sustainable Watersheds	3A	3
JTC 300	Professional and Technical Communication (GT-CO3)	2	3
SOCR 320	Forage and Pasture Management		3
SOCR 350	Soil Fertility Management		3
SOCR 351	Soil Fertility Laboratory		1
SOCR 370	Irrigation Principles		2

SOCR 377	Geographic Information Systems in Agriculture		3
SOCR 440	Pedology		4
SOCR 486 or 487	Practicum Internship		1-3
Select one course from the following:			3
STAT 201	General Statistics		
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
	Total Credits		30-32

Senior

BZ 440	Plant Physiology		3
RS 478	Ecological Restoration		3
SOCR 371	Irrigation of Field Crops		1
SOCR 421	Crop and Soil Management Systems II	4A,4B,4C	4
SOCR 455	Soil Microbiology		3
SOCR 467	Soil and Environmental Chemistry		3
SOCR 470	Soil Physics		3
SOCR 471	Soil Physics Laboratory		1
SOCR 492	Seminar	4A	1
Electives[1]			7-9
	Total Credits		29-31
	Program Total Credits:		120

[1] Select from list of department electives.

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					1
AGRI 192	Orientation to Agricultural Systems				
AGRI 292	Transfer Seminar				
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)			3A	1
LAND 220/ LIFE 220	Fundamentals of Ecology (GT-SC2)	X		3A	3
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	X		1B	1
SOCR 100	General Crops	X			4
	Total Credits				16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
AREC 202	Agricultural and Resource Economics (GT-SS1)			3C	3
BZ 120	Principles of Plant Biology (GT-SC1)	X		3A	4
CHEM 113	General Chemistry II	X			3
CHEM 114	General Chemistry Lab II				1
CO 150	College Composition (GT-CO2)	X		1A	3
AUCC 1B (Quantitative Reasoning) must be completed by the end of Semester 2.		X			
	Total Credits				14

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
BSPM 308	Ecology and Management of Weeds				3

CHEM 245	Fundamentals of Organic Chemistry				4
SPCM 200	Public Speaking				3
Arts and Humanities				3B	3
	Total Credits				13
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
PH 110	Physics of Everyday Phenomena (GT-SC2)			3A	3
PHIL 110	Logic and Critical Thinking (GT-AH3)			3B	3
SOCR 240	Introductory Soil Science		X		4
Diversity and Global Awareness				3E	3
Historical Perspectives				3D	3
	Total Credits				16
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
JTC 300	Professional and Technical Communication (GT-CO3)			2	3
SOCR 350	Soil Fertility Management				3
SOCR 351	Soil Fertility Laboratory				1
SOCR 377	Geographic Information Systems in Agriculture				3
SOCR 440	Pedology				4
	Total Credits				14
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 334	Quantitative Analysis Laboratory				1
CHEM 335	Introduction to Analytical Chemistry				3
GR 304/WR 304	Sustainable Watersheds			3A	3
SOCR 320	Forage and Pasture Management				3
SOCR 370	Irrigation Principles				2
Select one course from the following:					1-3
SOCR 486	Practicum				
SOCR 487	Internship				
Select one course from the following:					3
STAT 201	General Statistics				
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
	Total Credits				16
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
SOCR 371	Irrigation of Field Crops	X			1
SOCR 421	Crop and Soil Management Systems II	X		4A,4B,4C	4
SOCR 455	Soil Microbiology	X			3
SOCR 470	Soil Physics	X			3
SOCR 471	Soil Physics Laboratory	X			1
SOCR 492	Seminar	X		4A	1
Electives					4
LAND 220 / LIFE 220 must be completed by the end of Semester 7.		X			
	Total Credits				17
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 440	Plant Physiology	X			3
RS 478	Ecological Restoration	X			3
SOCR 467	Soil and Environmental Chemistry	X			3
Electives		X			5

The benchmark courses for the 8th semester are the remaining courses in the entire program of study	X	
Total Credits		14
Program Total Credits:		120

Minor in Soil Resources and Conservation

Interested in conserving and restoring soil resources? The minor in Soil Resources and Conservation provides students the opportunity to complement their major by gaining the knowledge and tools to help conserve this most precious resource. Soil erosion and degradation are one of the most serious environmental challenges. At the same time, opportunities to reverse degradation and restore soils while sequestering carbon have never been greater.

Requirements Effective Fall 2012

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Lower Division		
SOCR 240	Introductory Soil Science	4
Upper Division		
BZ 440	Plant Physiology	3
GEOL 454	Geomorphology	4
Select six credits from the following:		6
SOCR 320	Forage and Pasture Management	
SOCR 370	Irrigation Principles	
SOCR 371	Irrigation of Field Crops	
SOCR 455	Soil Microbiology	
SOCR 350	Soil Fertility Management	3
SOCR 351	Soil Fertility Laboratory	1
SOCR 421	Crop and Soil Management Systems II	4
SOCR 440	Pedology	4
Select one of the following groups:		3-4
Group A:		
SOCR 467	Soil and Environmental Chemistry	
Group B:		
SOCR 470	Soil Physics	
SOCR 471	Soil Physics Laboratory	
Program Total Credits:		32-33

Minor in Soil Science

Soils are the most amazing habitats for life on earth. In each handful of soil, there are thousands of different types of microbes and a whole soil food web. These organisms interact within the soil to decompose plant materials and cycle nutrients that are critical to life. Humans depend on soils for food production, clear water, and as the foundation for our living world. In recent years, new technologies have opened up this exciting frontier of science.

The purpose of the minor in Soil Science is to combine the fundamental sub-disciplines of soil science to provide non-majors the essential elements of soil science.

Requirements Effective Fall 2014

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Required Courses		
SOCR 240	Introductory Soil Science	4
SOCR 440	Pedology	4
SOCR 455	Soil Microbiology	3
SOCR 470	Soil Physics	3
Selected Courses		
Select a minimum of 7 credits from the following courses:		7
SOCR 322	Principles of Microclimatology	
SOCR 350	Soil Fertility Management	
SOCR 351	Soil Fertility Laboratory	
SOCR 370	Irrigation Principles	
SOCR 371	Irrigation of Field Crops	
SOCR 400	Soils and Global Change: Science and Impacts	
SOCR 441	Soil Ecology	
SOCR 456	Soil Microbiology Laboratory	
SOCR 467	Soil and Environmental Chemistry	
SOCR 471	Soil Physics Laboratory	
SOCR 490	Hydrus-1D Workshop	
SOCR 522	Micrometeorology	
Program Total Credits:		21

College of Business

Office in Rockwell Hall North Lobby
(970) 491-6471
biz.colostate.edu (http://biz.colostate.edu)

Professor Beth Walker, Dean
Professor Ken Manning, Associate Dean
Professor Paul Mallette, Associate Dean
Professor Sanjay Ramchander, Associate Dean

Undergraduate Programs

The College of Business is accredited by the AACSB, the Association to Advance Collegiate Schools of Business. The undergraduate programs of study provide functional business education in Accounting, Finance, Financial Planning, Information Systems, Marketing, Organization and Innovation Management, Human Resource Management, Supply Chain Management, and Real Estate. The skills acquired help prepare students for entry-level positions in a wide range of both private and public enterprises and provide a solid foundation for further academic study. The program follows a philosophy of linking theory with practical application.

Undergraduate Majors

Major in Business Administration

- Accounting Concentration
- Finance Concentration
- Financial Planning Concentration
- Human Resource Management Concentration
- Information Systems Concentration
- International Business Concentration (second concentration)
- Marketing Concentration
- Organization and Innovation Management Concentration
- Real Estate Concentration
- Supply Chain Management Concentration

Undergraduate Minors

- Business Administration
- Entrepreneurship and Innovation
- Real Estate

Undergraduate Certificates

- Applied Management Accounting for Decision Making
- Business-To-Business-Selling
- Customer Experience Management
- Entrepreneurship
- Financial Accounting and Reporting
- Information Technology for Business Professionals
- International Business
- Leadership in Organizations
- Managing Human Resources
- Market Research and Data Analytics
- Marketing Communication and Branding
- Operations, Logistics and Supply Management
- Strategic Marketing

Education Abroad

Education abroad programs are available to students in the College of Business. Because the knowledge of other cultures is valuable in understanding our own, students are strongly encouraged to take a summer or semester to study, intern, or complete a service learning program outside the United States as part of their overall program at CSU. Students interested in education abroad should plan far in advance by discussing opportunities with their academic advisor and by visiting the Office of International Programs (http://international.colostate.edu) in Laurel Hall.

Graduate Programs

The College of Business is accredited by the AACSB, the Association to Advance Collegiate Schools of Business. Graduate Programs offers a Master of Business Administration degree and three MBA specializations: Global Social and Sustainable Enterprise, Impact, and Marketing Data Analytics. Graduate Programs also offer a Master of Accountancy (M.Acc.) (http://catalog.colostate.edu/general-catalog/colleges/business/accounting/#graduatetext), Master of Computer Information Systems (M.C.I.S.), and Master of Finance (MFIN). The college also offers multiple platforms for the M.B.A.: on-campus/evening M.B.A., an online M.B.A., and a blended (online/face-to-face) Executive M.B.A. taught in Denver. In addition to the degree programs, several certificates are offered by Graduate Programs and allow students to delve deeper into specific content areas.

Certificates

- Graduate Certificate in Accounting Ethics and Auditing (http://catalog.colostate.edu/general-catalog/colleges/business/accounting/graduate-certificate-accounting-ethics-auditing)
- Graduate Certificate in Applied Finance
- Graduate Certificate in Business Information Systems
- Graduate Certificate in Business Intelligence
- Graduate Certificate in Business Management
- Graduate Certificate in IT Project Management
- Graduate Certificate in Marketing Management

College-Wide Master's Programs

- Master of Business Administration
- Master of Business Administration, Global Social and Sustainable Enterprise Specialization
- Master of Business Administration, Impact Specialization, Plan C
- Master of Business Administration, Marketing Data Analytics Specialization
- Master of Business Administration, Early Career Track Specialization (No new students are being accepted into this specialization.)
- Master of Science in Business Administration, Plan A, Computer Information Systems Specialization (No new students are being accepted into this specialization.)
- Master of Science in Business Administration, Plan B, Computer Information Systems Specialization (No new students are being accepted into this specialization.)

Department-Based Master's Program

- Master of Accountancy, Plan C (M.Acc.)
- Master of Accountancy, Plan C, Data Analytics and Systems Specialization
- Master of Accountancy, Plan C, Financial Analysis, Auditing and Reporting Specialization
- Master of Accountancy, Plan C, Taxation Specialization

- Master of Computer Information Systems (M.C.I.S)
- Master of Finance (M.Fin)

Students interested in business should refer to the College of Business (http://biz.colostate.edu).

For a complete list of departmental offerings (including certificates), see individual department catalog pages.

Department of Accounting

Office in Rockwell Hall, Room 205
(970) 491-5102
biz.colostate.edu/accounting (http://biz.colostate.edu/accounting)

Professor Lisa Kutcher, Department Chair

Undergraduate
Major in Business Administration

- Accounting Concentration

Undergraduate Certificates

- Applied Management Accounting for Decision Making
- Financial Accounting and Reporting

Graduate

Certificate

- Accounting Ethics and Auditing (No new students are being accepted into this certificate.)

Master's Programs

- Master of Accountancy, Plan C, (M.Acc.)
- Master of Accountancy, Plan C, Data Analytics and Systems Specialization
- Master of Accountancy, Plan C, Financial Analysis, Auditing, and Reporting Specialization
- Master of Accountancy, Plan C, Taxation Specialization

Courses
Accounting (ACT)

ACT 205 Fundamentals of Accounting Credits: 3 (3-0-0)
Course Description: Understanding of financial statements to support financial and managerial decision making.
Prerequisite: None.
Registration Information: For nonbusiness majors. Sections may be offered: Online. Credit not allowed for both ACT 205 and ACT 210.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 210 Introduction to Financial Accounting Credits: 3 (3-0-0)
Course Description: Use of accounting information by decision makers; development of the basic accounting model, and issues concerning income and cash flows.
Prerequisite: None.
Registration Information: Credit not allowed for both ACT 210 and ACT 205.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 211 Accounting Professional Skills Credit: 1 (1-0-0)
Course Description: Survey of accounting profession career options, certifications, and professional skills.
Prerequisite: ACT 210.
Registration Information: Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 220 Introduction to Managerial Accounting Credits: 3 (3-0-0)
Course Description: Use of accounting information in internal decision making.
Prerequisite: ACT 210.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 311 Intermediate Accounting I Credits: 4 (3-0-1)
Course Description: Preparation and analysis of financial statements under U.S. generally accepted accounting principles (GAAP); accounting for revenue and assets.
Prerequisite: (ACT 210 with a minimum grade of B-) and (ACT 211, may be taken concurrently and ACT 220 with a minimum grade of B-).
Registration Information: Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 312 Intermediate Accounting II Credits: 3 (3-0-0)
Course Description: Equity structure of corporations; analysis and interpretation of accounting data.
Prerequisite: ACT 311 with a minimum grade of C.
Registration Information: Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 321 Cost Management Credits: 3 (3-0-0)
Course Description: Utilizing budgetary and cost accounting information for planning, controlling, and decision-making.
Prerequisite: ACT 220.
Registration Information: Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 330 Introduction to Taxation Credits: 3 (3-0-0)
Course Description: Introduction to U.S. taxation, with emphasis on federal income tax; impact of taxation on business decisions.
Prerequisite: ACT 220.
Registration Information: Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 350 Accounting Information Systems Credits: 3 (3-0-0)
Course Description: Design, administration and control of accounting information systems; use of accounting systems software.
Prerequisite: ACT 220 and ACT 321.
Registration Information: Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 411 Advanced Accounting Credits: 3 (3-0-0)
Course Description: Accounting for branches and subsidiaries, partnerships, and business combinations. Accounting for multi-national business transactions.
Prerequisite: ACT 312.
Registration Information: Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 441 Auditing Practices Credits: 3 (3-0-0)
Course Description: Environment, professional standards, and practices involved in auditing financial statements and performance of other assurance services.
Prerequisite: ACT 312 and ACT 350.
Registration Information: Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 487 Internship Credits: Var[1-6] (0-0-0)
Course Description: Supervised work experience in public, industry, not-for-profit, or governmental accounting.
Prerequisite: ACT 311 and ACT 312 or ACT 311 and ACT 321 or ACT 311 and ACT 330 or ACT 311 and ACT 350 or ACT 312 and ACT 321 or ACT 312 and ACT 330 or ACT 312 and ACT 350 or ACT 321 and ACT 330 or ACT 321 and ACT 350 or ACT 330 and ACT 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ACT 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 498 Research Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

ACT 540 Professional Ethics and Responsibilities Credits: 3 (3-0-0)
Course Description: Ethical practice of professional accounting.
Prerequisite: ACT 311.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 541 Forensic Accounting and Fraud Auditing Credits: 3 (3-0-0)
Course Description: Professional practices for addressing the related areas of forensic accounting and fraud.
Prerequisite: ACT 441.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 550 Accounting Information Technologies Credits: 3 (3-0-0)
Course Description: Best practices for information technologies used in accounting systems worldwide.
Prerequisite: ACT 350.
Registration Information: Sections may be offered: Online. Consent of instructor can substitute for ACT 350 for a student with substantial and relevant work experience.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 561 Legal and Regulatory Issues in Accounting Credits: 3 (3-0-0)
Course Description: Contracts, ownership, bankruptcy (debtor/creditor relationship), formation of business entities, regulation of accounting profession.
Prerequisite: BUS 205 or BUS 260.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 570 Government and Nonprofit Credits: 3 (3-0-0)
Course Description: Theory and practical application of accounting principles and auditing standards to governmental entities and not-for-profit organizations.
Prerequisite: ACT 441, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 575 Oil and Gas Accounting Credits: 3 (3-0-0)
Course Description: Specialized financial accounting procedures related to the oil and gas industry.
Prerequisite: ACT 311.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 601A Professional Practice: Taxation Credits: 3 (3-0-0)
Course Description: Management of professional tax practice; professional ethics and regulation; research techniques.
Prerequisite: ACT 330.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online, and in 8 week format.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 601B Professional Practice: Accounting Credits: 3 (3-0-0)
Course Description: Management of professional accounting practice; professional ethics and regulation; and research techniques.
Prerequisite: ACT 441.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online, in 8 week format.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 605 Accounting for Sustainable Enterprises Credits: 3 (3-0-0)
Course Description: A survey of financial, managerial, and sustainability accounting systems and reports.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Not available to Master of Accountancy students.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 612 Issues in Financial Reporting and Auditing Credits: 3 (3-0-0)
Course Description: Contemporary and emerging issues at the intersection of financial reporting and auditing.
Prerequisite: ACT 312.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 614 Financial Statement Analysis and Valuation Credits: 3 (3-0-0)
Course Description: Tools and techniques of financial statement analysis and application to equity valuation.
Prerequisite: ACT 312.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 631 Corporate Taxation Credits: 3 (3-0-0)
Course Description: Federal income tax principles pertaining to formation and operation of corporate entities.
Prerequisite: ACT 330.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 633 Flow-Through Entities Credits: 3 (3-0-0)
Course Description: Federal income tax principles and problems pertaining to flow-through entities.
Prerequisite: ACT 330.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 635 State and Local Taxation Credits: 3 (3-0-0)
Course Description: Tax planning and compliance issues for entities doing business in multi-jurisdictional locales.
Prerequisite: ACT 330.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 636 Taxation of Corporations and Shareholders Credits: 3 (3-0-0)
Course Description: Federal income tax principles and problems relating to reorganization, consolidation, and termination of corporations.
Prerequisite: ACT 330.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 639 Special Topics in Taxation Credits: 3 (3-0-0)
Course Description: Taxation of not-for-profit entities; international tax issues; other contemporary topics.
Prerequisite: ACT 330.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 641 Information Systems Audit and Control Credits: 3 (3-0-0)
Course Description: Exploration of organizations' information systems, and the considerations involved in controlling and auditing these systems. Topics range from the general, such as organizational governance, to the very technical, for example, data encryption. Addresses material found on the CPA exam and the Certified Information Systems Auditor (CISA) exam.
Prerequisite: ACT 350 and ACT 441.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ACT 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Graduate Certificate in Accounting Ethics and Auditing

No new students are being accepted into this certificate.

Completion of the certificate provides increased expertise in accounting ethics, forensic accounting, fraud auditing, and leading best practice information technologies used in organizational accounting systems worldwide. The graduate coursework is designed in part to help individuals meet professional licensure requirements in Colorado and certain other states.

Effective Fall 2015

Additional coursework may be required due to prerequisites.

Code	Title	Credits
ACT 540	Professional Ethics and Responsibilities	3
ACT 541	Forensic Accounting and Fraud Auditing	3
ACT 550	Accounting Information Technologies	3
Program Total Credits:		9

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Major in Business Administration, Accounting Concentration

This program is designed to give students an understanding of the theory and practice of the major fields of accounting: financial accounting and reporting, managerial accounting, taxation, accounting information systems, and auditing. Accounting is an ever-evolving field with growing importance in most businesses and not-for-profit organizations. Today's accountants are important members of their organizations, using their business expertise, communication, interpersonal skills, and accounting knowledge to improve organizational decision making. Accountants play a key role in the continued growth of a prosperous society.

Accountants must be able to explain and analyze business data, excel in communications, teamwork, leadership, and possess technical and computer-based skills. The accountant in an increasingly global society is rapidly becoming both an information specialist as well as a business advisor. Accountants also act as the moral and ethical compass for business practices.

The undergraduate accounting curriculum at CSU satisfies current educational requirements to sit for the Certified Public Accountant (CPA) exam in the state of Colorado. Additional coursework is required to become a Certified Public Accountant (CPA) in the state of Colorado. (Requirements to become a CPA are unique to each state and students should be aware of requirements of the state in which they intend to practice.)

The accounting curriculum is designed to meet the needs of those who seek professional education and training to practice as public, private, not-for-profit and governmental accountants, or those who expect to work in business managerial positions requiring an understanding of fundamental accounting concepts and principles. The curriculum offers considerable flexibility in designing a program of study that will meet a variety of career interests. In addition to the All-University Core Curriculum and the College of Business Core Curriculum, students are particularly encouraged to take additional course work in both finance and computer information systems.

Learning Outcomes

Students will demonstrate:

- Knowledge of the principles of auditing and attestation
- Knowledge of the fundamental concepts of financial accounting and reporting
- Knowledge of the fundamental concepts of managerial accounting and decision making
- Knowledge of taxation (federal, state) and its application to business decisions
- Knowledge of business ethics and principles of social responsibility
- Knowledge of business organization, processes, and understanding of accounting-based systems integration issues

Potential Occupations

Some examples include, but are not limited to: accountant or auditor of publicly or privately held companies, government agencies, or not-for-profit organizations; consultant in firms providing professional advisory services; public, private, or personal tax specialist; financial analyst; forensics accountant; internal auditor; information technology auditor.

Requirements

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Effective Fall 2019

Freshman

		AUCC	Credits
BUS 100	Introduction to Business		1
BUS 201[1]	Foundations of Sustainable Enterprise		1

BUS 220[1]	Ethics in Contemporary Organizations (GT-AH3)	3B	3
CO 150	College Composition (GT-CO2)	1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	4
Electives			9
	Total Credits		30

Sophomore

ACT 210	Introduction to Financial Accounting		3
ACT 211	Accounting Professional Skills		1
ACT 220	Introduction to Managerial Accounting		3
BUS 260	Social-Ethical-Regulatory Issues in Business		3
CIS 200	Business Information Systems		3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
STAT 204	Statistics for Business Students		3
Biological and Physical Sciences		3A	3
Historical Perspectives		3D	3
Electives			5
	Total Credits		30

Junior

All freshman and sophomore required courses must be completed prior to or concurrent with first enrollment in required junior and senior courses.

ACT 311	Intermediate Accounting I		4
ACT 312	Intermediate Accounting II		3
ACT 321	Cost Management		3
ACT 350	Accounting Information Systems		3
BUS 300[2]	Business Writing and Communication (GT-CO3)	2	3
FIN 300[3]	Principles of Finance	4A,4B	3
MKT 300[3]	Marketing	4B	3
Electives			8
	Total Credits		30

Senior

ACT 330	Introduction to Taxation		3
ACT 411	Advanced Accounting		3
ACT 441	Auditing Practices		3
BUS 479	Strategic Management	4A,4C	3
MGT 301	Supply Chain Management		3
MGT 320	Contemporary Management Principles/Practices		3
Diversity and Global Awareness		3E	3
Electives[4]			9
	Total Credits		30
	Program Total Credits:		120

[1] Students enrolled in the Business Administration major prior to Fall semester 2013, are not required to take BUS 201 and BUS 220.

[2] BUS 300 is not offered online at CSU. Students may consult with their advisor regarding acceptable equivalent courses available online through the Colorado Community College System (including Arapahoe Community College). Students who have completed two Written Composition GT Pathways courses (GT-CO1 and GT-CO2) or (GT-CO2 and GT-CO3) will have satisfied the AUCC category 1A and category 2 requirements.

[3] Students who have taken FIN 305 and/or MKT 305 prior to admission to the College of Business may substitute those courses to satisfy the AUCC category 4A and 4B requirements. All other students are required to take FIN 300 and MKT 300 to satisfy AUCC categories 4A and 4B.

[4] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be Upper-Division (300- or 400- level).

Students are not to utilize the satisfactory/unsatisfactory (S/U) grading option for any Business concentration course or any Business core course (Business and non-Business subject codes) except when a course only allows S/U grading.

Major Completion Map

Distinctive Requirements for Degree Program:
To Declare this Major: Business is a controlled major. students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the Department for more information.

To Prepare for First Semester: The Curriculum for the Business Administration-Accounting Concentration assumes students will be able to successfully complete calculus within the first year.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 100	Introduction to Business		X		1
BUS 201	Foundations of Sustainable Enterprise				1
CO 150	College Composition (GT-CO2)		X	1A	3
Biological and Physical Sciences				3A	4
Elective					6
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 220	Ethics in Contemporary Organizations (GT-AH3)			3B	3
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)		X	1B	3
Arts and Humanities				3B	3
Elective					3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 210	Introduction to Financial Accounting	X			3
CIS 200	Business Information Systems		X		3
ECON 204	Principles of Macroeconomics (GT-SS1)		X	3C	3
Biological and Physical Sciences				3A	3
Elective					3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 211	Accounting Professional Skills	X			1
ACT 220	Introduction to Managerial Accounting	X			3
BUS 260	Social-Ethical-Regulatory Issues in Business				3
STAT 204	Statistics for Business Students				3
Historical Perspectives				3D	3
Elective					2
ACT 211 must be completed by the end of Semester 4.		X			
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 311	Intermediate Accounting I	X			4
ACT 321	Cost Management	X			3

BUS 300	Business Writing and Communication (GT-CO3)	X		2	3
FIN 300	Principles of Finance		X	4A,4B	3
Elective					2
	Total Credits				15

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 312	Intermediate Accounting II	X			3
ACT 350	Accounting Information Systems	X			3
MKT 300	Marketing			4B	3
Electives					6
	Total Credits				15

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 330	Introduction to Taxation				3
ACT 411	Advanced Accounting				3
MGT 301	Supply Chain Management	X			3
MGT 320	Contemporary Management Principles/Practices		X		3
Diversity and Global Awareness				3E	3
	Total Credits				15

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 441	Auditing Practices	X			3
BUS 479	Strategic Management	X		4A,4C	3
Electives		X			9
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Second Concentration with International Business

A second concentration in International Business may be taken in conjunction with the Accounting concentration. Upon graduation, both concentrations will be noted on a student's official transcript.

Effective Fall 2019

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Freshman

		AUCC	**Credits**
BUS 100	Introduction to Business		1
BUS 201	Foundations of Sustainable Enterprise		1
CIS 200	Business Information Systems		3
CO 150	College Composition (GT-CO2)	1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	4
Historical Perspectives		3D	3
Electives			6
	Total Credits		30

Sophomore

ACT 210	Introduction to Financial Accounting	3
ACT 211	Accounting Professional Skills	1
ACT 220	Introduction to Managerial Accounting	3

BUS 220	Ethics in Contemporary Organizations (GT-AH3)	3B	3
BUS 260	Social-Ethical-Regulatory Issues in Business		3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
STAT 204	Statistics for Business Students		3
Biological and Physical Sciences		3A	3
Diversity and Global Awareness		3E	3
International Business Group 2 - Global Focus			3
Elective			1
	Total Credits		29

Junior

ACT 311	Intermediate Accounting I		4
ACT 312	Intermediate Accounting II		3
ACT 321	Cost Management		3
ACT 350	Accounting Information Systems		3
BUS 300	Business Writing and Communication (GT-CO3)	2	3
FIN 300	Principles of Finance	4A,4B	3
FIN 475	International Business Finance		3
MGT 301	Supply Chain Management		3
MGT 435	Global Ethical Leadership Stakeholder Mgmt		3
International Business Group 3 - Experiential Learning Requirement			3
	Total Credits		31

Senior

ACT 330	Introduction to Taxation		3
ACT 411	Advanced Accounting		3
ACT 441	Auditing Practices		3
BUS 479	Strategic Management	4A,4C	3
MGT 320	Contemporary Management Principles/Practices		3
MGT 475	International Business Management		3
MKT 300	Marketing	4B	3
International Business Group 1 - Select one course from the following:			3
MGT 478	Global Supply Chain Management		
MGT 468	Negotiating Globally		
MKT 365	International Marketing		
International Business Group 2 - Global Focus			3
International Business Group 3 - Experiential Learning Requirement			3
	Total Credits		30
	Program Total Credits:		120

Interdisciplinary: International Business Group 2 – Global Focus (6 credits)

Code	Title	Credits
Select 6 credits from the following:		6
AM 430	International Retailing	3
ANTH 200	Cultures and the Global System (GT-SS3)	3
ECON 317	Population Economics	3
ECON 332/POLS 332	International Political Economy	3
ECON 440	Economics of International Trade and Policy	3
ECON 442	Economics of International Finance and Policy	3
ECON 460	Economic Development	3
GR 320	Cultural Geography	3
HIST 470	World Environmental History, 1500-Present	3
IE 450/SOWK 450	International Social Welfare and Development	3
IE 470	Women and Development	3
IE 471	Children and Youth in Global Context	3
IE 472	Education for Global Peace	3
IE 478	Managing International Development Programs	3
JTC 412	International Mass Communication	3
NRRT 320	International Issues-Recreation and Tourism	3

POLS 232	International Relations (GT-SS1)	3
POLS 362	Global Environmental Politics	3
POLS 431	International Law	3
POLS 433	International Organization	3
POLS 437	International Security	3
POLS 442	Environmental Politics in Developing World	3
POLS 462	Globalization, Sustainability, and Justice	3
SOC 364	Food, Agriculture and Global Society	3
SPCM 434	Intercultural Communication	3

Immersion: International Business Group 3 – Experiential Learning Requirement (6 credits)

Code	Title	Credits
Select at least one from the following:		6
Education Abroad experience		
Internship with global focus		
L*** language course		

Students are not to utilize the satisfactory/unsatisfactory (S/U) grading option for any Business concentration course or any Business core course (Business and non-Business subject codes) except when a course only allows S/U grading.

Second Concentration Major Completion Map

Distinctive Requirements for Degree Program:
To Declare this Major: Business is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the department for more information.

To Prepare for First Semester: The Curriculum for the Business Administration-Accounting Concentration assumes students will be able to successfully complete calculus within the first year.

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 100	Introduction to Business		X		1
BUS 201	Foundations of Sustainable Enterprise		X		1
CO 150	College Composition (GT-CO2)		X	1A	3
Arts and Humanities			X	3B	3
Biological and Physical Sciences			X	3A	4
Electives			X		3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CIS 200	Business Information Systems		X		3
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)		X	1B	3
Historical Perspectives			X	3D	3
Electives			X		3
BUS 100 and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 210	Introduction to Financial Accounting		X		3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)		X	3B	3
ECON 204	Principles of Macroeconomics (GT-SS1)		X	3C	3
Biological and Physical Sciences				3A	3
Elective			X		1
	Total Credits				13
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 211	Accounting Professional Skills		X		1
ACT 220	Introduction to Managerial Accounting		X		3
BUS 260	Social-Ethical-Regulatory Issues in Business		X		3
STAT 204	Statistics for Business Students		X		3
Diversity and Global Awareness			X	3E	3
International Business Group 2			X		3
	Total Credits				16

Junior

Semester 5		Critical	Recommended	AUCC	Credits
ACT 311	Intermediate Accounting I		X		4
ACT 321	Cost Management		X		3
FIN 300	Principles of Finance		X	4A,4B	3
MGT 301	Supply Chain Management		X		3
MGT 435	Global Ethical Leadership Stakeholder Mgmt		X		3
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 312	Intermediate Accounting II		X		3
ACT 350	Accounting Information Systems		X		3
BUS 300	Business Writing and Communication (GT-CO3)		X	2	3
FIN 475	International Business Finance		X		3
International Business Group 3			X		3
	Total Credits				15

Senior

Semester 7		Critical	Recommended	AUCC	Credits
ACT 330	Introduction to Taxation	X			3
MGT 320	Contemporary Management Principles/Practices	X			3
MGT 475	International Business Management	X			3
MKT 300	Marketing	X		4B	3
International Business Group 2		X			3
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 411	Advanced Accounting	X			3
ACT 441	Auditing Practices	X			3
BUS 479	Strategic Management	X	X	4A,4C	3
International Business Group 1 - Select one course from the following:		X			3
MKT 365	International Marketing	X			
MGT 468	Negotiating Globally	X			
MGT 478	Global Supply Chain Management	X			
International Business Group 3		X			3
	Total Credits				15
	Program Total Credits:				120

Certificate in Applied Management Accounting for Decision Making

The Certificate in Applied Management Accounting for Decision Making will provide students with accounting tools to make managerial decisions in a business setting. This certificate recognizes that such decisions require knowledge of budgetary and cost accounting information and accounting information systems, as well as discipline-specific knowledge.

Effective Fall 2018

Additional coursework may be required due to prerequisites.

Code	Title	Credits
ACT 321	Cost Management	3
ACT 350	Accounting Information Systems	3
Select one course from the following:		3
CIS 320	Project Management for Information Systems	
MGT 375	Advanced Supply Management	
MGT 377	Advanced Logistics	
Program Total Credits:		9

Certificate in Financial Accounting and Reporting

The Certificate in Financial Accounting and Reporting will increase the financial accounting related competence of College of Business students not in the accounting concentration. This certificate focuses on the preparation and analysis of financial statements under U.S. Generally Accepted Accounting Principles (GAAP).

Requirements Effective Fall 2018

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Required Courses		
ACT 311	Intermediate Accounting I	4
ACT 312	Intermediate Accounting II	3
ACT 411	Advanced Accounting	3
Program Total Credits:		10

Master of Accountancy, Plan C (M.Acc.)

CSU's Master of Accountancy is a 30-credit program offered on campus that provides a wealth of practical job-related knowledge and the in-depth topical coverage you need to successfully sit for the national Uniform CPA Examination.

Our curriculum reflects the breadth of services performed by CPAs. You will learn the skills you need to land accounting and management positions in a wide range of business services, including public accounting, auditing, financial and tax planning, and consulting on information systems.

Students will demonstrate the ability to:

1. Develop the necessary research skills to investigate complex accounting issues.
2. Apply analytical and conceptual problem-solving skills to the field of corporate taxation.
3. Describe the role of information systems and technology in accounting.
4. Communicate complex accounting issues orally and in writing.
5. Recognize ethical and legal issues in a variety of accounting situations.

Requirements Effective Fall 2019

Code	Title	Credits
Required Core (18 credits)		
ACT 540	Professional Ethics and Responsibilities	3
ACT 541	Forensic Accounting and Fraud Auditing	3
ACT 550	Accounting Information Technologies	3
ACT 561	Legal and Regulatory Issues in Accounting	3
ACT 601A	Professional Practice: Taxation	3
or ACT 601B	Professional Practice: Accounting	
ACT 631	Corporate Taxation	3
Select 12 credits from the following:		12
ACT 570	Government and Nonprofit	
ACT 575	Oil and Gas Accounting	
ACT 612	Issues in Financial Reporting and Auditing	
ACT 614	Financial Statement Analysis and Valuation	
ACT 633	Flow-Through Entities	
ACT 635	State and Local Taxation	
ACT 636	Taxation of Corporations and Shareholders	
ACT 639	Special Topics in Taxation	
ACT 641	Information Systems Audit and Control	
CIS 570	Business Intelligence	
CIS 575	Applied Data Mining and Analytics in Business	
CIS 600	Information Technology and Project Management	
CIS 601	Enterprise Computing and Systems Integration	
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

Master of Accountancy, Plan C, Data Analytics and Systems Specialization

CSU's Master of Accountancy is a 30-credit program offered on campus that provides a wealth of practical job-related knowledge and the in-depth topical coverage you need to successfully sit for the national Uniform CPA Examination.

Our curriculum reflects the breadth of services performed by CPAs. The Data Analytics and Systems Specialization provides advanced coursework in auditing of accounting systems with a focus on preparation for practice of public accounting, particularly in systems auditing. Coursework emphasizes systems auditing, data analytic techniques, and computer information systems.

Students will demonstrate the ability to:

1. Develop the necessary research skills to investigate complex accounting issues.
2. Apply analytical and conceptual problem-solving skills to the field of corporate taxation.
3. Describe the role of information systems and technology in accounting.
4. Communicate complex accounting issues orally and in writing.
5. Recognize ethical and legal issues in a variety of accounting situations.

Requirements Effective Fall 2019

Code	Title	Credits
Required core: (15 credits)		
ACT 540	Professional Ethics and Responsibilities	3
ACT 550	Accounting Information Technologies	3
ACT 561	Legal and Regulatory Issues in Accounting	3
ACT 601B	Professional Practice: Accounting	3
ACT 631	Corporate Taxation	3
Other required courses: (12 credits)		
ACT 641	Information Systems Audit and Control	3
CIS 575	Applied Data Mining and Analytics in Business	3
CIS 600	Information Technology and Project Management	3

CIS 601	Enterprise Computing and Systems Integration	3
Select 3 credits from the following:		3
ACT 541	Forensic Accounting and Fraud Auditing	
ACT 570	Government and Nonprofit	
ACT 575	Oil and Gas Accounting	
ACT 612	Issues in Financial Reporting and Auditing	
ACT 614	Financial Statement Analysis and Valuation	
ACT 633	Flow-Through Entities	
ACT 635	State and Local Taxation	
ACT 636	Taxation of Corporations and Shareholders	
ACT 639	Special Topics in Taxation	
CIS 570	Business Intelligence	
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

Master of Accountancy, Plan C, Financial Analysis, Auditing, and Reporting Specialization

CSU's Master of Accountancy is a 30-credit program offered on campus that provides a wealth of practical job-related knowledge and the in-depth topical coverage you need to successfully sit for the national Uniform CPA Examination.

Our curriculum reflects the breadth of services performed by CPAs. The Financial Analysis, Auditing, and Reporting Specialization provides advanced coursework with a focus on preparation for practice of public accounting, particularly in auditing. Coursework emphasizes auditing, financial reporting and analysis, and analytics.

Students will demonstrate the ability to:

1. Develop the necessary research skills to investigate complex accounting issues.
2. Apply analytical and conceptual problem-solving skills to the field of corporate taxation.
3. Describe the role of information systems and technology in accounting.
4. Communicate complex accounting issues orally and in writing.
5. Recognize ethical and legal issues in a variety of accounting situations.

Requirements Effective Fall 2019

Code	Title	Credits
Required Core: (15 credits)		
ACT 540	Professional Ethics and Responsibilities	3
ACT 550	Accounting Information Technologies	3
ACT 561	Legal and Regulatory Issues in Accounting	3
ACT 601B	Professional Practice: Accounting	3
ACT 631	Corporate Taxation	3
Other Required Courses: (12 credits)		
ACT 570	Government and Nonprofit	3
ACT 612	Issues in Financial Reporting and Auditing	3
ACT 614	Financial Statement Analysis and Valuation	3
ACT 641	Information Systems Audit and Control	3
Select 3 credits from the following:		3
ACT 541	Forensic Accounting and Fraud Auditing	
ACT 575	Oil and Gas Accounting	
ACT 633	Flow-Through Entities	
ACT 635	State and Local Taxation	
ACT 636	Taxation of Corporations and Shareholders	
ACT 639	Special Topics in Taxation	
CIS 570	Business Intelligence	
CIS 600	Information Technology and Project Management	
CIS 601	Enterprise Computing and Systems Integration	
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

Master of Accountancy, Plan C, Taxation Specialization

CSU's Master of Accountancy is a 30-credit program offered on campus that provides a wealth of practical job-related knowledge and the in-depth topical coverage you need to successfully sit for the national Uniform CPA Examination.

Our curriculum reflects the breadth of services performed by CPAs. The Taxation Specialization provides advanced coursework in taxation, with a focus on preparation for professional tax practice. In particular, in-depth coverage of topics relevant for those interested a career in tax compliance, planning, and consulting, as well as corporate tax.

Students will demonstrate the ability to:

1. Develop the necessary research skills to investigate complex accounting issues.
2. Apply analytical and conceptual problem-solving skills to the field of corporate taxation.
3. Describe the role of information systems and technology in accounting.
4. Communicate complex accounting issues orally and in writing.
5. Recognize ethical and legal issues in a variety of accounting situations.

Requirements Effective Fall 2019

Code	Title	Credits
Required Core: (15 credits)		
ACT 540	Professional Ethics and Responsibilities	3
ACT 550	Accounting Information Technologies	3
ACT 561	Legal and Regulatory Issues in Accounting	3
ACT 601A	Professional Practice: Taxation	3
ACT 631	Corporate Taxation	3
Other Required Courses: (12 credits)		
ACT 541	Forensic Accounting and Fraud Auditing	3

ACT 633	Flow-Through Entities	3
ACT 635	State and Local Taxation	3
ACT 636	Taxation of Corporations and Shareholders	3
Select 3 credits from the following:		3
ACT 570	Government and Nonprofit	
ACT 575	Oil and Gas Accounting	
ACT 612	Issues in Financial Reporting and Auditing	
ACT 614	Financial Statement Analysis and Valuation	
ACT 639	Special Topics in Taxation	
ACT 641	Information Systems Audit and Control	
CIS 570	Business Intelligence	
CIS 575	Applied Data Mining and Analytics in Business	
CIS 600	Information Technology and Project Management	
CIS 601	Enterprise Computing and Systems Integration	
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

Business Administration

Undergraduate

Major

- Major in Business Administration

Minor

- Minor in Business Administration

Graduate

Master's Programs

- Master of Business Administration
- Master of Business Administration, Early Career Track Specialization (No new students are being admitted to this specialization.)
- Master of Business Administration, Global Social and Sustainable Enterprise Specialization
- Master of Business Administration, Impact Specialization, Plan C
- Master of Business Administration, Marketing Data Analytics Specialization

Major in Business Administration

The College of Business prepares students with the knowledge and skills needed to become effective leaders and decision makers in today's dynamic business environment.

The four-year curriculum leads to a Bachelor of Science degree with a major in Business Administration. The program focuses on global orientation, technology, ethics, business processes, sustainability, and corporate social responsibility.

Lower-division work provides a cultural and analytical foundation. Upper-division work provides specialized work in business disciplines to prepare students to enter their chosen fields in the business world. At the same time, the program develops the attitudes and analytical abilities required for future professional advancement.

The College of Business has a strong reputation among regional, national, and international employers. As a whole, graduates from the College of Business are well-prepared to enter challenging positions. The program centers on an approach which emphasizes: knowledge of concepts, processes, and institutions; understanding of the financial, economic, legal, ethical, social, and organizational influences; information systems; and interpersonal communications. The senior capstone course offers an opportunity for students to apply these skills in an active and engaging learning environment.

All undergraduate business majors must complete the All-University Core Curriculum (AUCC) as part of their graduation requirement. Coordinated with this general education, all business students take business core subjects plus a concentration with its specified course sequence. Fifty percent of the total credits required for the business core and concentration must be completed at CSU.

Each student selects one of the following concentrations: Accounting, Finance, Financial Planning, Human Resource Management, Information Systems, Marketing, Organization and Innovation Management, Real Estate, or Supply Chain Management.

Students have the opportunity to select a second Business Administration concentration in International Business to be taken in conjunction with their first concentration.

Admission

Direct entry as a new freshman or transfer to the College of Business is highly selective and only those students meeting academic requirements will be accepted. For details contact the Office of Admissions (http://admissions.colostate.edu).

CSU and the College of Business use holistic review when determining eligibility for admission to the College of Business as a new freshman. An example of a strong candidate for admission to the College of Business is one who is actively involved in their high school and community, has at least a 3.200 GPA with a 1200 or higher on the SAT or a 27 or higher on the ACT. For current admission criteria, contact the CSU Office of Admissions. New freshmen admitted to CSU but not directly to the College of Business will be admitted as "Undeclared Business Interest" and must meet the requirements below. To be eligible for admission to the College, CSU students (including Undeclared Business Interest) must have a 3.000 cumulative GPA on a minimum of 15 graded credits at Colorado State and grades of B- or higher in ECON 202 and MATH 141.

External transfer students who have completed a minimum of 15 graded credits with MATH 141 and ECON 202 with grades of B- or higher and a 3.000 cumulative GPA will be admitted directly to the College.

External transfer students who do not meet the above criteria will be admitted to Undeclared and must complete the requirements stated above.

The College of Business participates in a statewide transfer articulation agreement for the bachelor's degree in Business Administration. That agreement is available online (http://registrar.colostate.edu/classroomscheduling/csu-specific-statewide-agreements) with the Registrar's Office.

Learning Outcomes

Students will demonstrate:

- The ability to speak the language of business by constructing and analyzing financial and operating reports and using this information to make various business and capital allocation decisions
- An appreciation of the impact of the marketing environment on developing and sustaining a coherent marketing strategy that addresses the needs and wants of a selected target market
- An understanding of leadership principles, effective communication, and ways to collaborate within and across organizations
- An understanding of risk and the time value of money, how to use and value different types of securities, and how to make sound financial management decisions
- An understanding of the all-encompassing role information technology plays in all aspects of a business and the ability to collect, store, analyze, and professionally disseminate data using business technology tools to solve problems and make decisions
- The ability to identify and analyze various ethical dilemmas that occur in organizations, apply sound moral reasoning to address these situations, and defend recommended courses of action
- An understanding of the dynamics of the global business environment and, when appropriate, the application of elements of a global perspective in making business decisions
- An understanding of the environmental, social, and economic dimensions of sustainability and how to measure, report, and manage sustainability in organizations

Course Requirements

The first two years of study include completion of the All-University Core Curriculum (AUCC) and the lower-division business core courses. Some lower-division specialized course work is required in the Information Systems concentration. Students must have junior or senior status and be admitted into the College of Business in order to take specialized course work in the business concentrations.

Concentrations

- Accounting
- Finance
- Financial Planning
- Human Resource Management
- Information Systems
- International Business (second concentration)
- Marketing
- Organization and Innovation Management
- Real Estate
- Supply Chain Management

Requirements

Concentrations

- Accounting
- Finance
- Financial Planning
- Human Resource Management
- Information Systems
- International Business (second concentration)
- Marketing
- Organization and Innovation Management
- Real Estate
- Supply Chain Management

Core Curriculum

The following core curriculum sets the minimum course requirements for all business majors. With recommendations of the student's advisor, supplementary courses are selected to meet the total minimum of 120 credits required for the Bachelor of Science degree.

All freshman and sophomore required courses must be completed prior to or concurrent with first enrollment in required junior and senior courses. By the beginning of the junior year, students must select one of the above concentrations approved for the major in Business Administration.

Additional requirements which all business majors must complete are:

1. one of the approved concentrations;
2. All-University Core Curriculum (AUCC) requirements;
3. Business majors must not utilize the satisfactory/unsatisfactory (S/U) grading option in any Business concentration course or and Business core course (BUS and non-BUS subject codes) except when a course allows S/U grading.

Effective Fall 2017

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Code	Title	AUCC	Credits
LOWER DIVISION BUSINESS CORE COURSES			
ACT 210	Introduction to Financial Accounting		3
ACT 220	Introduction to Managerial Accounting		3
BUS 100	Introduction to Business		1
BUS 201	Foundations of Sustainable Enterprise [1]		1
BUS 220	Ethics in Contemporary Organizations (GT-AH3) [1]	3B	3
BUS 260	Social-Ethical-Regulatory Issues in Business		3

CIS 200	Business Information Systems		3
CO 150	College Composition (GT-CO2)	1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
STAT 204	Statistics for Business Students		3
UPPER DIVISION BUSINESS CORE COURSES			
BUS 300	Business Writing and Communication (GT-CO3)	2	3
BUS 479	Strategic Management	4A,4C	3
FIN 300	Principles of Finance [2]	4A,4B	3
MGT 301	Supply Chain Management		3
MGT 320	Contemporary Management Principles/Practices		3
MKT 300	Marketing [2]	4B	3
Core Total Credits			50

Code	Title	AUCC	Credits
ALL-UNIVERSITY CORE CURRICULUM (AUCC) NON-SPECIFIED COURSES			
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	7
Global and Cultural Awareness		3E	3
Historical Perspectives		3D	3

1 Students enrolled in the Business Administration major prior to Fall semester 2013, are not required to take BUS 201 and BUS 220.

2 Students who have taken FIN 305 and/or MKT 305 prior to admission to the College of Business may substitute those courses to satisfy the category 4A and 4B requirements. All other students are required to take FIN 300 and MKT 300 to satisfy categories 4A and 4B.

Major in Business Administration, International Business Concentration

International Business Concentration (second concentration)

Business is increasingly global in nature and the number of firms with international dimensions in their business models continues to grow. The International Business (IB) concentration is designed to provide students with both the skills and perspectives to add value to firms whose activities, in full or in part, are international in nature. The International Business concentration is only offered as a second Business concentration. Students pursuing IB must also complete one of our disciplinary concentrations.

Coursework will allow students to explore business activities that occur between people and organizations around the world. A significant component of the program is the link between multiple world cultures and the business practices that have developed both within and around them. As a second concentration, students will gain functional expertise in a traditional Business discipline with their first concentration and then develop skill sets that will help them to apply this expertise in an international context. The combination of both a disciplinary and international skill set helps ensure that students have the functional depth, as well as global mindset, for meaningful careers with firms whose activities extend beyond national borders. A unique dimension of the IB concentration is the inclusion of a 6-credit experiential learning component that can be satisfied through an education abroad experience (study abroad, international service learning, semester-at-sea), an international internship, a domestic internship with a global focus, or coursework in a foreign language.

Students will demonstrate:
1. Knowledge of business activities that occur between people and organizations around the world
2. Knowledge of leadership principles and ethical decision making skills in a global context
3. A global mindset and the skills necessary for leadership positions in companies with global dimensions in their business models
4. Knowledge of global competitive dynamics and how they influence industries and firms around the world
5. The ability to diagnose global situations that are characterized by complexity and uncertainty while being bounded by legal, ethical, and cultural norms

Concentrations

- Accounting Concentration with International Business Concentration
- Finance Concentration
  - Corporate Finance Option with International Business Concentration

- Investment Analysis Option with International Business Concentration
- Real Estate Finance Option with International Business Concentration

- Financial Planning Concentration with International Business Concentration
- Human Resource Management Concentration with International Business Concentration
- Information Systems Concentration with International Business Concentration
- Marketing Concentration with International Business Concentration
- Organization and Innovation Management Concentration with International Business Concentration
- Real Estate Concentration with International Business Concentration
- Supply Chain Management Concentration with International Business Concentration

Minor in Business Administration

businessminors@business.colostate.edu

The College of Business offers a minor in Business Administration to students in other colleges. A minor in Business Administration will give all students a basic understanding of the functional areas of business, including marketing, management, accounting, finance, business law, and economics. Business knowledge combined with knowledge in a student's primary major will provide a solid foundation for career success in a variety of industries. Students can expect to develop competencies to understand the language and key concepts of business, and apply them in a wide variety of careers.

Requirements
Effective Spring 2015

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

A minimum grade of C is required for all business courses in the minor to receive the credential.

Freshman		Credits
AREC 202 or ECON 202	Agricultural and Resource Economics (GT-SS1) Principles of Microeconomics (GT-SS1)	3
	Total Credits	3
Sophomore		
ACT 205	Fundamentals of Accounting	3
BUS 205	Legal and Ethical Issues in Business	3
ECON 204	Principles of Macroeconomics (GT-SS1)	3
	Total Credits	9
Junior		
FIN 305	Fundamentals of Finance	3
MGT 305	Fundamentals of Management	3
MKT 305	Fundamentals of Marketing	3
	Total Credits	9
Senior		
Select one from the following:		3
BUS 405A	Contemporary Business Topics: Entrepreneurship	
BUS 405B	Contemporary Business Topics: International Business	
BUS 405C	Contemporary Business Topics: Business Information Management	
BUS 405D	Contemporary Business Topics: Real Estate	
	Total Credits	3
	Program Total Credits:	24

Certificate in International Business

The College of Business offers the Certificate in International Business to students majoring in Business Administration. This certificate will give students majoring in Business Administration an integrated understanding of the principles and practices of international business. This knowledge will help them enhance their careers in the global economy by gaining a deeper understanding of international financing, cross-cultural negotiation, international management strategies/practices, and global marketing practices.

Effective Spring 2015

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Select three courses from the following:		9
FIN 475	International Business Finance	
MGT 468	Negotiating Globally	
MGT 475	International Business Management	
MKT 365	International Marketing	
Program Total Credits:		9

Graduate Certificate in Business Management

The Business Management certificate provides students from any educational background a solid grounding in core business concepts that cut across multiple disciplines. The certificate will help students acquire and apply skill sets which can be used to help transition into a new career, start or improve a business, or pursue graduate education.

This program is compatible with our MBA degree requirements, enabling certificate recipients to easily transition into the MBA program.

Effective Fall 2019

Additional coursework may be required due to prerequisites.

Code	Title	Credits
BUS 500	Business Systems and Processes	2
BUS 601	Quantitative Business Analysis	2
BUS 614	Accounting Concepts	2
BUS 620	Leadership and Teams	2
BUS 640	Financial Principles and Practice	2
BUS 655	Marketing Management	2
Program Total Credits:		12

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Master of Business Administration

The Master of Business Administration degree prepares students for careers in a dynamic and rapidly changing world. Coursework, comprised of 36 core credits and 6 elective credits, has been developed to put an emphasis on the practical application of both foundational and advanced concepts in finance, accounting, management, marketing and professional enrichment. The curriculum covers the central tenets, processes, and practices of statistics, human resources, accounting, supply chain management, marketing, and finance, with hands-on application of course concepts. Students may also choose to pursue graduate transcripted certificates in a variety of focused content areas.

MBA Programs and Specializations:

The College currently offers four distinct MBA paths:

- **Evening/Online MBA** (Same curriculum for both offering formats – with the exception of some electives, the courses in the Evening MBA are offered on-campus; the Online MBA offering format is via streamed digital media)
- **Executive MBA** (hybrid) offered in Denver
- ***MBA with a specialization in Marketing Data Analytics** (online)
- ***Global Social and Sustainable Enterprise MBA** (on-campus)
- ***Impact MBA** (on-campus; recruiting now for cohort starting Fall 2020)

***Note:** there are unique curricular requirements documented elsewhere for these MBA paths

Although the programs differ from each other in terms of target market dimensions and value proposition, students across all MBA programs are expected to graduate with a common set of core competencies.

Core Competencies:

- *Business Acumen and Integration Skills* - Graduates will demonstrate competency across business functions and integrate them into strategic decisions.
- *Practical Leadership and Management Skills* - Graduates will demonstrate individual, interpersonal, and organizational leadership skills necessary for professional development and organizational effectiveness.
- Critical and Analytical Thinking - Graduates will be able to apply critical thinking and analytical skills for management decision-making.
- *External Environment Considerations: Ethical, Legal, and Regulatory Framework* - Graduates will consider ethical, legal, and regulatory implications inherent in business situations and apply that knowledge to make responsible decisions.
- *Global Perspective* - Graduates will acquire a global and cross-cultural perspective in formulating decisions and implementing organizational strategy.

Requirements Effective Fall 2019

First Year		Credits
BUS 500	Business Systems and Processes	2
BUS 601	Quantitative Business Analysis	2
BUS 614	Accounting Concepts	2
BUS 615	Managerial Accounting	2
BUS 616	Financial Reporting and Analysis	2
BUS 620	Leadership and Teams	2
BUS 626	Managing Human Capital	2
BUS 635	Business Economics for the World Market	2
BUS 650	Supply Chain Management	2
BUS 655	Marketing Management	2
Directed Electives[1]		0-6
	Total Credits	20-26
Second Year		
BUS 630	Information Management	2
BUS 640	Financial Principles and Practice	2
BUS 641	Financial Markets and Investments	2
BUS 656	Marketing Strategy and Planning	2
BUS 660	Ethical, Legal, and Regulatory Issues	2
BUS 662	International Business	2
BUS 665	MBA Capstone	4
Directed Electives[1]		0-6
	Total Credits	16-22
	Program Total Credits:	42

Directed Electives [1]

Code	Title	Credits
BUS 515	Career Management	1
BUS 690A	Contemporary Issues: Business	1-6

BUS 690B	Contemporary Issues: Grad Tutorials	1-6
BUS 690C	Contemporary Issues: Info Systems	1-6
BUS 690D	Contemporary Issues: Accounting	1-6
BUS 690E	Contemporary Issues: Global Enterprise	1-6
BUS 690F	Contemporary Issues: Finance	1-6
CIS 505	Database Concepts	1
CIS 570	Business Intelligence	3
CIS 575	Applied Data Mining and Analytics in Business	3
CIS 576	Business Data Visualization	3
CIS 600	Information Technology and Project Management	3
CIS 655	Business Database Systems	3
CIS 670	Advanced IT Project Management	3
CIS 675	Agile Management and Product Development	3
CIS 676	Information Technology Management	3
FIN 602	Options and Futures	1
FIN 603	Corporate Risk Management	1
FIN 604	Employee Benefits	1
FIN 606	Fundamentals of International Finance	1
FIN 607	Fundamentals of Bond Markets	1
FIN 608	Fundamentals of Firm Valuation	1
FIN 609	Fundamentals of Personal Finance	1
FIN 612	Private Equity and Venture Capital	1
MKT 610	Qualitative Marketing Research Methods	1
MKT 611	Quantitative Marketing Research Methods	1
MKT 621	Search Engine Marketing and Optimization	1
MKT 661	Consumer Behavior	1
MKT 662	Strategic Selling for Business Customers	1
MKT 667	Services Marketing Management	1
MKT 670	Digital Marketing	1
REL 601	Fundamentals of Real Estate Finance	1

A minimum of 42 credits are required to complete this program.

[1] Select from the Directed Electives list in consultation with advisor. Electives may be used to include a certificate.

Master of Business Administration, Early Career Track Specialization

No new students are being admitted into this program.

Requirements Effective Fall 2015

First Year		Credits
BUS 500	Business Systems and Processes	2
BUS 510	Career Assessment and Development	1
BUS 515	Career Management	1
BUS 601	Quantitative Business Analysis	2
BUS 614	Accounting Concepts	2
BUS 615	Managerial Accounting	2
BUS 616	Financial Reporting and Analysis	2
BUS 620	Leadership and Teams	2
BUS 625	Organizational Communication	2
BUS 626	Managing Human Capital	2
BUS 635	Business Economics for the World Market	2
BUS 650	Supply Chain Management	2
BUS 655	Marketing Management	2
BUS 686	Practicum	2
BUS 687	Internship	2
Directed Electives (see list below)[1]		4-5
	Total Credits	32-33
Second Year		
BUS 630	Information Management	2
BUS 640	Financial Principles and Practice	2
BUS 641	Financial Markets and Investments	2
BUS 656	Marketing Strategy and Planning	2
BUS 660	Ethical, Legal, and Regulatory Issues	2
BUS 662	International Business	2
BUS 665	MBA Capstone	4
Directed Electives (see list below)[1]		4-5
	Total Credits	20-21
	Program Total Credits:	52

Directed Electives [1]

Code	Title	Credits
BUS 690A	Contemporary Issues: Business	1-6
BUS 690B	Contemporary Issues: Grad Tutorials	1-6
BUS 690C	Contemporary Issues: Info Systems	1-6
BUS 690D	Contemporary Issues: Accounting	1-6
BUS 690E	Contemporary Issues: Global Enterprise	1-6
BUS 690F	Contemporary Issues: Finance	1-6
CIS 570	Business Intelligence	3
CIS 575	Applied Data Mining and Analytics in Business	3
CIS 576	Business Data Visualization	3
CIS 600	Information Technology and Project Management	3
CIS 655	Business Database Systems	3
CIS 670	Advanced IT Project Management	3
CIS 675	Agile Management and Product Development	3
CIS 676	Information Technology Management	3

FIN 602	Options and Futures	1
FIN 603	Corporate Risk Management	1
FIN 604	Employee Benefits	1
FIN 606	Fundamentals of International Finance	1
FIN 607	Fundamentals of Bond Markets	1
FIN 608	Fundamentals of Firm Valuation	1
FIN 609	Fundamentals of Personal Finance	1
MKT 610	Qualitative Marketing Research Methods	1
MKT 611	Quantitative Marketing Research Methods	1
MKT 621	Search Engine Marketing and Optimization	1
MKT 661	Consumer Behavior	1
MKT 662	Strategic Selling for Business Customers	1
MKT 667	Services Marketing Management	1
REL 601	Fundamentals of Real Estate Finance	1

A minimum of 52 credits are required to complete this program.

[1] Select from the Directed Electives list in consultation with advisor. Electives may be used to include a certificate.

Master of Business Administration, Global Social and Sustainable Enterprise Specialization

The purpose of the Global Social and Sustainable Enterprise specialization is to prepare students to design, build, and manage entrepreneurial ventures that impact social and environmental challenges. A key differentiator is the fully integrated venture creation process, during which students form teams and design ventures throughout the program. This process is woven throughout multiple courses and all three semesters, including a 40-60 day summer practicum. It is a cohort-based program with 25-30 students from diverse backgrounds and experiences.

After Fall 2019 students will no longer be admitted to this program. The Global Social and Sustainable Enterprise specialization will be replaced by our new Master of Business Administration, Impact Specialization, which will debut with its first class in Fall 2020.

Requirements Effective Fall 2016

First Year		
Fall		**Credits**
BUS 614	Accounting Concepts	2
BUS 620	Leadership and Teams	2
BUS 636	Economics of Ecosystems and Biodiversity	3
CIS 600	Information Technology and Project Management	3
MGT 667	Global Social Sustainable Entrepreneurship	3
	Total Credits	13
Spring		
BUS 601	Quantitative Business Analysis	2
BUS 615	Managerial Accounting	2
BUS 686	Practicum	1
BUS 690E	Contemporary Issues: Global Enterprise	1
FIN 601	Financial Management and Markets	3
MGT 665	Supply Chain Development and Management	2
MKT 601	Marketing for Social Sustainable Enterprises	3
	Total Credits	14
Second Year		
Fall		
BUS 505	Legal and Ethical Environment of Business	3
BUS 686	Practicum	2
FIN 669	Financing, Evaluating Sustainable Enterprise	3
MGT 612	Managing in a Global Context	3
MGT 668	New Venture Development for Social Enterprise	3
	Total Credits	14
	Program Total Credits:	41

A minimum of 41 credits are required to complete this program.

Master of Business Administration, Impact Specialization

Sustainability underlies many of the complex global challenges we face today, carrying profound implications for business practices, economic development and environmental stewardship. Businesses increasingly recognize the need to incorporate environmental risks and social objectives into their core strategy and operational decisions. The commitment to sustainable practices can take many forms such as developing social enterprises, creating and distributing fair-trade products, reducing carbon footprints, ensuring a sustainable value chain, guiding social impact investments, and making frugal use of natural resources. Sustainability initiatives are motivated by a desire to manage risk, drive growth, improve returns on capital, and create value.

The Master of Business Administration, Impact Specialization, is a 44-credit, 3 semester, full-time Resident Instruction program. The program aims to provide business solutions that achieve positive economic, environmental and social impact. The program educates and prepares future business leaders to take effective roles in organizations that integrate economic, social and environmental sustainability into core strategy and operations. There are elective options to enable students to pursue either a venture-creation process, or take up to 15 credits outside the College of Business in areas such as environmental sustainability,

social impact, water resources, life cycle assessment, ethics and sustainability, and climate change.

Requirements Effective Spring 2020

Code	Title	Credits
Core Classes:		
ACT 605	Accounting for Sustainable Enterprises	3
BUS 601	Quantitative Business Analysis [1]	2
BUS 636	Economics of Ecosystems and Biodiversity	3
BUS 690E	Contemporary Issues: Global Enterprise	1
CIS 600	Information Technology and Project Management	3
FIN 601	Financial Management and Markets	3
MGT 612	Managing in a Global Context	3
MGT 663	Strategic Opportunities in Impact Enterprise	3
MGT 665	Supply Chain Development and Management	2
MKT 601	Marketing for Social Sustainable Enterprises	3
Select one course from the following:		2-3
BUS 641	Financial Markets and Investments	
FIN 669	Financing, Evaluating Sustainable Enterprise	
Select one course from the following:		3
BUS 686	Practicum	
BUS 687	Internship	
Select 12-13 credits from the following electives:		12-13
BUS 620	Leadership and Teams [1]	
BUS 660	Ethical, Legal, and Regulatory Issues [1]	
ESS 524	Foundations for Carbon/Greenhouse Gas Mgmt	
ESS 542	Greenhouse Gas Policies	
ESS 543/ATS 543	Current Topics in Climate Change	
ESS 555/ ENGR 555	Life Cycle Assessment for Sustainability	
FIN 603	Corporate Risk Management	
FIN 606	Fundamentals of International Finance	
FIN 612	Private Equity and Venture Capital	
GES 441	Analysis of Sustainable Energy Solutions	
GES 460	Law and Sustainability	
GES 520	Issues in Global Environmental Sustainability	
GRAD 592	Water Resources Seminar	
MKT 664	Design Thinking for Sustainable Enterprise	
MGT 667	Global Social Sustainable Entrepreneurship	
MGT 668	New Venture Development for Social Enterprise	
PHIL 565	Seminar in Environmental Philosophy	
Program Total Credits:		44

A minimum of 44 credits are required to complete this program.

[1] Students will need to obtain a prerequisite override from the department to enroll in this course.

Master of Business Administration, Marketing Data Analytics Specialization

This program provides students with comprehensive knowledge of marketing data analytics as a specialization in the MBA program. Data analytics is a rapidly growing field, part of which has occurred in the domain of marketing and marketing research. Data analytics involves defining problems surrounding marketing questions, such as customer relationship management, consumer behavior, customer service, pricing, sales force management, advertising, business-to-business and channels relationships. Once problems are defined, data analysts are responsible for gathering the right information (the data) to solve the problem and applying sophisticated data analytics tools to provide empirical answers. An important part of the process is to present and explain the data findings to a marketing audience. Marketing action is generally taken based on data definition, gathering, manipulation, and analysis.

Program Learning Goals:

Students will demonstrate the ability to:

- Obtain, combine, clean, transform, validate and analyze large and small datasets from multiple sources.
- Design and implement databases and other data collection systems.
- Apply marketing RESEARCH methodologies and systems such as segmentation modeling, targeting, CRM, and ROI projections and evaluation.
- Perform statistical analysis and interpretation of data in order to uncover actionable intelligence and trends that provide value to marketing and business.
- Present and interpret data in a meaningful way to internal and external stakeholders.
- Develop high quality reports, dashboards and visualizations with marketing data.
- Add to the ability of marketing managers to make optimal decisions on important marketing variables such as marketing segmentation, market positioning, new product design, pricing strategies, advertising choice, and others.

Requirements Effective Fall 2019

Code	Title	Credits
Required Core Courses:		
BUS 500	Business Systems and Processes	2
BUS 601	Quantitative Business Analysis	2
BUS 614	Accounting Concepts	2
BUS 620	Leadership and Teams	2
BUS 626	Managing Human Capital	2
BUS 630	Information Management	2
BUS 640	Financial Principles and Practice	2
BUS 655	Marketing Management	2
BUS 656	Marketing Strategy and Planning	2

Select two courses from the following:		4
BUS 615	Managerial Accounting	
BUS 616	Financial Reporting and Analysis	
BUS 635	Business Economics for the World Market	
BUS 641	Financial Markets and Investments	
Required Specialization Courses:		
BUS 686	Practicum	2
CIS 505	Database Concepts	1
CIS 570	Business Intelligence	3
CIS 575	Applied Data Mining and Analytics in Business	3
CIS 601	Enterprise Computing and Systems Integration	3
MKT 610	Qualitative Marketing Research Methods	1
MKT 621	Search Engine Marketing and Optimization	1
MKT 650	Marketing Analytics I	2
MKT 651	Marketing Analytics II	2
MKT 670	Digital Marketing	1
Select 1 credit elective with approval of graduate advisor.		1
Program Total Credits:		42

A minimum of 42 credits are required to complete this program.

Department of Computer Information Systems

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Professor Leo R. Vijayasarathy, Chair

Undergraduate
Major in Business Administration

- Information Systems Concentration

Certificate

- Information Technology for Business Professionals

Graduate
Certificates

- Business Analytics and Accounting Systems
- Business Information Systems
- Business Intelligence
- Information Technology Project Management

Master's Programs

- Master of Computer Information Systems, Plan C (M.C.I.S.)
- Master of Science in Business Administration, Plan A, Computer Information Systems Specialization (No new students are being accepted into this specialization.)
- Master of Science in Business Administration, Plan B, Computer Information Systems Specialization (No new students are being accepted into this specialization.)

Courses
Computer Information Systems (CIS)

CIS 120 Business Programming Fundamentals Credits: 3 (3-0-0)
Course Description: File and operating systems for business application development. Business program development using a high-level programming language.
Prerequisite: None.
Registration Information: Credit not allowed for both CIS 120 and CIS 210.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 200 Business Information Systems Credits: 3 (3-0-0)
Course Description: Use of information technology (IT) to enable knowledge workers, support business processes, and grow the business.
Prerequisite: None.
Registration Information: Passing score on Excel competency exam. Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 210 Information Technology in Business Credits: 3 (3-0-0)
Course Description: Introduction to information systems: the IS profession; hardware, software, and programming; web and database applications; data analysis tools.
Prerequisite: CIS 200, may be taken concurrently.
Registration Information: Credit not allowed for both CIS 210 and CIS 120.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 240 Application Design and Development Credits: 3 (3-0-0)
Course Description: Software engineering methods including design, implementation, and testing using structured and event-driven techniques, logic, and data structures.
Prerequisite: CIS 210.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIS 301 End User Computing Credits: 3 (3-0-0)
Course Description: End user applications in a Graphical User Interface environment including spreadsheet, word processing, and presentation graphics; Internet concepts.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIS 320 Project Management for Information Systems Credits: 3 (3-0-0)
Course Description: Project management concepts including work breakdown structure, estimating, scheduling, tools, and reports.
Prerequisite: CIS 200.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 340 Advanced Application Design and Development Credits: 3 (3-0-0)
Course Description: Design and construction of business applications using object-orientation and advanced data structures.
Prerequisite: CIS 240.
Registration Information: Credit not allowed for both CIS 340 and CIS 220.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 350 Operating Systems and Networks Credits: 3 (3-0-0)
Course Description: Multiuser and network operating systems; basic networking concepts including security, transmission, performance, and topologies.
Prerequisite: CIS 210.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 355 Business Database Systems Credits: 3 (3-0-0)
Course Description: Physical and logical design, implementation, and administration of databases.
Prerequisite: CIS 200.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 360 Systems Analysis and Design Credits: 3 (3-0-0)
Course Description: Traditional and cutting-edge systems analysis and design techniques, with emphasis on object-oriented approaches.
Prerequisite: CIS 240.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 370 Business Analytics Credits: 3 (3-0-0)
Course Description: Concepts, processes, techniques, and tools to extract, cleanse, organize, transform, store, analyze, and visualize data to support business decision making.
Prerequisite: CIS 200 and STAT 204.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 410 Web Application Development Credits: 3 (3-0-0)
Course Description: Web development techniques and strategies including Active Server Pages using VBScript, JavaScript, ColdFusion; security, web design.
Prerequisite: CIS 355 and CIS 240.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 411 Enterprise Resource Planning Systems Credits: 3 (3-0-0)
Course Description: Introduction to enterprise resource planning (ERP) systems concepts, business processes impacted by ERP, systems and software integration.
Prerequisite: (ACT 220) and (FIN 300 or FIN 305) and (MGT 305 or MGT 320) and (MKT 300 or MKT 305).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 413 Advanced Networking and Security Credits: 3 (3-0-0)
Course Description: Modern communication standards, protocol systems; network security, security policies, attack and protection mechanisms, legal and ethical issues.
Prerequisite: CIS 240 and CIS 350.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIS 455 Advanced Database Management Credits: 3 (3-0-0)
Course Description: Advanced data management topics including performance tuning, concurrency control, security, object-oriented databases, and data warehousing.
Prerequisite: CIS 355.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 487 Internship Credits: 3 (0-9-0)
Course Description: Supervised and planned work experience paralleling concentration in industry.
Prerequisite: CIS 355 and CIS 360.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 492 Seminar Credits: 3 (3-0-0)
Course Description: Current topics in computer-based information systems.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 496B Group Study: Small Business Information Systems Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 496C Group Study: Communications and Distributed Systems Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 496D Group Study: Information Systems Performance Measurement Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 496E Group Study: Current Issues in Business Computing Systems Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 498 Research Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 505 Database Concepts Credit: 1 (1-0-0)
Course Description: An introduction to business database systems for non-CIS majors. Covers introductory database concepts, terminology, structures, relationships, and querying with SQL.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 570 Business Intelligence Credits: 3 (3-0-0)
Course Description: Harnessing vast data stores to solve problems, enhance decision-making, discover new business opportunities, and to derive additional benefits.
Prerequisite: None.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 575 Applied Data Mining and Analytics in Business Credits: 3 (3-0-0)
Course Description: Data mining is a process of selecting, exploring and modeling large amounts of data to identify patterns and relationships among key variables.
Prerequisite: STAT 204.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 576 Business Data Visualization Credits: 3 (3-0-0)
Course Description: Methods to solve data visualization problems; critique and evaluate current systems; develop skills in the construction of data visualization.
Prerequisite: CIS 575 or CIS 605.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 600 Information Technology and Project Management Credits: 3 (3-0-0)
Course Description: Strategic role in and management of information technology and software development projects.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 601 Enterprise Computing and Systems Integration Credits: 3 (3-0-0)
Also Offered As: MGT 601.
Course Description: Integrated extended enterprise planning and execution systems concepts including ERP, CRM, SCM, MRP II, business processes, front/back office systems.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Credit not allowed for both CIS 601 and MGT 601. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 605 Business Visual Application Development Credits: 3 (3-0-0)
Course Description: Design, construction, and testing of business application systems including leading-edge visual, E-commerce languages, and tools.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 606 Application Software Infrastructure Credits: 3 (3-0-0)
Course Description: Design, construction, and testing of business application software infrastructure including hardware, operating software, and communications network.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 610 Software Development Methodology Credits: 3 (3-0-0)
Course Description: Methods for all phases of software development focusing upon the establishment of economical software that is reliable and cross platform.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 611 Object-Oriented Systems Credits: 3 (3-0-0)
Course Description: Object-oriented and web-based software; object model describing classes; relationships to other objects, attributes, and operations.
Prerequisite: CIS 610.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 620 IT Communications Infrastructure Credits: 3 (3-0-0)
Course Description: Technical aspects of information communications, business considerations; wireless technology, architecture, and applications.
Prerequisite: CIS 606.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 623 Cybersecurity Credits: 3 (3-0-0)
Course Description: Detailed examination of modern security topics, blending coverage of many of the domains of the CISSP with those of the CEH: Access Control, Network Security, Risk Management, Software Development Security, Cryptography, Architecture, Operations, Business Continuity, Legal/Ethical issues, as well as attack, defense and counter-measure mechanisms.
Prerequisite: CIS 620.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 655 Business Database Systems Credits: 3 (3-0-0)
Course Description: Database analysis, design, administration; data modeling; data sublanguages, query facilities; distributed database systems.
Prerequisite: CIS 605.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 665 E-Business Application Technologies Credits: 3 (3-0-0)
Course Description: Developing E-business (B2B and B2C) through construction and deployment.
Prerequisite: CIS 605 and CIS 606 and CIS 610.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 670 Advanced IT Project Management Credits: 3 (3-0-0)
Course Description: Advanced tools, techniques and skills for advanced risk management, change movement, and performance/control measures in cross-functional projects.
Prerequisite: CIS 600.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 675 Agile Management and Product Development Credits: 3 (3-0-0)
Course Description: Business model process optimization; managing rapid product development; incorporating constituent feedback throughout the product life cycle.
Prerequisite: CIS 600.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 676 Information Technology Management Credits: 3 (3-0-0)
Course Description: Strategic information technology management of business, technical, system and information services.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to graduate program in business. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Business Administration, Information Systems Concentration

This program is designed to provide students with a comprehensive knowledge of computer information systems along with the skills necessary for effective decision making in a business environment that is diverse, global, and highly competitive. The information systems curriculum provides students with a broad understanding of business and a sound foundation in computer fundamentals and programming, systems analysis and design, networking, database design and implementation, project management, web applications, systems integration, and information and systems security. Graduates acquire an ability to apply computer technologies to solve business problems, providing a wide variety of career opportunities.

Learning Outcomes

Learning outcomes in the Information Systems concentration use a tiered model based on a student's year in school. Learning outcomes build on the previous year's learning outcomes. Upon graduation all of the learning outcomes will be achieved.

Students will demonstrate:

- The ability to design, write, and test computer programs written in various computer languages by the end of their sophomore year
- The ability to design, implement, and test a database; construct a project plan for technology implementation; and understand, implement, and administer various network protocols and implementations by the end of their junior year
- The ability to integrate and implement previously learned technologies in a Web-based environment by the time they graduate

Potential Occupations

Computing-related careers are characterized by a rapid rate of change driven by technological developments. Participating in paid or voluntary work, internships, and cooperative education opportunities is highly recommended, to keep students abreast of new developments and to help them benefit from networking to enhance employment opportunities.

Examples of career opportunities include, but are not limited to: applications programmer, programmer/analyst, systems analyst, systems consultant, PC specialist, systems or network manager/administrator, database administrator, IT project manager, webmaster, information and system security professional.

Requirements

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Effective Fall 2018

Freshman

		AUCC	Credits
BUS 100	Introduction to Business		1
BUS 201[1]	Foundations of Sustainable Enterprise		1
CIS 200	Business Information Systems		3
CO 150	College Composition (GT-CO2)	1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	4
Electives			9
	Total Credits		30

Sophomore

ACT 210	Introduction to Financial Accounting		3
ACT 220	Introduction to Managerial Accounting		3
BUS 220[1]	Ethics in Contemporary Organizations (GT-AH3)	3B	3
CIS 210	Information Technology in Business		3
CIS 240	Application Design and Development		3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
STAT 204	Statistics for Business Students		3
Biological and Physical Sciences		3A	3

Electives			6
	Total Credits		30

Junior

All freshman and sophomore required courses must be completed prior to or concurrent with first enrollment in required junior and senior courses.

BUS 260	Social-Ethical-Regulatory Issues in Business		3
BUS 300	Business Writing and Communication (GT-CO3)	2	3
CIS 320	Project Management for Information Systems		3
CIS 350	Operating Systems and Networks		3
CIS 355	Business Database Systems		3
FIN 300[2]	Principles of Finance	4A,4B	3
Historical Perspectives		3D	3
Electives			6
	Total Credits		27

Senior

BUS 479	Strategic Management	4A,4C	3
Select two courses from the following:[3]			6
CIS 340	Advanced Application Design and Development		
CIS 410	Web Application Development		
CIS 411	Enterprise Resource Planning Systems		
CIS 413	Advanced Networking and Security		
CIS 455	Advanced Database Management		
CIS 360	Systems Analysis and Design		3
MGT 301	Supply Chain Management		3
MGT 320	Contemporary Management Principles/Practices		3
MKT 300	Marketing	4B	3
Diversity and Global Awareness		3E	3
Electives[4]			9
	Total Credits		33
	Program Total Credits:		120

1. Students enrolled in the Business Administration major prior to Fall semester, 2013, are not required to take BUS 201 and BUS 220.
2. Students who have taken FIN 305 and/or MKT 305 prior to admission to the College of Business may substitute those courses to satisfy the category 4A and 4B requirements. All other students are required to take FIN 300 and MKT 300 to satisfy categories 4A and 4B.
3. One of the courses selected must be either CIS 340 or CIS 410.
4. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level). A minimum of 6 elective credits must be upper-division.

Students are not to utilize the satisfactory/unsatisfactory (S/U) grading option for any Business concentration course or any Business core course (Business and non-Business subject codes) except when a course only allows S/U grading.

Major Completion Map

Distinctive Requirements for Degree Program:
To Declare this Major: Business is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the Department for more information.
To prepare for first semester: The curriculum in Business Administration - Information Systems concentration assumes students will be able to successfully complete calculus within their first year.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 100	Introduction to Business		X		1
BUS 201	Foundations of Sustainable Enterprise				1
CO 150	College Composition (GT-CO2)		X	1A	3
Biological and Physical Sciences				3A	4

Elective					6
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CIS 200	Business Information Systems	X			3
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	X		1B	3
Arts and Humanities				3B	3
Elective					3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 210	Introduction to Financial Accounting	X			3
CIS 210	Information Technology in Business	X			3
ECON 204	Principles of Macroeconomics (GT-SS1)			3C	3
Electives					6
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 220	Introduction to Managerial Accounting	X			3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)			3B	3
CIS 240	Application Design and Development		X		3
STAT 204	Statistics for Business Students				3
Biological and Physical Sciences				3A	3
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 260	Social-Ethical-Regulatory Issues in Business				3
CIS 320	Project Management for Information Systems				3
CIS 350	Operating Systems and Networks				3
BUS 300	Business Writing and Communication (GT-CO3)		X	2	3
Elective					3
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
CIS 355	Business Database Systems		X		3
FIN 300	Principles of Finance		X	4A,4B	3
Historical Perspectives				3D	3
Elective					3
CIS 240 must be completed by the end of Semester 6.		X			
	Total Credits				12
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
MKT 300	Marketing	X		4B	3
MGT 301	Supply Chain Management	X			3
MGT 320	Contemporary Management Principles/Practices	X			3
Select one course from the following:					3
CIS 340	Advanced Application Design and Development				
CIS 410	Web Application Development				
Select one additional course from the following:					3
CIS 340	Advanced Application Design and Development				
CIS 410	Web Application Development	X			
CIS 411	Enterprise Resource Planning Systems				
CIS 413	Advanced Networking and Security				

CIS 455	Advanced Database Management				
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 479	Strategic Management	X		4A,4C	3
CIS 360	Systems Analysis and Design	X			3
Diversity and Global Awareness		X		3E	3
Electives		X			9
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				18
	Program Total Credits:				120

Second Concentration with International Business

A second concentration in International Business may be taken in conjunction with the Information Systems concentration. Upon graduation, both concentrations will be noted on a student's official transcript.

Effective Fall 2019

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Freshman

		AUCC	**Credits**
BUS 100	Introduction to Business		1
BUS 201	Foundations of Sustainable Enterprise		1
CIS 200	Business Information Systems		3
CO 150	College Composition (GT-CO2)	1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	4
Historical Perspectives		3D	3
Electives			6
	Total Credits		30

Sophomore

ACT 210	Introduction to Financial Accounting		3
ACT 220	Introduction to Managerial Accounting		3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)	3B	3
BUS 260	Social-Ethical-Regulatory Issues in Business		3
CIS 210	Information Technology in Business		3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
STAT 204	Statistics for Business Students		3
Biological and Physical Sciences		3A	3
Diversity and Global Awareness		3E	3
International Business Group 2 - Global Focus			3
	Total Credits		30

Junior

BUS 300	Business Writing and Communication (GT-CO3)	2	3
CIS 240	Application Design and Development		3
CIS 320	Project Management for Information Systems		3
CIS 350	Operating Systems and Networks		3
CIS 355	Business Database Systems		3

FIN 300	Principles of Finance	4A,4B	3
FIN 475	International Business Finance		3
MGT 301	Supply Chain Management		3
MGT 435	Global Ethical Leadership Stakeholder Mgmt		3
International Business Group 3 - Experiential Learning Requirement			3
	Total Credits		30

Senior

BUS 479	Strategic Management	4A,4C	3
CIS 360	Systems Analysis and Design		3
MGT 320	Contemporary Management Principles/Practices		3
MGT 475	International Business Management		3
MKT 300	Marketing	4B	3
CIS Group 1 - Select one course from the following:			3
CIS 340	Advanced Application Design and Development		
CIS 410	Web Application Development		
CIS Group 2 - Select one course from the following:			3
CIS 340	Advanced Application Design and Development		
CIS 410	Web Application Development		
CIS 411	Enterprise Resource Planning Systems		
CIS 413	Advanced Networking and Security		
CIS 455	Advanced Database Management		
International Business Group 1 - Select one course from the following:			3
MKT 365	International Marketing		
MGT 468	Negotiating Globally		
MGT 478	Global Supply Chain Management		
International Business Group 2 - Global Focus			3
International Business Group 3 - Experiential Learning Requirement			3
	Total Credits		30
	Program Total Credits:		120

Interdisciplinary: International Business Group 2 – Global Focus (6 credits)

Code	Title	Credits
Select 6 credits from the following:		6
AM 430	International Retailing	3
ANTH 200	Cultures and the Global System (GT-SS3)	3
ECON 317	Population Economics	3
ECON 332/POLS 332	International Political Economy	3
ECON 440	Economics of International Trade and Policy	3
ECON 442	Economics of International Finance and Policy	3
ECON 460	Economic Development	3
GR 320	Cultural Geography	3
HIST 470	World Environmental History, 1500-Present	3
IE 450/SOWK 450	International Social Welfare and Development	3
IE 470	Women and Development	3
IE 471	Children and Youth in Global Context	3
IE 472	Education for Global Peace	3
IE 478	Managing International Development Programs	3
JTC 412	International Mass Communication	3
NRRT 320	International Issues-Recreation and Tourism	3
POLS 232	International Relations (GT-SS1)	3
POLS 362	Global Environmental Politics	3
POLS 431	International Law	3
POLS 433	International Organization	3
POLS 437	International Security	3
POLS 442	Environmental Politics in Developing World	3
POLS 462	Globalization, Sustainability, and Justice	3
SOC 364	Food, Agriculture and Global Society	3
SPCM 434	Intercultural Communication	3

Immersion: International Business Group 3 – Experiential Learning Requirement (6 credits)

Code	Title	Credits
Select at least one from the following:		6
Education Abroad experience		
Internship with global focus		
L*** language course		

Students are not to utilize the satisfactory/unsatisfactory (S/U) grading option for any Business concentration course or any Business core course (Business and non-Business subject codes) except when a course only allows S/U grading.

Second Concentration Major Completion Map

Distinctive Requirements for Degree Program:

To Declare this Major: Business is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the department for more information.

To prepare for first semester: The curriculum in Business Administration - Information Systems concentration assumes students will be able to successfully complete calculus within their first year.

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 100	Introduction to Business		X		1
BUS 201	Foundations of Sustainable Enterprise		X		1
CO 150	College Composition (GT-CO2)		X	1A	3
Arts and Humanities			X	3B	3
Biological and Physical Sciences			X	3A	4
Electives			X		3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CIS 200	Business Information Systems		X		3
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)		X	1B	3
Historical Perspectives			X	3D	3
Electives			X		3
BUS 100 and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 210	Introduction to Financial Accounting		X		3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)		X	3B	3
ECON 204	Principles of Macroeconomics (GT-SS1)		X	3C	3
STAT 204	Statistics for Business Students		X		3
Biological and Physical Sciences			X	3A	3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 220	Introduction to Managerial Accounting		X		3
BUS 260	Social-Ethical-Regulatory Issues in Business		X		3
CIS 210	Information Technology in Business		X		3
Diversity and Global Awareness			X	3E	3
International Business Group 2 - Global Focus			X		3
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
CIS 240	Application Design and Development		X		3
CIS 320	Project Management for Information Systems		X		3
FIN 300	Principles of Finance		X	4A,4B	3
MGT 301	Supply Chain Management		X		3
MGT 435	Global Ethical Leadership Stakeholder Mgmt		X		3
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 300	Business Writing and Communication (GT-CO3)		X	2	3

CIS 350	Operating Systems and Networks		X		3
CIS 355	Business Database Systems		X		3
FIN 475	International Business Finance				3
International Business Group 3 - Experiential Learning Requirement			X		3
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
CIS 360	Systems Analysis and Design	X			3
MGT 320	Contemporary Management Principles/Practices	X			3
MGT 475	International Business Management	X			3
MKT 300	Marketing	X		4B	3
International Business Group 2 - Global Focus		X			3
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 479	Strategic Management	X		4A,4C	3
CIS Group 1 - Select one course from the following:		X			3
CIS 340	Advanced Application Design and Development	X			
CIS 410	Web Application Development	X			
CIS Group 2 - Select one course from the following:		X			3
CIS 340	Advanced Application Design and Development	X			
CIS 410	Web Application Development	X			
CIS 411	Enterprise Resource Planning Systems	X			
CIS 413	Advanced Networking and Security	X			
CIS 455	Advanced Database Management	X			
International Business Group 1 - Select one course from the following:		X			3
MKT 365	International Marketing	X			
MGT 468	Negotiating Globally	X			
MGT 478	Global Supply Chain Management	X			
International Business Group 3 - Experiential Learning Requirement		X			3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Certificate in Information Technology for Business Professionals

The Department of Computer Information Systems (CIS) offers the Certificate in Information Technology (IT) for Business Professionals, which covers some of the knowledge and skills needed to evaluate, create, deploy, and use IT-based solutions to business problems. It is open to all business students, other than those in the CIS concentration. Students who pursue the certificate are typically interested in applying IT skills to their chosen concentration.

Effective Fall 2018

Additional coursework may be required due to prerequisites.

Code	Title	Credits
CIS 320	Project Management for Information Systems	3
CIS 355	Business Database Systems	3
CIS 411	Enterprise Resource Planning Systems	3
Program Total Credits:		9

Graduate Certificate in Business Analytics and Accounting Systems

Completion of the Graduate Certificate in Business Analytics and Accounting Systems provides students with the ability to harness vast data stores to solve problems, enhance decision-making and discover new opportunities. They will learn data mining concepts, methodologies, models, and tools, along with appropriate applications for optimizing business functions, forecasting, detection, prediction, classification, and discovery. Additionally, students will gain increased expertise in accounting technology systems used in organizational accounting systems worldwide, including skills in spreadsheet and database technologies.

Effective Fall 2017

Additional coursework may be required due to prerequisites.

Code	Title	Credits
ACT 550	Accounting Information Technologies	3
CIS 570	Business Intelligence	3
CIS 575	Applied Data Mining and Analytics in Business	3
Program Total Credits:		9

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Graduate Certificate in Business Information Systems

The Certificate combines business intelligence with applied data mining and analytics to optimize, forecast, detect, predict, classify and discover new ways of using data to make a business more productive and efficient. Completion of the certificate allows students to bring value to companies that have vast quantities of both structured and unstructured data that requires identification, analysis, and transformation into useful data for business optimization and forecasting.

Effective Fall 2015

Additional coursework may be required due to prerequisites.

Code	Title	Credits
CIS 570	Business Intelligence	3
CIS 600	Information Technology and Project Management	3
CIS 676	Information Technology Management	3
Program Total Credits:		9

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Graduate Certificate in Business Intelligence

The Certificate combines business intelligence with applied data mining and analytics to optimize, forecast, detect, predict, classify and discover new ways of using data to make a business more productive and efficient. Completion of the certificate allows students to bring value to companies that have vast quantities of both structured and unstructured data that requires identification, analysis, and transformation into useful data for business optimization and forecasting.

Effective Fall 2019

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Select three courses from the following:		9
CIS 570	Business Intelligence	
CIS 575	Applied Data Mining and Analytics in Business	
CIS 576	Business Data Visualization	
CIS 655	Business Database Systems	
Program Total Credits:		9

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Graduate Certificate in Information Technology Project Management

In the information technology areas, project management is found across the private, public, and military sectors. The Certificate includes a deep understanding of the 10 knowledge areas and the 42 grouped processes required by the Project Management Institute©, information technology management, agile project management, and other special topics. Completion of this certificate also prepares the recipient to sit for the PMP© Certification or the CAP-M© Certification exam.

Effective Fall 2015

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Select 9 credits from the following:		9
CIS 600	Information Technology and Project Management	
CIS 670	Advanced IT Project Management	
CIS 675	Agile Management and Product Development	
CIS 676	Information Technology Management	
Program Total Credits:		9

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Master of Computer Information Systems, Plan C (M.C.I.S.)

The M.C.I.S. program addresses the demand of the marketplace. Students gain applicable skills to meet the needs of an ever-evolving business environment which increasingly relies on technology to support organizations from a systems perspective. The program offers students innovative, cutting-edge and necessary skills to address organizational issues such as data analysis, project management, security, IT communication infrastructure, software development and implementation, integration of processes, and technology in support of enterprises and the organization and management of information technology projects. Because students may enroll full- or part-time in either an on-campus or online program, working professionals have flexibility in completing the curriculum. Depending on time available to devote to coursework, the M.C.I.S. degree typically takes between 2 and 5 years. Students entering with a technical background may take less time.

Requirements Effective Fall 2019

Code	Title	Credits
Core Courses		
CIS 600	Information Technology and Project Management	3
CIS 606	Application Software Infrastructure	3
CIS 610	Software Development Methodology	3
CIS 655	Business Database Systems	3
Select at least one course from the following:		3
CIS 605	Business Visual Application Development	
CIS 611	Object-Oriented Systems	
Select a minimum of six courses from the following (not previously taken):		18
BUS 690C	Contemporary Issues: Info Systems	
CIS 570	Business Intelligence	
CIS 575	Applied Data Mining and Analytics in Business	
CIS 576	Business Data Visualization	
CIS 601/MGT 601	Enterprise Computing and Systems Integration	
CIS 605	Business Visual Application Development	
CIS 611	Object-Oriented Systems	
CIS 620	IT Communications Infrastructure	
CIS 623	Cybersecurity	
CIS 665	E-Business Application Technologies	
CIS 670	Advanced IT Project Management	
CIS 675	Agile Management and Product Development	
CIS 676	Information Technology Management	
CIS 695	Independent Study	
Program Total Credits:		33

A minimum of 33 credits are required to complete this program.

Master of Science in Business Administration, Plan A, Computer Information Systems Specialization

No new students are being accepted into this specialization. Students interested in this area of study, please see the Master of Computer Information Systems.

Requirements Effective Fall 2011

Code	Title	Credits
CIS 600	Information Technology and Project Management	3
CIS 601/MGT 601	Enterprise Computing and Systems Integration	3
CIS 605	Business Visual Application Development	3
CIS 606	Application Software Infrastructure	3
CIS 610	Software Development Methodology	3
CIS 611	Object-Oriented Systems	3
CIS 620	IT Communications Infrastructure	3
CIS 655	Business Database Systems	3
CIS 665	E-Business Application Technologies	3
Thesis		
CIS 699	Thesis	3
Program Total Credits:		30

Master of Science in Business Administration, Plan B, Computer Information Systems Specialization

No new students are being accepted into this specialization. Students interested in this area of study, please see the Master of Computer Information Systems.

Requirements Effective Fall 2013

Code	Title	Credits
CIS 600	Information Technology and Project Management	3
CIS 601/MGT 601	Enterprise Computing and Systems Integration	3
CIS 605	Business Visual Application Development	3
CIS 606	Application Software Infrastructure	3
CIS 610	Software Development Methodology	3
CIS 611	Object-Oriented Systems	3
CIS 620	IT Communications Infrastructure	3
CIS 655	Business Database Systems	3
CIS 665	E-Business Application Technologies	3
Select a minimum of 6 credits from the following:		6
BUS 690C	Contemporary Issues: Info Systems	
CIS 570	Business Intelligence	
CIS 575	Applied Data Mining and Analytics in Business	
CIS 670	Advanced IT Project Management	
Program Total Credits:		33

Department of Finance and Real Estate

Office in Rockwell Hall, Room 305
(970) 491-5062
biz.colostate.edu/financeRealEstate (http://biz.colostate.edu/financeRealEstate)

Professor Harry J. Turtle, Chair

Undergraduate
Major in Business Administration

- Finance Concentration
- Financial Planning Concentration
- Real Estate Concentration

Minor

- Real Estate

Graduate
Certificate

- Applied Finance

Master's Programs

- Master of Finance, Plan C (M.Fin)

Courses

Subjects in this department include: Finance (FIN) and Real Estate (REL).

Finance (FIN)

FIN 200 Personal Finance and Investing Credits: 3 (3-0-0)
Course Description: Fundamentals of personal finance including budgeting, tax planning, managing credit, avoiding identity theft, buying insurance, selecting employee benefits, saving, and investing to meet long-term financial goals. Apply a systematic process to evaluate personal financial situation, develop goals, and create a plan to meet those goals.
Prerequisite: MATH 101 or MATH 105 or MATH 117 or MATH 118 or MATH 124 or MATH 125 or MATH 126 or MATH 141 or MATH 155 or MATH 160.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 300 Principles of Finance Credits: 3 (3-0-0)
Course Description: Overview of financial markets and institutions, analysis of securities and investigation of financial management techniques.
Prerequisite: (ACT 205 or ACT 210) and (AREC 202 or ECON 202) and (CIS 200) and (ECON 204) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online. Credit not allowed for both FIN 300 and FIN 305.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 305 Fundamentals of Finance Credits: 3 (3-0-0)
Course Description: Role of finance in management of the firm; role, structure of financial markets and institutions, valuation of basic securities.
Prerequisite: (ACT 205 or ACT 210) and (ECON 204).
Registration Information: Credit not allowed for both FIN 305 and FIN 300. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 309 Fundamentals of Entrepreneurial Finance Credits: 3 (3-0-0)
Course Description: Accounting and finance for entrepreneurs, including forms of business organization, preparation of financial statements, developing a cash budget, managing working capital, measuring cash flow, valuing a company, measuring performance, types and sources of financing at different stages in a company's life cycle.
Prerequisite: MGT 340.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 310 Financial Markets and Institutions Credits: 3 (3-0-0)
Course Description: Analysis of the functions and operations of financial markets and the primary and secondary securities created in those markets.
Prerequisite: ECON 204.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 311 Debt Securities Analysis Credits: 3 (3-0-0)
Course Description: Analysis of corporate, government, and mortgage-based debt securities. Emphasis on securitization of asset-backed obligations.
Prerequisite: (FIN 300) and (FIN 310 or ECON 315) and (FIN 355).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 320 Introduction to Financial Planning Credits: 3 (3-0-0)
Course Description: Personal financial planning including budgeting, tax planning, credit management, investing, retirement, and estate planning.
Prerequisite: ACT 210 and ECON 202.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 342 Risk Management and Insurance Credits: 3 (3-0-0)
Course Description: Management of insurable risks for the individual and business firm.
Prerequisite: FIN 300 or FIN 305.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 355 Principles of Investments Credits: 3 (3-0-0)
Course Description: Modern investment theory with applications in the debt and equity markets, with introduction to portfolio management.
Prerequisite: FIN 300 and FIN 310.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 370 Financial Management-Theory and Application Credits: 3 (3-0-0)
Course Description: Theory and application of financial management to business firms; case problems used for illustration.
Prerequisite: FIN 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 430 Introduction to Financial Modeling Credits: 3 (3-0-0)
Course Description: Financial modeling that integrates conceptual material with spreadsheet-based numerical solutions and simulation techniques.
Prerequisite: FIN 300 and FIN 310.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 440 Estate Planning Credits: 3 (3-0-0)
Course Description: Methods for conservation and transfer of wealth, considering aspects of tax, trusts, wills, probate, advanced directives, and charitable giving.
Prerequisite: ACT 330 and FIN 320.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 442 Employee Benefits and Retirement Planning Credits: 3 (3-0-0)
Course Description: Design, financing, accounting, and taxation for employee benefit and retirement plans.
Prerequisite: FIN 342.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 445 Financial Plan Development Credits: 3 (3-0-0)
Course Description: Analyze client finances and economic conditions, develop and communicate comprehensive financial plan using financial planning professional standards.
Prerequisite: ACT 330 and FIN 320 and FIN 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 455 Advanced Portfolio Management Credits: 3 (3-0-0)
Course Description: Advanced hedging and portfolio management theory and techniques.
Prerequisite: FIN 355.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 470 Derivative Securities Credits: 3 (3-0-0)
Course Description: Futures, options and other derivatives, including their use in hedging, speculation, and arbitrage.
Prerequisite: FIN 355.
Registration Information: Business majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 471 Enterprise Valuation Credits: 3 (3-0-0)
Course Description: Analytical framework for measuring, managing, and applying principles and tools to value enterprises.
Prerequisite: FIN 355 and FIN 370.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 475 International Business Finance Credits: 3 (3-0-0)
Course Description: International financial management emphasizing markets, instruments, hedging techniques, and operating strategies.
Prerequisite: FIN 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 486 Summit Investment Fund Practicum Credits: 3 (0-0-6)
Course Description: An opportunity to gain valuable experience in equity valuation, asset allocation, style analysis and portfolio management as applied to an actual investment portfolio.
Prerequisite: FIN 355.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 487 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FIN 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FIN 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FIN 498 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FIN 524 Financial Statistics Credits: 3 (3-0-0)
Also Offered As: STAT 524.
Course Description: Probability and statistical concepts and quantitative tools used in financial modeling and decision-making.
Prerequisite: MATH 345 and STAT 420.
Registration Information: MATH 345; STAT 420, or Admission to MSBA program with Financial Risk Management specialization. Credit not allowed for both FIN 524 and STAT 524. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 600 Financial Management-Theory and Case Studies Credits: 3 (3-0-0)
Course Description: Financial problems for various types of business organizations.
Prerequisite: FIN 300 or FIN 305.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 601 Financial Management and Markets Credits: 3 (3-0-0)
Course Description: Integrated coverage of financial management, investments, and markets and institutions from the public, private, and nonprofit perspective.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to GSSE program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 602 Options and Futures Credit: 1 (1-0-0)
Course Description: Advanced analysis and pricing of derivative securities, such as futures, forwards and options.
Prerequisite: BUS 641.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 603 Corporate Risk Management Credit: 1 (1-0-0)
Course Description: Survey of topics related to corporate risk management including the role and function of insurance and risk management for business enterprises.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master's program in business. This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 604 Employee Benefits Credit: 1 (1-0-0)
Course Description: Design and financing of employee benefits including health plans, disability, life insurance, long-term care, and retirement plans.
Prerequisite: FIN 603.
Restriction: Must not be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 605 Enterprise Valuation Credits: 3 (3-0-0)
Course Description: Corporate valuation methodologies including dividend discount model, relative valuation using market multiples, free cash flows and options analysis.
Prerequisite: FIN 300.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to M.S. Business Administration, Financial Risk Management specialization. This is a partial-semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 606 Fundamentals of International Finance Credit: 1 (1-0-0)
Course Description: Fundamental principles of international finance and how they relate to business operations and strategies.
Prerequisite: BUS 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 607 Fundamentals of Bond Markets Credit: 1 (1-0-0)
Course Description: Properties of bonds and bond markets, pricing bonds by arbitrage, risk characteristics of bonds.
Prerequisite: BUS 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 608 Fundamentals of Firm Valuation Credit: 1 (1-0-0)
Course Description: Identifies key value drivers for a business and how these can be identified utilizing currently available financial information.
Prerequisite: BUS 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 609 Fundamentals of Personal Finance Credit: 1 (1-0-0)
Course Description: Personal financial planning focusing on TVM, personal financial statements, retirement plans, government sponsored benefits and education planning.
Prerequisite: BUS 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 610 Debt Securities Analysis Credits: 3 (3-0-0)
Course Description: Valuation of corporate, government, and mortgage-backed debt securities and strategies for management of debt security portfolios.
Prerequisite: FIN 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 612 Private Equity and Venture Capital Credit: 1 (1-0-0)
Course Description: The role and function of the private equity market and key players in that market, including crowdfunding, angel investors, and venture capitalists. Application of financial tools and models to value venture investments, evaluate risk and return, and negotiate deals.
Prerequisite: BUS 640.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only. This is a partial semester course. Credit not allowed for both FIN 612 and FIN 669.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 625 Quantitative Methods in Finance Credits: 3 (3-0-0)
Course Description: Review and application of mathematical and analytical techniques used in solving financial problems.
Prerequisite: FIN 300.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 630 Financial Modeling Credits: 3 (3-0-0)
Course Description: Practical applications of financial modeling and computer programming to analyze financial data.
Prerequisite: FIN 524 or STAT 524.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 655 Investments Credits: 3 (3-0-0)
Course Description: Investment analysis and decision making emphasizing equity securities and portfolio management.
Prerequisite: FIN 300.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to M.S. Business Administration, Financial Risk Management specialization. This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 661 Advanced Portfolio Management Credits: 3 (3-0-0)
Course Description: Portfolio management, asset allocation, and asset selection theory and techniques.
Prerequisite: FIN 605 and FIN 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 665 Financial Engineering Credits: 3 (3-0-0)
Course Description: Using futures, options, swaps, and securitized transactions in financial management.
Prerequisite: FIN 610 or FIN 655 or FIN 675.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 669 Financing, Evaluating Sustainable Enterprise Credits: 3 (3-0-0)
Course Description: Theoretical and applied approaches to the funding and evaluation of enterprises.
Prerequisite: (BUS 601) and (FIN 601).
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 670 Risk Management Theory and Application Credits: 3 (3-0-0)
Course Description: Fundamentals of financial risk management using quantitative techniques and models to identify, measure, and manage corporate risk.
Prerequisite: (FIN 524 or STAT 524) and (FIN 655).
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 675 International Finance Credits: 3 (3-0-0)
Course Description: Analysis of the foreign exchange market and international financial markets.
Prerequisite: FIN 300.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 678 Financial Decisions-Theory and Practice Credits: 3 (3-0-0)
Course Description: Analysis of theory of corporate finance with emphasis on underlying assumptions and implications for financial decisions.
Prerequisite: FIN 600.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FIN 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FIN 698 Research Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Real Estate (REL)

REL 360 Real Estate Principles Credits: 3 (3-0-0)
Course Description: Broad survey of real estate emphasizing land use, urban structure and growth, market analysis, real estate finance and valuation, and property rights.
Prerequisite: AREC 202 or ECON 202.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

REL 367 Real Estate Law Credits: 3 (3-0-0)
Course Description: Legal regulations applicable to real property ownership and transfer, to real estate agents, and to use of real property.
Prerequisite: BUS 205 or BUS 260 or HDFS 403.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

REL 430 Real Estate Market Analysis Credits: 3 (3-0-0)
Course Description: Analysis of real estate markets, including development feasibility and managing risk, and their relation to urban economic trends.
Prerequisite: (FIN 300 or FIN 305) and (REL 360).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

REL 454 Real Estate Appraisal Credits: 3 (3-0-0)
Also Offered As: AREC 454.
Course Description: Theoretical principles that underlie real estate appraisal methods. Procedures and practices used in real estate appraisal.
Prerequisite: (AREC 202 or ECON 202) and (AREC 305 or REL 360).
Registration Information: Sections may be offered: Online. Credit allowed for only one of the following: AREC 453, AREC 454, REL 453, or REL 454.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

REL 455 Real Estate Finance Credits: 3 (3-0-0)
Course Description: Residential mortgage origination, mortgage loan amortization, mortgage decision making, secondary mortgage markets, mortgage backed securities, REITs.
Prerequisite: (FIN 300 or FIN 305) and (REL 360).
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

REL 460 Real Estate Investment Credits: 3 (3-0-0)
Course Description: Financing of real estate assets: real estate markets, policies; use of leverage and real estate investment analysis in real estate investment.
Prerequisite: (FIN 300 or FIN 305) and (REL 360).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

REL 487 Real Estate Internship Credits: Var[1-3] (0-0-0)
Course Description: Internship.
Prerequisite: FIN 300.
Registration Information: Junior standing. Maximum of 3 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

REL 495 Real Estate Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 3 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

REL 496 Real Estate Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 3 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

REL 601 Fundamentals of Real Estate Finance Credit: 1 (1-0-0)
Course Description: Valuation-oriented study of real estate concepts and principles, including legal, regulatory, finance, market and financial analysis.
Prerequisite: BUS 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Major in Business Administration, Finance Concentration

This program is designed to prepare undergraduate students to enter the finance profession with comprehensive knowledge and real world skills in their area of emphasis. The field of finance is constantly evolving. The program focuses on providing state-of-the-art tools, techniques, and computer applications.

Learning Outcomes

Students will demonstrate the ability to:

- Display broad conceptual knowledge, analytical abilities, and problem solving skill sets in finance
- Analyze and interpret financial statements, and capital markets and economic data to inform business decisions
- Explain the role of business financing and investment decisions on firm value
- Understand the structure and function of financial markets, and the pricing of securities that trade in these markets
- Characterize the relationship between expected return and various sources of risks
- Identify and implement asset allocation and portfolio diversification strategies to improve investment outcomes
- Appreciate the role of the firm in the broader economy and society including an understanding of the many stakeholders of the firm in global markets

In addition to the core areas of asset valuation, investments, and global finance, the concentration allows students to select from three options for more in-depth study.

The **Corporate Finance option** prepares students for positions in both financial and non-financial business enterprises in which they will need to make and defend strategic financial decisions in capital budgeting, planning, control, and policy.

The **Investment Analysis option** focuses on the theoretical and practical aspects of investment valuation, selection, and portfolio management, for both individual and institutional investors.

The **Real Estate Finance option** prepares students for careers in commercial or residential real estate and related industries, while also providing strong foundations in financial analysis.

Potential Occupations

Finance students are prepared for a number of different careers in business. Internships and volunteer experiences enhance skills and marketability.

Examples of fields in which graduates can find finance-related occupations include: commercial, mortgage, and investment banking; corporate finance; investments; portfolio management; financial analysis; securities analysis; loan analysis; risk management and insurance; stock brokerage; government banking and securities regulation; government finance; teaching and research.

Requirements

In order to complete the Finance concentration, the Business Administration core courses and the Finance concentration core courses must be completed. Students must select one of the following options as well: Corporate Finance, Investment Analysis, or Real Estate Finance.

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Effective Fall 2017

Freshman

		AUCC	Credits
BUS 100	Introduction to Business		1
BUS 201[1]	Foundations of Sustainable Enterprise		1
CIS 200	Business Information Systems		3
CO 150	College Composition (GT-CO2)	1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
Biological and Physical Sciences		3A	4
Global and Cultural Awareness		3E	3
Elective			9
	Total Credits		30

Sophomore

ACT 210	Introduction to Financial Accounting		3
ACT 220	Introduction to Managerial Accounting		3
BUS 220[1]	Ethics in Contemporary Organizations (GT-AH3)	3B	3
BUS 260	Social-Ethical-Regulatory Issues in Business		3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
STAT 204	Statistics for Business Students		3
Biological and Physical Sciences		3A	3
Historical Perspectives		3D	3
Electives			6
	Total Credits		30

Junior

All freshman and sophomore required courses must be completed prior to or concurrent with first enrollment in required junior and senior courses.			
BUS 300	Business Writing and Communication (GT-CO3)	2	3
FIN 300[2]	Principles of Finance	4A,4B	3
FIN 310	Financial Markets and Institutions		3
FIN 355	Principles of Investments		3
MKT 300[2]	Marketing	4B	3
Arts and Humanities		3B	3
Option courses (see requirements below)			3-6
Electives			3-9
	Total Credits		30

Senior

BUS 479	Strategic Management	4A,4C	3
FIN 475	International Business Finance		3
MGT 301	Supply Chain Management		3
MGT 320	Contemporary Management Principles/Practices		3
Option courses (see requirements below)			6-12
Electives[3]			6-12
	Total Credits		30
	Program Total Credits:		120

[1] Students enrolled in the Business Administration major prior to Fall semester 2013, are not required to take BUS 201 and BUS 220.

[2] Students who have taken FIN 305 and/or MKT 305 prior to admission to the College of Business may substitute those courses to satisfy the category 4A and 4B requirements. All other students are required to take FIN 300 and MKT 300 to satisfy categories 4A and 4B.

[3] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Students are not to utilize the satisfactory/unsatisfactory (S/U) grading option for any Business concentration course or any Business core course (Business and non-Business subject codes) except when a course only allows S/U grading.

Corporate Finance Option

Code	Title	AUCC	Credits
JUNIOR			
FIN 370	Financial Management-Theory and Application		3
SENIOR			
FIN 470	Derivative Securities		3
FIN 471	Enterprise Valuation		3
Upper-Division ACT, FIN, or REL Electives			6

Investment Analysis Option

Code	Title	AUCC	Credits
JUNIOR			
FIN 311	Debt Securities Analysis		3
Upper-Division ACT, FIN, or REL Elective			3
SENIOR			
FIN 455	Advanced Portfolio Management		3
FIN 470	Derivative Securities		3
Upper-Division ACT, FIN, or REL Elective			3

Real Estate Finance Option

Code	Title	AUCC	Credits
JUNIOR			
REL 360	Real Estate Principles		3
Upper-Division ACT, FIN, or REL Elective			3
SENIOR			
REL 430	Real Estate Market Analysis		3
REL 460	Real Estate Investment		3
Upper-Division ACT, FIN, or REL Elective			3

Major Completion Map

Distinctive Requirements for Degree Program: .
To Declare this Major: Business is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in department for more information.
To prepare for first semester: The curriculum for the Business Administration - Finance concentration assumes students will be able to successfully complete calculus within their first year.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
BUS 100	Introduction to Business		X		1
BUS 201	Foundations of Sustainable Enterprise				1
CO 150	College Composition (GT-CO2)		X	1A	3
Biological and Physical Sciences				3A	4
Elective					6
	Total Credits				15

Semester 2		Critical	Recommended	AUCC	Credits
CIS 200	Business Information Systems				3
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	X		1B	3
Global and Cultural Awareness				3E	3
Elective					3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		Critical	Recommended	AUCC	Credits
ACT 210	Introduction to Financial Accounting	X			3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)			3B	3
ECON 204	Principles of Macroeconomics (GT-SS1)		X	3C	3
Biological and Physical Sciences				3A	3
Elective					3
	Total Credits				15

Semester 4		Critical	Recommended	AUCC	Credits
ACT 220	Introduction to Managerial Accounting	X			3
BUS 260	Social-Ethical-Regulatory Issues in Business				3
STAT 204	Statistics for Business Students				3
Historical Perspectives				3D	3
Elective					3
	Total Credits				15
	Program Total Credits:				60

Corporate Finance Option

Junior

Semester 5		Critical	Recommended	AUCC	Credits
BUS 300	Business Writing and Communication (GT-CO3)		X	2	3
FIN 300	Principles of Finance	X		4A,4B	3
FIN 310	Financial Markets and Institutions	X			3
Arts and Humanities				3B	3
Elective					3
	Total Credits				15

Semester 6		Critical	Recommended	AUCC	Credits
FIN 355	Principles of Investments	X			3
FIN 370	Financial Management-Theory and Application	X			3
MKT 300	Marketing			4B	3
Electives					6
	Total Credits				15

Senior

Semester 7		Critical	Recommended	AUCC	Credits
FIN 470	Derivative Securities				3
FIN 475	International Business Finance				3
MGT 301	Supply Chain Management	X			3
MGT 320	Contemporary Management Principles/Practices	X			3
Upper-Division ACT, FIN, or REL Elective					3
MKT 300 must be completed by the end of Semester 7.		X			
	Total Credits				15

Semester 8		Critical	Recommended	AUCC	Credits
BUS 479	Strategic Management	X		4A,4C	3
FIN 471	Enterprise Valuation	X			3
Upper-Division ACT, FIN, or REL Elective		X			3
Electives		X			6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study		X			
	Total Credits				15
	Program Total Credits:				60

Investment Analysis Option

Junior

Semester 5		Critical	Recommended	AUCC	Credits
BUS 300	Business Writing and Communication (GT-CO3)		X	2	3
FIN 300	Principles of Finance	X		4A,4B	3
FIN 310	Financial Markets and Institutions	X			3
Arts and Humanities (note: this option suggests AUCC 3D in Semester 5 and AUCC 3B in Semester 4.)				3B	3
Elective					3
	Total Credits				15

Semester 6		Critical	Recommended	AUCC	Credits
FIN 355	Principles of Investments	X			3
MGT 301	Supply Chain Management		X		3
MKT 300	Marketing		X	4B	3
Electives					6
	Total Credits				15

Senior

Semester 7		Critical	Recommended	AUCC	Credits
FIN 311	Debt Securities Analysis	X			3
FIN 475	International Business Finance				3
MGT 320	Contemporary Management Principles/Practices	X			3
Upper-Division ACT, FIN, or REL Elective					3
Elective					3
	Total Credits				15

Semester 8		Critical	Recommended	AUCC	Credits
BUS 479	Strategic Management	X		4A,4C	3
FIN 455	Advanced Portfolio Management	X			3
FIN 470	Derivative Securities	X			3
Upper-Division ACT, FIN, or REL Elective		X			3
Elective		X			3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				60

Real Estate Finance Option

Junior

Semester 5		Critical	Recommended	AUCC	Credits
BUS 300	Business Writing and Communication (GT-CO3)		X	2	3
FIN 300	Principles of Finance	X		4A,4B	3

FIN 310	Financial Markets and Institutions	X			3
MKT 300	Marketing		X	4B	3
Arts and Humanities				3B	3
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
REL 360	Real Estate Principles	X			3
FIN 355	Principles of Investments	X			3
Upper-Division ACT, FIN, or REL Elective					3
Electives					6
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
REL 430	Real Estate Market Analysis	X			3
REL 460	Real Estate Investment	X			3
MGT 301	Supply Chain Management	X			3
MGT 320	Contemporary Management Principles/Practices	X			3
Upper-Division ACT, FIN, or REL Elective					3
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 479	Strategic Management	X		4A,4C	3
FIN 475	International Business Finance	X			3
Electives		X			9
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				60

Second Concentration options with International Business

A second concentration in International Business may be taken in conjunction with the Finance concentration. Students must also select an option within the Finance concentration. Upon graduation, both concentrations will be noted on a student's official transcript.

- Corporate Finance option
- Investment Analysis option
- Real Estate Finance option

Corporate Finance option Effective Fall 2019

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Freshman

		AUCC	**Credits**
BUS 100	Introduction to Business		1
BUS 201	Foundations of Sustainable Enterprise		1
CIS 200	Business Information Systems		3
CO 150	College Composition (GT-CO2)	1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	4
Historical Perspectives		3D	3
Electives			6
	Total Credits		30

Sophomore

ACT 210	Introduction to Financial Accounting		3
ACT 220	Introduction to Managerial Accounting		3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)	3B	3
BUS 260	Social-Ethical-Regulatory Issues in Business		3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
STAT 204	Statistics for Business Students		3
Biological and Physical Sciences		3A	3
Diversity and Global Awareness		3E	3
International Business Group 2 - Global Focus			3
Electives			3
	Total Credits		30

Junior

BUS 300	Business Writing and Communication (GT-CO3)	2	3
FIN 300	Principles of Finance	4A,4B	3
FIN 310	Financial Markets and Institutions		3
FIN 355	Principles of Investments		3
FIN 370	Financial Management-Theory and Application		3
FIN 475	International Business Finance		3
MGT 320	Contemporary Management Principles/Practices		3
MGT 435	Global Ethical Leadership Stakeholder Mgmt		3
International Business Group 2 - Global Focus			3
International Business Group 3 - Experiential Learning Requirement			3
	Total Credits		30

Senior

BUS 479	Strategic Management	4A,4C	3
FIN 470	Derivative Securities		3
FIN 471	Enterprise Valuation		3
MGT 301	Supply Chain Management		3
MGT 475	International Business Management		3
MKT 300	Marketing	4B	3
International Group 1 select one course from the following:			3
MKT 365	International Marketing		
MGT 468	Negotiating Globally		
MGT 478	Global Supply Chain Management		
International Business Group 3 - Experiential Learning Requirement			3
Upper-Division FIN, REL, or ACT Electives			6
	Total Credits		30
	Program Total Credits:		120

Interdisciplinary: International Business Group 2 – Global Focus (6 credits)

Code	Title	Credits
Select 6 credits from the following:		6
AM 430	International Retailing	3
ANTH 200	Cultures and the Global System (GT-SS3)	3
ECON 317	Population Economics	3
ECON 332/POLS 332	International Political Economy	3
ECON 440	Economics of International Trade and Policy	3
ECON 442	Economics of International Finance and Policy	3
ECON 460	Economic Development	3
GR 320	Cultural Geography	3
HIST 470	World Environmental History, 1500-Present	3
IE 450/SOWK 450	International Social Welfare and Development	3
IE 470	Women and Development	3

IE 471	Children and Youth in Global Context	3
IE 472	Education for Global Peace	3
IE 478	Managing International Development Programs	3
JTC 412	International Mass Communication	3
NRRT 320	International Issues-Recreation and Tourism	3
POLS 232	International Relations (GT-SS1)	3
POLS 362	Global Environmental Politics	3
POLS 431	International Law	3
POLS 433	International Organization	3
POLS 437	International Security	3
POLS 442	Environmental Politics in Developing World	3
POLS 462	Globalization, Sustainability, and Justice	3
SOC 364	Food, Agriculture and Global Society	3
SPCM 434	Intercultural Communication	3

Immersion: International Business Group 3 – Experiential Learning Requirement (6 credits)

Code	Title	Credits
Select at least one from the following:		6
Education Abroad experience		
Internship with global focus		
L*** language course		

Students are not to utilize the satisfactory/unsatisfactory (S/U) grading option for any Business concentration course or any Business core course (Business and non-Business subject codes) except when a course only allows S/U grading.

Investment Analysis option Effective Fall 2019

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Freshman

		AUCC	Credits
BUS 100	Introduction to Business		1
BUS 201	Foundations of Sustainable Enterprise		1
CIS 200	Business Information Systems		3
CO 150	College Composition (GT-CO2)	1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
Biological and Physical Sciences		3A	4
Arts and Humanities		3B	3
Historical Perspectives		3D	3
Electives			6
	Total Credits		30

Sophomore

ACT 210	Introduction to Financial Accounting		3
ACT 220	Introduction to Managerial Accounting		3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)	3B	3
BUS 260	Social-Ethical-Regulatory Issues in Business		3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
STAT 204	Statistics for Business Students		3
Biological and Physical Sciences		3A	3
Diversity and Global Awareness		3E	3
International Business Group 2 - Global Focus			3
Electives			3
	Total Credits		30

Junior

BUS 300	Business Writing and Communication (GT-CO3)	2	3
FIN 300	Principles of Finance	4A,4B	3
FIN 310	Financial Markets and Institutions		3
FIN 311	Debt Securities Analysis		3
FIN 355	Principles of Investments		3
FIN 475	International Business Finance		3

MGT 320	Contemporary Management Principles/Practices		3
MGT 435	Global Ethical Leadership Stakeholder Mgmt		3
International Business Group 2 - Global Focus			3
International Business Group 3 - Experiential Learning Requirement			3
	Total Credits		30

Senior

BUS 479	Strategic Management	4A,4C	3
FIN 470	Derivative Securities		3
FIN 455	Advanced Portfolio Management		3
MGT 301	Supply Chain Management		3
MGT 475	International Business Management		3
MKT 300	Marketing	4B	3
International Group 1 select one course from the following:			3
MKT 365	International Marketing		
MGT 468	Negotiating Globally		
MGT 478	Global Supply Chain Management		
International Business Group 3 - Experiential Learning Requirement			3
Upper Division FIN, REL, or ACT Electives			6
	Total Credits		30
	Program Total Credits:		120

Interdisciplinary: International Business Group 2 – Global Focus (6 credits)

Code	Title	Credits
Select 6 credits from the following:		6
AM 430	International Retailing	3
ANTH 200	Cultures and the Global System (GT-SS3)	3
ECON 317	Population Economics	3
ECON 332/POLS 332	International Political Economy	3
ECON 440	Economics of International Trade and Policy	3
ECON 442	Economics of International Finance and Policy	3
ECON 460	Economic Development	3
GR 320	Cultural Geography	3
HIST 470	World Environmental History, 1500-Present	3
IE 450/SOWK 450	International Social Welfare and Development	3
IE 470	Women and Development	3
IE 471	Children and Youth in Global Context	3
IE 472	Education for Global Peace	3
IE 478	Managing International Development Programs	3
JTC 412	International Mass Communication	3
NRRT 320	International Issues-Recreation and Tourism	3
POLS 232	International Relations (GT-SS1)	3
POLS 362	Global Environmental Politics	3
POLS 431	International Law	3
POLS 433	International Organization	3
POLS 437	International Security	3
POLS 442	Environmental Politics in Developing World	3
POLS 462	Globalization, Sustainability, and Justice	3
SOC 364	Food, Agriculture and Global Society	3
SPCM 434	Intercultural Communication	3

Immersion: International Business Group 3 – Experiential Learning Requirement (6 credits)

Code	Title	Credits
Select at least one from the following:		6
Education Abroad experience		
Internship with global focus		
L*** language course		

Students are not to utilize the satisfactory/unsatisfactory (S/U) grading option for any Business concentration course or any Business core course (Business and non-Business subject codes) except when a course only allows S/U grading.

Real Estate Finance option Effective Fall 2019

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Freshman

		AUCC	Credits
BUS 100	Introduction to Business		1
BUS 201	Foundations of Sustainable Enterprise		1
CIS 200	Business Information Systems		3
CO 150	College Composition (GT-CO2)	1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	4
Historical Perspectives		3D	3
Electives			6
	Total Credits		30

Sophomore

ACT 210	Introduction to Financial Accounting		3
ACT 220	Introduction to Managerial Accounting		3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)	3B	3
BUS 260	Social-Ethical-Regulatory Issues in Business		3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
STAT 204	Statistics for Business Students		3
Biological and Physical Sciences		3A	3
Diversity and Global Awareness		3E	3
International Business Group 2 - Global Focus			3
Electives			3
	Total Credits		30

Junior

BUS 300	Business Writing and Communication (GT-CO3)	2	3
FIN 300	Principles of Finance	4A,4B	3
FIN 310	Financial Markets and Institutions		3
FIN 355	Principles of Investments		3
FIN 475	International Business Finance		3
MGT 320	Contemporary Management Principles/Practices		3
MGT 435	Global Ethical Leadership Stakeholder Mgmt		3
REL 360	Real Estate Principles		3
International Business Group 2 - Global Focus			3
International Business Group 3 - Experiential Learning Requirement			3
	Total Credits		30

Senior

BUS 479	Strategic Management	4A,4C	3
MGT 301	Supply Chain Management		3
MGT 475	International Business Management		3
MKT 300	Marketing	4B	3
REL 430	Real Estate Market Analysis		3
REL 460	Real Estate Investment		3
International Business Group 1 - Select one course from the following:			3
MGT 468	Negotiating Globally		
MGT 478	Global Supply Chain Management		
MKT 365	International Marketing		

International Business Group 3 - Experiential Learning Requirement	3
Upper-Division FIN, REL, or ACT Electives	6
Total Credits	30
Program Total Credits:	120

Interdisciplinary: International Business Group 2 – Global Focus (6 credits)

Code	Title	Credits
Select 6 credits from the following:		6
AM 430	International Retailing	3
ANTH 200	Cultures and the Global System (GT-SS3)	3
ECON 317	Population Economics	3
ECON 332/POLS 332	International Political Economy	3
ECON 440	Economics of International Trade and Policy	3
ECON 442	Economics of International Finance and Policy	3
ECON 460	Economic Development	3
GR 320	Cultural Geography	3
HIST 470	World Environmental History, 1500-Present	3
IE 450/SOWK 450	International Social Welfare and Development	3
IE 470	Women and Development	3
IE 471	Children and Youth in Global Context	3
IE 472	Education for Global Peace	3
IE 478	Managing International Development Programs	3
JTC 412	International Mass Communication	3
NRRT 320	International Issues-Recreation and Tourism	3
POLS 232	International Relations (GT-SS1)	3
POLS 362	Global Environmental Politics	3
POLS 431	International Law	3
POLS 433	International Organization	3
POLS 437	International Security	3
POLS 442	Environmental Politics in Developing World	3
POLS 462	Globalization, Sustainability, and Justice	3
SOC 364	Food, Agriculture and Global Society	3
SPCM 434	Intercultural Communication	3

Immersion: International Business Group 3 – Experiential Learning Requirement (6 credits)

Code	Title	Credits
Select at least one from the following:		6
Education Abroad experience		
Internship with global focus		
L*** language course		

Students are not to utilize the satisfactory/unsatisfactory (S/U) grading option for any Business concentration course or any Business core course (Business and non-Business subject codes) except when a course only allows S/U grading.

Second Concentration options Major Completion Maps

A second concentration in International Business may be taken in conjunction with the Finance concentration. Students must also select an option within the Finance concentration. Upon graduation, both concentrations will be noted on a student's official transcript.

- Corporate Finance option
- Investment Analysis option
- Real Estate Finance option

Corporate Finance option

Distinctive Requirements for Degree Program: .
To Declare this Major: Business is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the department for more information.
To prepare for first semester: The curriculum for the Business Administration - Finance concentration assumes students will be able to successfully complete calculus within their first year.

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 100	Introduction to Business		X		1
BUS 201	Foundations of Sustainable Enterprise		X		1
CO 150	College Composition (GT-CO2)		X	1A	3
Arts and Humanities			X	3B	3
Biological and Physical Sciences			X	3A	4
Electives			X		3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CIS 200	Business Information Systems		X		3
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3

MATH 141	Calculus in Management Sciences (GT-MA1)		X	1B	3
Historical Perspectives			X	3D	3
Electives			X		3
BUS 100 and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 210	Introduction to Financial Accounting		X		3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)		X	3B	3
ECON 204	Principles of Macroeconomics (GT-SS1)		X	3C	3
Biological and Physical Sciences			X	3A	3
Electives			X		3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 220	Introduction to Managerial Accounting		X		3
BUS 260	Social-Ethical-Regulatory Issues in Business		X		3
STAT 204	Statistics for Business Students		X		3
Diversity and Global Awareness			X	3E	3
International Business Group 2 - Global Focus			X		3
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 300	Business Writing and Communication (GT-CO3)		X	2	3
FIN 300	Principles of Finance		X	4A,4B	3
FIN 310	Financial Markets and Institutions		X		3
MGT 435	Global Ethical Leadership Stakeholder Mgmt		X		3
International Business Group 2 - Global Focus			X		3
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
MGT 320	Contemporary Management Principles/Practices		X		3
FIN 355	Principles of Investments		X		3
FIN 370	Financial Management-Theory and Application		X		3
FIN 475	International Business Finance		X		3
International Business Group 3 - Experiential Learning Requirement			X		3
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
FIN 470	Derivative Securities	X			3
MGT 301	Supply Chain Management	X			3
MKT 300	Marketing	X		4B	3
MGT 475	International Business Management	X			3
Upper-Division FIN, REL, or ACT Elective		X			3
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 479	Strategic Management	X		4A,4C	3
FIN 471	Enterprise Valuation	X			3
International Business Group 1 - Select one course from the following:		X			3
MKT 365	International Marketing	X			
MGT 468	Negotiating Globally	X			
MGT 478	Global Supply Chain Management	X			
International Business Group 3 - Experiential Learning Requirement		X			3
Upper Division FIN, REL, or ACT Elective		X			3

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.			X		
	Total Credits				15
	Program Total Credits:				120

Investment Analysis option

Distinctive Requirements for Degree Program: .
To Declare this Major: Business is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the department for more information.

To prepare for first semester: The curriculum for the Business Administration - Finance concentration assumes students will be able to successfully complete calculus within their first year.

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 100	Introduction to Business		X		1
CO 150	College Composition (GT-CO2)		X	1A	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	4
Historical Perspectives				3D	3
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 201	Foundations of Sustainable Enterprise				1
CIS 200	Business Information Systems				3
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)		X	1B	3
Electives					6
BUS 100 and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 210	Introduction to Financial Accounting				3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)			3B	3
ECON 204	Principles of Macroeconomics (GT-SS1)		X	3C	3
Biological and Physical Sciences					3
Electives					3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 220	Introduction to Managerial Accounting				3
BUS 260	Social-Ethical-Regulatory Issues in Business				3
STAT 204	Statistics for Business Students				3
Diversity and Global Awareness				3E	3
International Business Group 2 - Global Focus					3
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 300	Business Writing and Communication (GT-CO3)			2	3
FIN 300	Principles of Finance			4A,4B	3
FIN 310	Financial Markets and Institutions				3
MGT 435	Global Ethical Leadership Stakeholder Mgmt				3
International Business Group 2 - Global Focus					3
	Total Credits				15

Semester 6		Critical	Recommended	AUCC	Credits
FIN 311	Debt Securities Analysis				3
FIN 355	Principles of Investments				3
FIN 475	International Business Finance				3
MGT 320	Contemporary Management Principles/Practices				3
International Business Group 3 - Experiential Learning Requirement					3
	Total Credits				15

Senior

Semester 7		Critical	Recommended	AUCC	Credits
FIN 470	Derivative Securities				3
MGT 301	Supply Chain Management				3
MGT 475	International Business Management				3
MKT 300	Marketing			4B	3
Upper Division FIN, REL, or ACT Elective					3
	Total Credits				15

Semester 8		Critical	Recommended	AUCC	Credits
BUS 479	Strategic Management			4A,4C	3
FIN 455	Advanced Portfolio Management				3
International Business Group 1 - Select one course from the following:					3
MGT 468	Negotiating Globally				
MGT 478	Global Supply Chain Management				
MKT 365	International Marketing				
International Business Group 3 - Experiential Learning Requirement					3
Upper Division FIN, REL, or ACT Elective					3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Real Estate Finance option

Distinctive Requirements for Degree Program: .
To Declare this Major: Business is a controlled major. students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the department for more information.

To prepare for first semester: The curriculum for the Business Administration - Finance concentration assumes students will be able to successfully complete calculus within their first year.

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
BUS 100	Introduction to Business		X		1
BUS 201	Foundations of Sustainable Enterprise		X		1
CO 150	College Composition (GT-CO2)		X	1A	3
Arts and Humanities			X	3B	3
Biological and Physical Sciences				3A	4
Electives			X		3
	Total Credits				15

Semester 2		Critical	Recommended	AUCC	Credits
CIS 200	Business Information Systems		X		3
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)		X	1B	3
Historical Perspectives			X	3D	3
Electives			X		3

BUS 100 and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 210	Introduction to Financial Accounting		X		3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)		X	3B	3
ECON 204	Principles of Macroeconomics (GT-SS1)		X	3C	3
Biological and Physical Sciences			X	3A	3
Electives			X		3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 220	Introduction to Managerial Accounting		X		3
BUS 260	Social-Ethical-Regulatory Issues in Business		X		3
STAT 204	Statistics for Business Students		X		3
Diversity and Global Awareness			X	3E	3
International Business Group 2 - Global Focus			X		3
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 300	Business Writing and Communication (GT-CO3)		X	2	3
FIN 300	Principles of Finance		X	4A,4B	3
FIN 310	Financial Markets and Institutions		X		3
MGT 435	Global Ethical Leadership Stakeholder Mgmt		X		3
International Business Group 2 - Global Focus			X		3
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
FIN 355	Principles of Investments		X		3
FIN 475	International Business Finance		X		3
MGT 320	Contemporary Management Principles/Practices		X		3
REL 360	Real Estate Principles		X		3
International Business Group 3 - Experiential Learning Requirement			X		3
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
MGT 301	Supply Chain Management	X			3
MKT 300	Marketing	X		4B	3
MGT 475	International Business Management	X			3
REL 460	Real Estate Investment	X			3
Upper-Division FIN, REL, or ACT Elective		X			3
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 479	Strategic Management	X		4A,4C	3
REL 430	Real Estate Market Analysis	X			3
International Business Group 1 - Select one course from the following:		X			3
MGT 468	Negotiating Globally	X			
MGT 478	Global Supply Chain Management	X			
MKT 365	International Marketing	X			
International Business Group 3 - Experiential Learning Requirement		X			3
Upper-Division FIN, REL, or ACT Elective		X			3

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X	
Total Credits		15
Program Total Credits:		120

Major in Business Administration, Financial Planning Concentration

This program is designed to prepare undergraduate students to enter the financial planning profession. The program is a Certified Financial Planner Board of Standards registered program, and students are eligible to sit for the CFP® Exam upon graduation.*

Learning Outcomes

Students will demonstrate the ability to:

- Analyze a client's current financial position
- Review a client's risk management needs
- Estimate the current capital and future savings needed to fund goals
- Prepare and present recommendations for meeting goals
- Consider the impact of income and estate tax law on achieving goals

The Financial Planning concentration has required classes in Financial Planning, Risk Management, Investments, Income Tax, Estate Tax, Retirement Planning, and Financial Plan Development.

This curriculum covers all the major areas of financial planning, including retirement, employee benefits, income tax, estate planning, and risk management. The option is most appropriate for those who intend to enter the financial planning profession as credit counselors, financial advisors, financial planners, wealth managers, or financial product representatives.

Potential Occupations

Financial Planning students are prepared for a number of different careers in business. Internships and volunteer experiences enhance skills and marketability.

Examples of financial-planning-related occupations include, but are not limited to: financial planner, investment advisor, consumer credit counselor, personal banker, investment wholesaler, insurance agent, and trust advisor.

*Certified Financial Planner Board of Standards Inc. owns the certification marks CFP CERTIFIED FINANCIAL PLANNER™ in the U.S., which it awards to individuals who successfully complete CFP Board's initial and ongoing certification requirements.

Requirements

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Effective Fall 2017

Freshman

		AUCC	Credits
BUS 100	Introduction to Business		1
BUS 220[1]	Ethics in Contemporary Organizations (GT-AH3)	3B	3
CIS 200	Business Information Systems		3
CO 150	College Composition (GT-CO2)	1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
Biological and Physical Sciences		3A	4
Arts and Humanities		3B	3
Electives			8
	Total Credits		31

Sophomore

ACT 210	Introduction to Financial Accounting		3
ACT 220	Introduction to Managerial Accounting		3
BUS 201[1]	Foundations of Sustainable Enterprise		1
BUS 260	Social-Ethical-Regulatory Issues in Business		3
BUS 300	Business Writing and Communication (GT-CO3)	2	3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
STAT 204	Statistics for Business Students		3
Biological and Physical Sciences		3A	3
Diversity and Global Awareness		3E	3

Electives			6
	Total Credits		31
Junior			
ACT 330	Introduction to Taxation		3
FIN 300[2]	Principles of Finance	4A,4B	3
FIN 310	Financial Markets and Institutions		3
FIN 320	Introduction to Financial Planning		3
FIN 342	Risk Management and Insurance		3
FIN 355	Principles of Investments		3
MKT 300[2]	Marketing	4B	3
Historical Perspectives		3D	3
Electives			6
	Total Credits		30
Senior			
BUS 479	Strategic Management	4A,4C	3
FIN 440	Estate Planning		3
FIN 442	Employee Benefits and Retirement Planning		3
FIN 445	Financial Plan Development		3
MGT 301	Supply Chain Management		3
MGT 320	Contemporary Management Principles/Practices		3
Electives[3]			10
	Total Credits		28
	Program Total Credits:		120

1 Students enrolled in the Business Administration major prior to Fall semester 2013, are not required to take BUS 201 and BUS 220.

2 Students who have taken FIN 305 (http://catalog.colostate.edu/search/?P=FIN%20305) and/or MKT 305 (http://catalog.colostate.edu/search/?P=MKT%20305) prior to admission to the College of Business may substitute those courses to satisfy the category 4A and 4B requirements. All other students are required to take FIN 300 (http://catalog.colostate.edu/search/?P=FIN%20300) and MKT 300 (http://catalog.colostate.edu/search/?P=MKT%20300) to satisfy categories 4A and 4B.

3 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Students are not to utilize the satisfactory/unsatisfactory (S/U) grading option for any Business concentration course (Business and non-Business subject codes) except when a course only allows S/U grading.

Major Completion Map

Distinctive Requirements for Degree Program:

TO DECLARE MAJOR: Business is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in Department for more information.

TO PREPARE FOR FIRST SEMESTER: The curriculum for the Business Administration - Finance concentration, Financial Planning option assumes students will be able to successfully complete calculus within their first year.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 100	Introduction to Business		X		1
CO 150	College Composition (GT-CO2)		X	1A	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	4
Elective					5
	Total Credits				16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 220	Ethics in Contemporary Organizations (GT-AH3)			3B	3
CIS 200	Business Information Systems				3
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3

MATH 141	Calculus in Management Sciences (GT-MA1)	X		1B	3
Elective					3
BUS 100 and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 210	Introduction to Financial Accounting	X			3
BUS 201	Foundations of Sustainable Enterprise				1
BUS 300	Business Writing and Communication (GT-CO3)		X	2	3
ECON 204	Principles of Macroeconomics (GT-SS1)			3C	3
Biological and Physical Sciences				3A	3
Elective					3
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 220	Introduction to Managerial Accounting	X			3
BUS 260	Social-Ethical-Regulatory Issues in Business				3
STAT 204	Statistics for Business Students				3
Diversity and Global Awareness				3E	3
Elective					3
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
FIN 300	Principles of Finance	X		4A,4B	3
FIN 310	Financial Markets and Institutions	X			3
Historical Perspectives				3D	3
Electives					6
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 330	Introduction to Taxation				3
FIN 320	Introduction to Financial Planning				3
FIN 342	Risk Management and Insurance	X			3
FIN 355	Principles of Investments	X			3
MKT 300	Marketing		X	4B	3
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
FIN 440	Estate Planning	X			3
FIN 442	Employee Benefits and Retirement Planning				3
MGT 301	Supply Chain Management	X			3
MGT 320	Contemporary Management Principles/Practices	X			3
Elective					3
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 479	Strategic Management	X		4A,4C	3
FIN 445	Financial Plan Development	X			3
Electives		X			7
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				13
	Program Total Credits:				120

Second Concentration with International Business

A second concentration in International Business may be taken in conjunction with the Financial Planning concentration. Upon graduation, both concentrations will be noted on a student's official transcript.

Effective Fall 2019

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Freshman

		AUCC	Credits
BUS 100	Introduction to Business		1
BUS 201	Foundations of Sustainable Enterprise		1
CIS 200	Business Information Systems		3
CO 150	College Composition (GT-CO2)	1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	4
Historical Perspectives		3D	3
Electives			6
	Total Credits		30

Sophomore

ACT 210	Introduction to Financial Accounting		3
ACT 220	Introduction to Managerial Accounting		3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)	3B	3
BUS 260	Social-Ethical-Regulatory Issues in Business		3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
FIN 320	Introduction to Financial Planning		3
STAT 204	Statistics for Business Students		3
Biological and Physical Sciences		3A	3
Diversity and Global Awareness		3E	3
International Business Group 2 - Global Focus			3
	Total Credits		30

Junior

ACT 330	Introduction to Taxation		3
BUS 300	Business Writing and Communication (GT-CO3)	2	3
FIN 300	Principles of Finance	4A,4B	3
FIN 310	Financial Markets and Institutions		3
FIN 355	Principles of Investments		3
FIN 475	International Business Finance		3
MGT 320	Contemporary Management Principles/Practices		3
MGT 435	Global Ethical Leadership Stakeholder Mgmt		3
International Business Group 2 - Global Focus			3
International Business Group 3 - Experiential Learning Requirement			3
	Total Credits		30

Senior

BUS 479	Strategic Management	4A,4C	3
FIN 342	Risk Management and Insurance		3
FIN 440	Estate Planning		3
FIN 442	Employee Benefits and Retirement Planning		3

FIN 445	Financial Plan Development		3
MGT 301	Supply Chain Management		3
MGT 475	International Business Management		3
MKT 300	Marketing	4B	3
International Group 1 - Select one course from the following:			3
MKT 365	International Marketing		
MGT 468	Negotiating Globally		
MGT 478	Global Supply Chain Management		
International Business Group 3 - Experiential Learning Requirement			3
	Total Credits		30
	Program Total Credits:		120

Interdisciplinary: International Business Group 2 – Global Focus (6 credits)

Code	Title	Credits
Select 6 credits from the following:		6
AM 430	International Retailing	3
ANTH 200	Cultures and the Global System (GT-SS3)	3
ECON 317	Population Economics	3
ECON 332/POLS 332	International Political Economy	3
ECON 440	Economics of International Trade and Policy	3
ECON 442	Economics of International Finance and Policy	3
ECON 460	Economic Development	3
GR 320	Cultural Geography	3
HIST 470	World Environmental History, 1500-Present	3
IE 450/SOWK 450	International Social Welfare and Development	3
IE 470	Women and Development	3
IE 471	Children and Youth in Global Context	3
IE 472	Education for Global Peace	3
IE 478	Managing International Development Programs	3
JTC 412	International Mass Communication	3
NRRT 320	International Issues-Recreation and Tourism	3
POLS 232	International Relations (GT-SS1)	3
POLS 362	Global Environmental Politics	3
POLS 431	International Law	3
POLS 433	International Organization	3
POLS 437	International Security	3
POLS 442	Environmental Politics in Developing World	3
POLS 462	Globalization, Sustainability, and Justice	3
SOC 364	Food, Agriculture and Global Society	3
SPCM 434	Intercultural Communication	3

Immersion: International Business Group 3 – Experiential Learning Requirement (6 credits)

Code	Title	Credits
Select at least one from the following:		6
Education Abroad experience		
Internship with global focus		
L*** language course		

Students are not to utilize the satisfactory/unsatisfactory (S/U) grading option for any Business concentration course or any Business core course (Business and non-Business subject codes) except when a course only allows S/U grading.

Second Concentration Major Completion Map

Distinctive Requirements for Degree Program:

TO DECLARE MAJOR: Business is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the department for more information.

TO PREPARE FOR FIRST SEMESTER: The curriculum for the Business Administration - Financial Planning concentration assumes students will be able to successfully complete calculus within their first year.

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
BUS 100	Introduction to Business		X		1
BUS 201	Foundations of Sustainable Enterprise		X		1
CO 150	College Composition (GT-CO2)		X	1A	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	4
Electives			X		3
	Total Credits				15

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CIS 200	Business Information Systems		X		3
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)		X	1B	3
Historical Perspectives			X	3D	3
Electives			X		3
BUS 100 and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 210	Introduction to Financial Accounting		X		3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)		X	3B	3
ECON 204	Principles of Macroeconomics (GT-SS1)		X	3C	3
STAT 204	Statistics for Business Students		X		3
Biological and Physical Sciences			X	3A	3
	Total Credits				15

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 220	Introduction to Managerial Accounting		X		3
BUS 260	Social-Ethical-Regulatory Issues in Business		X		3
FIN 320	Introduction to Financial Planning		X		3
Diversity and Global Awareness			X	3E	3
International Business Group 2 - Global Focus			X		3
ANTH 200 recommended for International Business Group 2 - Global Focus					
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 300	Business Writing and Communication (GT-CO3)		X	2	3
FIN 300	Principles of Finance		X	4A,4B	3
FIN 310	Financial Markets and Institutions		X		3
MGT 435	Global Ethical Leadership Stakeholder Mgmt		X		3
International Business Group 2 - Global Focus			X		3
	Total Credits				15

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 330	Introduction to Taxation		X		3
FIN 355	Principles of Investments		X		3
FIN 475	International Business Finance		X		3
MGT 320	Contemporary Management Principles/Practices		X		3
International Business Group 3 - Experiential Learning Requirement			X		3
	Total Credits				15

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
FIN 342	Risk Management and Insurance	X			3
FIN 440	Estate Planning	X			3
MGT 301	Supply Chain Management	X			3
MGT 475	International Business Management	X			3
MKT 300	Marketing	X		4B	3
	Total Credits				15

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 479	Strategic Management	X		4A,4C	3
FIN 442	Employee Benefits and Retirement Planning	X			3
FIN 445	Financial Plan Development	X			3
International Business Group 1 - Select one course from the following:		X			3

MKT 365	International Marketing	X	
MGT 468	Negotiating Globally	X	
MGT 478	Global Supply Chain Management	X	
International Business Group 3 - Experiential Learning Requirement		X	3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X	
	Total Credits		15
	Program Total Credits:		120

Major in Business Administration, Real Estate Concentration

This program is designed to prepare undergraduate students for careers as professionals in real estate and related industries. Real estate is the largest industry in the world representing nearly 50% of the world's wealth. The real estate profession offers one of the most diverse career selections in the business world today. It is a multi-disciplinary profession that coordinates architecture, construction, law, finance, marketing, property management, and urban dynamics. Real estate professionals help find, provide, and manage space for people to work sleep, shop, eat, and play. Those who choose careers in real estate are typically goal-oriented, persevering, self-motivated, and possess an entrepreneurial spirit. Furthermore, they must be creative and able to research, analyze, negotiate, and pay attention to details. No two projects or investments are ever the same. Rewards of a real estate career include potential for high earnings, independence, flexibility, and an opportunity to help people.

Learning Outcomes

Students will demonstrate:

- The ability to evaluate physical real estate (land and building analysis)
- The ability to perform financial real estate analysis (including time value of money)
- The ability to assess and manage risk
- The ability to conduct market analysis and identify opportunities
- An understanding of property and portfolio management

Potential Occupations

Real estate graduates find professional employment in many fields. Students interested in commercial real estate may find employment in property and land development, property acquisition, property management, commercial mortgage lending, commercial real estate brokerage, asset management, government housing, commercial construction, or Real Estate Investment Trust (REIT) analysis, investment, or management. Students interested in real estate finance may find employment in commercial real estate investment banking, residential real estate lending for both development and loan underwriting, financial analysis, real estate securities analysis, insurance underwriting, commercial real estate brokerage, government housing finance and investment, or construction lending and research. Students interested in residential real estate may find employment in residential brokerage, residential marketing, residential appraisal, residential finance, residential home inspection services, home construction consulting, or residential development.

Requirements

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Effective Spring 2018

Freshman

		AUCC	Credits
BUS 100	Introduction to Business		1
BUS 201[1]	Foundations of Sustainable Enterprise		1
CIS 200	Business Information Systems		3
CO 150	College Composition (GT-CO2)	1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	4
Electives			8
	Total Credits		29

Sophomore

ACT 210	Introduction to Financial Accounting		3
ACT 220	Introduction to Managerial Accounting		3
BUS 220[1]	Ethics in Contemporary Organizations (GT-AH3)	3B	3
BUS 260	Social-Ethical-Regulatory Issues in Business		3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3

STAT 204	Statistics for Business Students		3
Biological and Physical Sciences		3A	3
Historical Perspectives		3D	3
Electives			6
	Total Credits		30

Junior

All freshman and sophomore required courses must be completed prior to or concurrent with first enrollment in required junior and senior courses.

BUS 300	Business Writing and Communication (GT-CO3)	2	3
FIN 300[2]	Principles of Finance	4A,4B	3
FIN 310	Financial Markets and Institutions		3
FIN 355	Principles of Investments		3
MKT 300[2]	Marketing	4B	3
REL 360	Real Estate Principles		3
REL 367	Real Estate Law		3
Electives			10
	Total Credits		31

Senior

BUS 479	Strategic Management	4A,4C	3
MGT 301	Supply Chain Management		3
MGT 320	Contemporary Management Principles/Practices		3
REL Group Requirement: Select 4 of the following 5 courses			12
REL 430	Real Estate Market Analysis		
REL 454/AREC 454	Real Estate Appraisal		
REL 455	Real Estate Finance		
REL 460	Real Estate Investment		
REL 487	Real Estate Internship		
Diversity and Global Awareness		3E	3
Electives[3]			6
	Total Credits		30
	Program Total Credits:		120

1 Students enrolled in the Business Administration major prior to Fall semester 2013, are not required to take BUS 201 or BUS 220.

2 Students who have taken FIN 305 and/or MKT 305 prior to admission to the College of Business may substitute those courses to satisfy the category 4A and 4B requirements. All other students are required to take FIN 300 and MKT 300 to satisfy categories 4A and 4B.

3 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level). A minimum of 6 elective credits must be upper-division.

Students are not to utilize the satisfactory/unsatisfactory (S/U) grading option for any Business concentration course or any Business core course (Business and non-Business subject codes) except when a course only allows S/U grading.

Major Completion Map

Distinctive Requirements for Degree Program:
To Declare this Major: Business is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in Department for more information.
To prepare for first semester: The curriculum for the Business Administration - Real Estate concentration assumes students will be able to successfully complete calculus within their first year.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
BUS 100	Introduction to Business		X		1
Biological and Physical Sciences				3A	4
Arts and Humanities				3B	3

Elective					3
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 201	Foundations of Sustainable Enterprise				1
CIS 200	Business Information Systems				3
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	X		1B	3
Electives					5
BUS 100 and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 210	Introduction to Financial Accounting	X			3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)			3B	3
ECON 204	Principles of Macroeconomics (GT-SS1)			3C	3
Biological and Physical Sciences				3A	3
Elective					3
CIS 200 must be completed by the end of Semester 3.		X			
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 220	Introduction to Managerial Accounting	X			3
BUS 260	Social-Ethical-Regulatory Issues in Business				3
STAT 204	Statistics for Business Students				3
Historical Perspectives				3D	3
Elective					3
ECON 204 must be completed by the end of Semester 4.		X			
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 300	Business Writing and Communication (GT-CO3)	X		2	3
FIN 300	Principles of Finance	X		4A,4B	3
FIN 310	Financial Markets and Institutions	X			3
REL 367	Real Estate Law	X			3
Electives					4
BUS 260 and BUS 300 must be completed by the end of Semester 5.		X			
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
FIN 355	Principles of Investments	X			3
MKT 300	Marketing		X	4B	3
REL 360	Real Estate Principles	X			3
Electives					6
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
MGT 301	Supply Chain Management	X			3
MGT 320	Contemporary Management Principles/Practices	X			3
REL Group Requirement (See Concentration Requirements Tab for selection of approved courses.)		X			6
Electives					6
	Total Credits				18
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 479	Strategic Management	X		4A,4C	3

REL Group Requirement (See Concentration Requirements Tab for selection of approved courses.)	X		6
Diversity and Global Awareness	X	3E	3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X		
Total Credits			12
Program Total Credits:			120

Second Concentration with International Business

A second concentration in International Business may be taken in conjunction with the Real Estate concentration. Upon graduation, both concentrations will be noted on a student's official transcript.

Effective Fall 2019

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Freshman

		AUCC	Credits
BUS 100	Introduction to Business		1
BUS 201	Foundations of Sustainable Enterprise		1
CIS 200	Business Information Systems		3
CO 150	College Composition (GT-CO2)	1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	4
Historical Perspectives		3D	3
Electives			6
	Total Credits		30

Sophomore

ACT 210	Introduction to Financial Accounting		3
ACT 220	Introduction to Managerial Accounting		3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)	3B	3
BUS 260	Social-Ethical-Regulatory Issues in Business		3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
REL 360	Real Estate Principles		3
STAT 204	Statistics for Business Students		3
Biological and Physical Sciences		3A	3
Diversity and Global Awareness		3E	3
International Business Group 2 - Global Focus			3
	Total Credits		30

Junior

BUS 300	Business Writing and Communication (GT-CO3)	2	3
FIN 300	Principles of Finance	4A,4B	3
FIN 310	Financial Markets and Institutions		3
FIN 355	Principles of Investments		3
FIN 475	International Business Finance		3
MGT 320	Contemporary Management Principles/Practices		3
MGT 435	Global Ethical Leadership Stakeholder Mgmt		3
REL 367	Real Estate Law		3
International Business Group 2 - Global Focus			3

International Business Group 3 - Experiential Learning Requirement			3
	Total Credits		30
Senior			
BUS 479	Strategic Management	4A,4C	3
MGT 301	Supply Chain Management		3
MGT 475	International Business Management		3
MKT 300	Marketing	4B	3
International Business Group 1 - Select one course from the following:			3
MGT 468	Negotiating Globally		
MGT 478	Global Supply Chain Management		
MKT 365	International Marketing		
Real Estate Group 1 - Select 12 credits from the following:			12
REL 430	Real Estate Market Analysis		
REL 454/AREC 454	Real Estate Appraisal		
REL 455	Real Estate Finance		
REL 460	Real Estate Investment		
REL 487	Real Estate Internship		
International Business Group 3 - Experiential Learning Requirement			3
	Total Credits		30
	Program Total Credits:		120

Interdisciplinary: International Business Group 2 – Global Focus (6 credits)

Code	Title	Credits
Select 6 credits from the following:		6
AM 430	International Retailing	3
ANTH 200	Cultures and the Global System (GT-SS3)	3
ECON 317	Population Economics	3
ECON 332/POLS 332	International Political Economy	3
ECON 440	Economics of International Trade and Policy	3
ECON 442	Economics of International Finance and Policy	3
ECON 460	Economic Development	3
GR 320	Cultural Geography	3
HIST 470	World Environmental History, 1500-Present	3
IE 450/SOWK 450	International Social Welfare and Development	3
IE 470	Women and Development	3
IE 471	Children and Youth in Global Context	3
IE 472	Education for Global Peace	3
IE 478	Managing International Development Programs	3
JTC 412	International Mass Communication	3
NRRT 320	International Issues-Recreation and Tourism	3
POLS 232	International Relations (GT-SS1)	3
POLS 362	Global Environmental Politics	3
POLS 431	International Law	3
POLS 433	International Organization	3
POLS 437	International Security	3
POLS 442	Environmental Politics in Developing World	3
POLS 462	Globalization, Sustainability, and Justice	3
SOC 364	Food, Agriculture and Global Society	3
SPCM 434	Intercultural Communication	3

Immersion: International Business Group 3 – Experiential Learning Requirement (6 credits)

Code	Title	Credits
Select at least one from the following:		6
Education Abroad experience		
Internship with global focus		
L*** language course		

Students are not to utilize the satisfactory/unsatisfactory (S/U) grading option for any Business concentration course or any Business core course (Business and non-Business subject codes) except when a course only allows S/U grading.

Second Concentration Major Completion Map

Distinctive Requirements for Degree Program:

To Declare this Major: Business is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the department for more information.

To prepare for first semester: The curriculum for the Business Administration - Real Estate concentration assumes students will be able to successfully complete calculus within their first year.

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 100	Introduction to Business		X		1
BUS 201	Foundations of Sustainable Enterprise		X		1
CO 150	College Composition (GT-CO2)		X	1A	3
Arts and Humanities			X	3B	3
Biological and Physical Sciences			X	3A	4
Electives					3
	Total Credits				15

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CIS 200	Business Information Systems		X		3
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)		X	1B	3
Historical Perspectives				3D	3
Electives			X		3
BUS 100 and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 210	Introduction to Financial Accounting		X		3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)		X	3B	3
ECON 204	Principles of Macroeconomics (GT-SS1)		X	3C	3
STAT 204	Statistics for Business Students		X		3
Biological and Physical Sciences				3A	3
	Total Credits				15

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 220	Introduction to Managerial Accounting		X		3
BUS 260	Social-Ethical-Regulatory Issues in Business		X		3
REL 360	Real Estate Principles		X		3
Diversity and Global Awareness				3E	3
International Business Group 2 - Global Focus			X		3
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 300	Business Writing and Communication (GT-CO3)		X	2	3
FIN 300	Principles of Finance		X	4A,4B	3
FIN 310	Financial Markets and Institutions		X		3
MGT 435	Global Ethical Leadership Stakeholder Mgmt		X		3
International Business Group 2 - Global Focus			X		3
	Total Credits				15

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
FIN 355	Principles of Investments		X		3
FIN 475	International Business Finance		X		3
MGT 320	Contemporary Management Principles/Practices				3
REL 367	Real Estate Law		X		3
International Business Group 3 - Experiential Learning Requirement			X		3
	Total Credits				15

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
MGT 475	International Business Management	X			3
MGT 301	Supply Chain Management	X			3

MKT 300	Marketing	X		4B	3
Real Estate Group 1 - Select 6 credits from the following:		X			6
REL 430	Real Estate Market Analysis	X			
REL 454	Real Estate Appraisal	X			
REL 455	Real Estate Finance	X			
REL 460	Real Estate Investment	X			
REL 487	Real Estate Internship	X			
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 479	Strategic Management	X		4A,4C	3
Real Estate Group 1 - Select 6 credits from the following courses not taken in Semester 7:		X			6
REL 430	Real Estate Market Analysis				
REL 454	Real Estate Appraisal				
REL 455	Real Estate Finance				
REL 460	Real Estate Investment				
REL 487	Real Estate Internship				
International Business Group 1 - Select one course from the following:		X			3
MGT 468	Negotiating Globally	X			
MGT 478	Global Supply Chain Management	X			
MKT 365	International Marketing	X			
International Business Group 3 - Experiential Learning Requirement		X			3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Minor in Real Estate

The College of Business offers a minor in Real Estate to majors in other colleges. The minor explores the fundamentals of real estate. Consisting of 24 credits, it covers an introduction to the field of real estate, real estate law, selling, appraisal, and principles of real estate finance.

Requirements
Effective Spring 2018

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Lower Division		
ACT 205	Fundamentals of Accounting	3
AREC 202	Agricultural and Resource Economics (GT-SS1)	3
or ECON 202	Principles of Microeconomics (GT-SS1)	
BUS 205	Legal and Ethical Issues in Business	3
or BUS 260	Social-Ethical-Regulatory Issues in Business	
ECON 204	Principles of Macroeconomics (GT-SS1)	3
Upper Division		
FIN 305	Fundamentals of Finance	3
REL 360	Real Estate Principles	3
Real Estate Courses – Select 6 credits from the following:		6
REL 367	Real Estate Law	
REL 430	Real Estate Market Analysis	
REL 454/ AREC 454	Real Estate Appraisal	
REL 455	Real Estate Finance	
REL 460	Real Estate Investment	
Program Total Credits:		24

Graduate Certificate in Applied Finance

Students will obtain a solid background in business finance and investments by completing graduate-level introductory finance courses and more advanced electives in specialized areas of finance. Students can focus in the investments area by taking electives that cover bonds, futures, and options, and real estate. Students interested in corporate financial management can focus their studies on corporate risk management, employee benefits, and international finance.

Effective Spring 2018

Additional coursework may be required due to prerequisites.

Code	Title	Credits
BUS 601	Quantitative Business Analysis	2
BUS 640	Financial Principles and Practice	2
BUS 641	Financial Markets and Investments	2

Select 5 credits from the following:		5
FIN 602	Options and Futures	
FIN 603	Corporate Risk Management	
FIN 604	Employee Benefits	
FIN 606	Fundamentals of International Finance	
FIN 607	Fundamentals of Bond Markets	
FIN 608	Fundamentals of Firm Valuation	
FIN 609	Fundamentals of Personal Finance	
FIN 612	Private Equity and Venture Capital	
REL 601	Fundamentals of Real Estate Finance	
Program Total Credits:		11

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Master of Finance, Plan C

Master of Finance, Plan C

Colorado State University's Master of Finance is a highly quantitative 30-credit program offered on campus that provides a comprehensive study of the principles, processes, and practices of modern finance including investment analysis, portfolio management, financial management, and risk management.

The program covers content required for the Chartered Finance Analyst (CFA®) and Financial Risk Manager (FRM®) exams, and provides a good foundation for students who want to further their education beyond the masters program.

This degree program is designated as a science, technology, engineering, and math (STEM) field. The STEM designation allows international students the opportunity to receive a visa extension after they've completed their degree.

Learning Outcomes

Students will demonstrate the ability to:

- Understand the function and structure of securities markets in a global economic environment.
- Utilize current statistical tools and modeling techniques to analyze financial markets, evaluate financial risk, and manage investment portfolios.
- Value companies using fundamental analysis and identify qualitative and quantitative factors the drive value and risk.
- Measure investment risk and return for equity and debt securities.
- Understand the uses and pricing of financial derivatives in measuring and managing equity, debt, and currency risks.

Employment Opportunities

Finance students are prepared for a number of different careers in business.

Examples of fields in which Master of Finance graduates can find finance-related occupations include: commercial, mortgage, and investment banking; corporate finance; investments; portfolio management; financial analysis; securities analysis; loan analysis; risk management and insurance; stock brokerage; government banking and securities regulation; government finance; teaching and research.

Requirements Effective Fall 2016

Code	Title	Credits
Required Courses		
FIN 524/STAT 524	Financial Statistics	3
FIN 605	Enterprise Valuation	3
FIN 610	Debt Securities Analysis	3
FIN 655	Investments	3
FIN 665	Financial Engineering	3
FIN 670	Risk Management Theory and Application	3
FIN 675	International Finance	3
Electives		
Select a minimum of 9 credits from the following:		9
FIN 603	Corporate Risk Management	
FIN 604	Employee Benefits	
FIN 625	Quantitative Methods in Finance	
FIN 630	Financial Modeling	
FIN 661	Advanced Portfolio Management	
FIN 669	Financing, Evaluating Sustainable Enterprise	
REL 601	Fundamentals of Real Estate Finance	
Program Total Credits:		30

Department of Management

Office in Rockwell Hall, Room 213
(970) 491-0255
biz.colostate.edu/management (http://biz.colostate.edu/management)

Professor Travis Maynard, Chair

Undergraduate Major in Business Administration

- Human Resource Management Concentration
- Organization and Innovation Management Concentration
- Supply Chain Management Concentration

Minor

- Entrepreneurship and Innovation

Certificates

- Certificate in Entrepreneurship
- Certificate in Leadership in Organizations

- Certificate in Managing Human Resources
- Certificate in Operations, Logistics and Supply Management

Courses

Subjects in this department include: Management (MGT) and Management Science (QNT).

Management (MGT)

MGT 301 Supply Chain Management Credits: 3 (3-0-0)
Course Description: Concept of value-driven supply chains; design and management of effective supply chains; emphasis on current practice and recent trends.
Prerequisite: None.
Registration Information: Sophomore standing. Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 305 Fundamentals of Management Credits: 3 (3-0-0)
Course Description: Managerial process of planning, directing, and controlling inputs of an organization. Analysis, decision making, and survey of research literature.
Prerequisite: None.
Registration Information: Sections may be offered: Online. Credit not allowed for both MGT 305 and MGT 320.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 310 Human Resource Management Credits: 3 (3-0-0)
Course Description: Principles and practices of employee management including hiring, development, compensation, and employee relations.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 320 Contemporary Management Principles/Practices Credits: 3 (3-0-0)
Course Description: Principles of management in combination with practices of the new economy to achieve managerial goals.
Prerequisite: (BUS 300) and (AREC 202 or ECON 202) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Credit not allowed for both MGT 320 and MGT 305. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 330 Creativity, Innovation, and Value Creation Credits: 3 (3-0-0)
Course Description: How creativity and innovation can be developed for application in value creation.
Prerequisite: None.
Restriction: Must not be a: Freshman, Sophomore.
Registration Information: Sophomore standing. Business Administration, Mechanical Engineering, Agriculture Business, Apparel and Merchandising, Biomedical Engineering, Computer Science majors; declared LEAP minors or LEAP graduate students only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 340 Fundamentals of Entrepreneurship Credits: 3 (3-0-0)
Course Description: Concepts of entrepreneurship and role of entrepreneurs in the economy.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 350 Employment Relations: The Legal Environment Credits: 3 (3-0-0)
Course Description: Legal principle and policy issues arising from the employment relationship.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 360 Social and Sustainable Venturing Credits: 3 (3-0-0)
Course Description: Entrepreneurship and economic opportunities in the transition to a socially and ecologically sustainable global economy.
Prerequisite: None.
Restriction: Must not be a: Freshman, Sophomore.
Registration Information: Junior standing or higher.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 374 Total Rewards and Performance Management Credits: 3 (3-0-0)
Course Description: Principles and best practices for the strategic design and implementation of compensation and performance management systems.
Prerequisite: MGT 310.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 375 Advanced Supply Management Credits: 3 (3-0-0)
Course Description: Advanced design of purchasing and supply management within global supply chains.
Prerequisite: MGT 301.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 376 Advanced Service and Manufacturing Operations Credits: 3 (3-0-0)
Course Description: Advanced concepts for the management of operations in service and manufacturing companies.
Prerequisite: MGT 301.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 377 Advanced Logistics Credits: 3 (3-0-0)
Course Description: Advanced design and management of logistics and distribution operations within global supply chains.
Prerequisite: MGT 301.
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 382 Management in an International Context Credits: 3 (3-0-0)
Course Description: Fundamentals of management taught in an international context. Emphasis on global management topics.
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 410 Leadership and Organizational Behavior Credits: 3 (3-0-0)
Course Description: Behavior of people and groups as members of organizations.
Prerequisite: MGT 305 or MGT 320.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 411 Leading High Performance Teams Credits: 3 (3-0-0)
Course Description: Design, management, and leadership of teams in organizational settings.
Prerequisite: MGT 305 or MGT 320.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 420 New Venture Creation Credits: 3 (3-0-0)
Course Description: Entrepreneurs and the entrepreneurial process. Growth of an independent business.
Prerequisite: MGT 340.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 424 Ventures in Social Entrepreneurship Credits: 3 (3-0-0)
Also Offered As: IDEA 424.
Course Description: Focus on value creation, and delivery of a solution to a team community project. Application of human-centered design, and the venture design processes provide solutions to real world problems facing some of society's most vulnerable populations.
Prerequisite: MGT 360.
Restriction: Must be a: Undergraduate.
Registration Information: Credit not allowed for both IDEA 424 and MGT 424.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 425 Organizational Communication Strategies Credits: 3 (3-0-0)
Course Description: Strategic communications in organizations; contribution that organizational members make whether acting as individual or group communicators.
Prerequisite: (FIN 300 or FIN 305) and (MKT 300 or MKT 305) and (MGT 305 or MGT 320).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 430 Leadership and Social Responsibility Credits: 3 (3-0-0)
Course Description: Social responsiveness of managers as they face expectations in the firm's internal and external environment.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 435 Global Ethical Leadership & Stakeholder Mgmt Credits: 3 (3-0-0)
Course Description: Develop knowledge and competence in global ethical leadership and stakeholder relationships in a global economy.
Prerequisite: BUS 220 and MGT 320.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 440 New Venture Management Credits: 3 (3-0-0)
Course Description: Theories and skills necessary for managing startup and existing small firms.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 450 Biomedical Entrepreneurship I Credits: 2 (2-0-0)
Course Description: Commercialization process for biomedical inventions; market and competitor analysis, regulations, patents; preliminary feasibility study.
Prerequisite: BIOM 470 or MGT 340 or MECH 470.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 468 Negotiating Globally Credits: 3 (3-0-0)
Course Description: Characteristics and process of negotiation in a global context.
Prerequisite: MGT 305 or MGT 320.
Registration Information: MGT 305 or MGT 320 or International Studies majors.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MGT 470 Managerial Decisions-Issues and Analysis Credits: 3 (3-0-0)
Course Description: Investigation and application of managerial decision-making processes and methods to solve problems in business functions.
Prerequisite: (MGT 301) and (MGT 305 or MGT 320).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 471 Micro Issues in Supply Chain Management Credits: 3 (3-0-0)
Course Description: Managing the supply function (locally or globally) and the productive flow of materials in goods and services-producing supply chains.
Prerequisite: MGT 301.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 472 Macro Issues in Supply Chain Management Credits: 3 (3-0-0)
Course Description: Application of analytical and computer-based tools in the analysis and improvement of supply chains with variable demand and supply.
Prerequisite: MGT 301.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 473 Employment Relations: Labor and Management Credits: 3 (3-0-0)
Course Description: Managerial decision making and action in labor-management relations as affected by labor legislation and administrative practices.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 474 Human Resource Planning and Development Credits: 3 (3-0-0)
Course Description: Human resource planning, recruitment, selection, training, and development.
Prerequisite: MGT 310.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 475 International Business Management Credits: 3 (3-0-0)
Course Description: Multinational corporations: their scope, activities, managerial problems and decisions.
Prerequisite: (FIN 300 or FIN 305) and (MKT 300 or MKT 305) and (MGT 305 or MGT 320).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 476 Negotiation and Conflict Management Credits: 3 (3-0-0)
Course Description: Principles and practices of negotiation and conflict management including bargaining as a social and managerial activity.
Prerequisite: MGT 320 or MGT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 478 Global Supply Chain Management Credits: 3 (3-0-0)
Course Description: Principles and best practices for the strategic design and implementation of global supply chains.
Prerequisite: MGT 375, may be taken concurrently and MGT 376, may be taken concurrently and MGT 377, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 482A Study Abroad: International New Venture Creation Credits: 3 (3-0-0)
Course Description: New venture creation taught in an international setting focusing on multi-country contexts. Emphasis on entrepreneurship and intrapreneurship in today's global environments.
Prerequisite: None.
Registration Information: Written consent of instructor. Completion of 60 credit hours.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 482B Study Abroad – Global SCM Experience: Peru Credits: 3 (0-0-3)
Course Description: Examination of supply chain practices and culture of Peru.
Prerequisite: MGT 301 or MGT 665 or BUS 650.
Registration Information: Sophomore standing. Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 482C Study Abroad--Todos Santos: Ventures in Social Entrepreneurship Credit: 1 (0-0-1)
Also Offered As: IDEA 482C.
Course Description: Interdisciplinary, service-learning course that incorporates human-centered design with the business design process in order to provide solutions to real world problems facing some of society's most vulnerable populations. Offers an experiential trip to meet the community partners working in Todos Santos, Mexico.
Prerequisite: MGT 360.
Restriction: Must be a: Undergraduate.
Registration Information: Must have concurrent registration with IDEA 424 or MGT 424. Credit not allowed for both IDEA 482C and MGT 482C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 486 Practicum in Supply Chain Management Credits: 3 (1-4-0)
Course Description: Research and recommend solutions to "real world" supply chain management problems.
Prerequisite: MGT 375, may be taken concurrently and MGT 376, may be taken concurrently or MGT 375, may be taken concurrently and MGT 377, may be taken concurrently or MGT 376, may be taken concurrently and MGT 377, may be taken concurrently.
Registration Information: Select two courses from the following: MGT 375, MGT 376, MGT 377. Must register for lecture and laboratory. Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 487 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MGT 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MGT 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MGT 498 Research Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MGT 600 Manufacturing Process and Systems Design Credits: 3 (3-0-0)
Course Description: Strategic understanding of alternate manufacturing processes and systems design support needed to manage those processes.
Prerequisite: BUS 620 and BUS 625.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 601 Enterprise Computing and Systems Integration Credits: 3 (3-0-0)
Also Offered As: CIS 601.
Course Description: Integrated extended enterprise planning and execution systems concepts including ERP, CRM, SCM, MRPII, business processes, front/back office systems.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online. Credit not allowed for both MGT 601 and CIS 601.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 610 Strategic Human Resource Management Credits: 3 (3-0-0)
Course Description: Strategic issues associated with recruiting, staffing, evaluating, compensating, and developing employees; leadership issues associated therein.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to master's program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 611 Management of Organization Development Credits: 3 (3-0-0)
Course Description: Methods for managing organizational change.
Prerequisite: MGT 305 or MGT 320.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 612 Managing in a Global Context Credits: 3 (3-0-0)
Course Description: Global management and HR development issues/practices. Cross-cultural issues in organization behavior, recruitment, selection, training, compensation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to GSSE program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 620 Management Credits: 3 (3-0-0)
Course Description: Practices, policies, philosophies, and behavior.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 625 Managerial Communication Practices Credits: 3 (3-0-0)
Course Description: Internal, external, and managerial communication. Managerial speaking and writing skills enhancement.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master's program in business.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 640 Supply Chain Management Strategies Credits: 2 (2-0-0)
Course Description: How to create an effective supply chain management system to establish an efficient network for supplying final consumption.
Prerequisite: MGT 600.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 663 Strategic Opportunities in Impact Enterprise Credits: 3 (3-0-0)
Course Description: Gain foundational knowledge of central sustainability challenges, concepts and tools of strategic management and entrepreneurship, and discover the economic opportunities present in the resolution of social and environmental issues. Develop an understanding of the role of corporations and entrepreneurs in resolving market imperfections, addressing sustainability challenges, and transitioning to a more sustainable economy. Introduce sustainability practices used by corporations and new ventures.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Impact MBA.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 665 Supply Chain Development and Management Credits: 2 (2-0-0)
Course Description: This course teaches the development and management of the global supply chain that plans, sources, makes and delivers an organization's products.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 667 Global Social Sustainable Entrepreneurship Credits: 3 (3-0-0)
Course Description: Global challenges--poverty, environmental degradation, public health, agriculture. Role of entrepreneurial management in private and public sector.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 668 New Venture Development for Social Enterprise Credits: 3 (3-0-0)
Course Description: Early stages of a new venture, including creation of business plan. Additional study of social entrepreneurship and sustainable business strategies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 671 Labor Management Relations Credits: 3 (3-0-0)
Course Description: Collective bargaining process, administration of contract, and impact of public policy on industrial relations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 675 Service Operations/Supply Chain Management Credits: 3 (3-0-0)
Course Description: Supply chain management (SCM) and operations function. Primary focus on service sector.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master's program in business.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 679 Principles of Strategic Management Credits: 3 (3-0-0)
Course Description: Processes through which firms choose and implement strategies. Formulation and implementation of strategic management process in variety of industries.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master's program in business.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MGT 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MGT 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Management Science (QNT)

QNT 270 Basic Business Statistics Credits: 3 (2-2-0)
Course Description: Statistical tools applied to business conditions and functions.
Prerequisite: STAT 204.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

Major in Business Administration, Human Resource Management Concentration

This program is designed to develop in students a comprehensive knowledge of human resource (HR) management along with the skills necessary for implementing strategic, effective, and legally defensible HR practices in contemporary business organizations. Human resource professionals operate in a dynamic and changing world, managing the organization's relationship with its employees. They develop and manage people, practices, and policies to ensure that they produce employee attitudes, skills, behaviors, and performance that companies need to achieve their strategic goals. They are commonly responsible for recruiting, hiring, onboarding, training and developing, evaluating performance, compensating, providing benefits, counseling, and terminating employees. HR Professionals are employed in every industry and are an essential partner in an organization's strategic vision for the future and for ensuring the right people are in place. It is essential that an HR professional learn and master key knowledge, skills, and abilities including critical thinking, confidentiality, change management, communication, negotiation and conflict management, business acumen, interpersonal skills, organizational skills, and fairness. In addition to the All-University Core Curriculum, course work for a concentration in Human Resource Management includes the College of Business Core and various management electives that allow the student to structure a program around his or her educational and/or career interests.

Learning Outcomes

Students will demonstrate:

- Knowledge and skills necessary to assume entry-level HR positions in preparation for pursuing careers in a wide variety of organizations and industries

- Knowledge and skills to develop and implement HR practices in a strategic, legal, and ethical manner
- Understanding of HR's role in the efficient and effective operations of organizations and their human resources
- The ability to create and manage HR practices that respect and encourage diversity and inclusion in the workplace

Potential Occupations

Some examples include, but are not limited to the following: Human Resource Assistant, Recruiter, Labor Relations Specialist, Human Resource Manager, Employee Benefits Manager, Training and Development Manager, Employee Relations Manager, Compensation Analyst, Human Resources Consultant, Job Analyst.

Requirements

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Effective Fall 2017

Freshman

		AUCC	Credits
BUS 100	Introduction to Business		1
BUS 201[1]	Foundations of Sustainable Enterprise		1
CIS 200	Business Information Systems		3
CO 150	College Composition (GT-CO2)	1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	4
Diversity and Global Awareness		3E	3
Electives			9
	Total Credits		33

Sophomore

ACT 210	Introduction to Financial Accounting		3
ACT 220	Introduction to Managerial Accounting		3
BUS 220[1]	Ethics in Contemporary Organizations (GT-AH3)	3B	3
BUS 300	Business Writing and Communication (GT-CO3)	2	3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
STAT 204	Statistics for Business Students		3
Biological and Physical Sciences		3A	3
Historical Perspectives		3D	3
Electives			6
	Total Credits		30

Junior

All freshman and sophomore required courses must be completed prior to or concurrent with first enrollment in required junior and senior courses.

BUS 260	Social-Ethical-Regulatory Issues in Business		3
MGT 301	Supply Chain Management		3
MGT 310	Human Resource Management		3
MGT 320	Contemporary Management Principles/Practices		3
MGT 350	Employment Relations: The Legal Environment		3
MGT 474	Human Resource Planning and Development		3
Electives			12
	Total Credits		30

Senior

BUS 479	Strategic Management	4A,4C	3
FIN 300[2]	Principles of Finance	4A,4B	3
MGT 374	Total Rewards and Performance Management		3

MKT 300[2]	Marketing	4B	3
Select three courses from the following:			9
MGT 410	Leadership and Organizational Behavior		
MGT 411	Leading High Performance Teams		
MGT 473	Employment Relations: Labor and Management		
MGT 476	Negotiation and Conflict Management		
Electives[3]			6
	Total Credits		27
	Program Total Credits:		120

1 Students enrolled in the Business Administration major prior to Fall semester 2013, are not required to take BUS 201 and BUS 220.

2 Students who have taken FIN 305 and/or MKT 305 prior to admission to the College of Business may substitute those courses to satisfy the category 4A and 4B requirements. All other students are required to take FIN 300 and MKT 300 to satisfy categories 4A and 4B.

3 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level). A minimum of 6 elective credits must be upper-division.

Students are not to utilize the satisfactory/unsatisfactory (S/U) grading option for any Business concentration course or any Business core course (Business and non-Business subject codes) except when a course only allows S/U grading.

Major Completion Map

Distinctive Requirements for Degree Program:
To Declare this Major: Business is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in Department for more information.
To prepare for first semester: The curriculum for the Business Administration - Human Resources Management concentration assumes students will be able to successfully complete calculus within their first year.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
BUS 100	Introduction to Business		X		1
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	4
Diversity and Global Awareness				3E	3
Elective					3
	Total Credits				17
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 201	Foundations of Sustainable Enterprise				1
CIS 200	Business Information Systems				3
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	X		1B	3
Electives					6
BUS 100 and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 210	Introduction to Financial Accounting	X			3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)			3B	3
BUS 300	Business Writing and Communication (GT-CO3)		X	2	3
ECON 204	Principles of Macroeconomics (GT-SS1)	X		3C	3
Biological and Physical Sciences				3A	3
CIS 200 must be completed by the end of Semester 3.		X			
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 220	Introduction to Managerial Accounting	X			3
STAT 204	Statistics for Business Students				3

Historical Perspectives				3D	3
Electives					6
BUS 300 must be completed by the end of Semester 4.		X			
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 260	Social-Ethical-Regulatory Issues in Business				3
MGT 301	Supply Chain Management	X			3
MGT 310	Human Resource Management	X			3
MGT 320	Contemporary Management Principles/Practices	X			3
Elective					3
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
MGT 350	Employment Relations: The Legal Environment				3
MGT 474	Human Resource Planning and Development				3
Electives					9
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
FIN 300	Principles of Finance	X		4A,4B	3
MGT 374	Total Rewards and Performance Management	X			3
Select two courses from the following:					6
MGT 410	Leadership and Organizational Behavior				
MGT 411	Leading High Performance Teams				
MGT 473	Employment Relations: Labor and Management				
MGT 476	Negotiation and Conflict Management				
Elective					3
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 479	Strategic Management	X		4A,4C	3
Select one of the following courses not previously taken:		X			3
MGT 410	Leadership and Organizational Behavior				
MGT 411	Leading High Performance Teams				
MGT 473	Employment Relations: Labor and Management				
MGT 476	Negotiation and Conflict Management				
MKT 300	Marketing	X		4B	3
Elective		X			3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12
	Program Total Credits:				120

Second Concentration with International Business

A second concentration in International Business may be taken in conjunction with the Human Resource Management concentration. Upon graduation, both concentrations will be noted on a student's official transcript.

Effective Fall 2019

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Freshman

		AUCC	Credits
BUS 100	Introduction to Business		1
BUS 201	Foundations of Sustainable Enterprise		1
CIS 200	Business Information Systems		3
CO 150	College Composition (GT-CO2)	1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	4
Historical Perspectives		3D	3
Electives			6
	Total Credits		30

Sophomore

ACT 210	Introduction to Financial Accounting		3
ACT 220	Introduction to Managerial Accounting		3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)	3B	3
BUS 260	Social-Ethical-Regulatory Issues in Business		3
BUS 300	Business Writing and Communication (GT-CO3)	2	3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
Biological and Physical Sciences		3A	3
Diversity and Global Awareness		3E	3
International Business Group 2 - Global Focus			3
Electives			3
	Total Credits		30

Junior

FIN 300	Principles of Finance	4A,4B	3
FIN 475	International Business Finance		3
MGT 310	Human Resource Management		3
MGT 320	Contemporary Management Principles/Practices		3
MGT 350	Employment Relations: The Legal Environment		3
MGT 435	Global Ethical Leadership Stakeholder Mgmt		3
STAT 204	Statistics for Business Students		3
Human Resource Management Group 1 - Select one course from following:			3
MGT 410	Leadership and Organizational Behavior		
MGT 411	Leading High Performance Teams		
MGT 473	Employment Relations: Labor and Management		
MGT 476	Negotiation and Conflict Management		
International Business Group 2 - Global Focus			3
International Business Group 3 - Experiential Learning Requirement			3
	Total Credits		30

Senior

BUS 479	Strategic Management	4A,4C	3
MGT 301	Supply Chain Management		3
MGT 374	Total Rewards and Performance Management		3
MGT 474	Human Resource Planning and Development		3
MGT 475	International Business Management		3
MKT 300	Marketing	4B	3

Human Resource Management Group 1 - Select 6 credits from following:		6
MGT 410	Leadership and Organizational Behavior	
MGT 411	Leading High Performance Teams	
MGT 473	Employment Relations: Labor and Management	
MGT 476	Negotiation and Conflict Management	
International Business Group 1 - Select one course from the following:		3
MGT 468	Negotiating Globally	
MGT 478	Global Supply Chain Management	
MKT 365	International Marketing	
International Business Group 3 - Experiential Learning Requirement		3
	Total Credits	30
	Program Total Credits:	120

Interdisciplinary: International Business Group 2 – Global Focus (6 credits)

Code	Title	Credits
Select 6 credits from the following:		6
AM 430	International Retailing	3
ANTH 200	Cultures and the Global System (GT-SS3)	3
ECON 317	Population Economics	3
ECON 332/POLS 332	International Political Economy	3
ECON 440	Economics of International Trade and Policy	3
ECON 442	Economics of International Finance and Policy	3
ECON 460	Economic Development	3
GR 320	Cultural Geography	3
HIST 470	World Environmental History, 1500-Present	3
IE 450/SOWK 450	International Social Welfare and Development	3
IE 470	Women and Development	3
IE 471	Children and Youth in Global Context	3
IE 472	Education for Global Peace	3
IE 478	Managing International Development Programs	3
JTC 412	International Mass Communication	3
NRRT 320	International Issues-Recreation and Tourism	3
POLS 232	International Relations (GT-SS1)	3
POLS 362	Global Environmental Politics	3
POLS 431	International Law	3
POLS 433	International Organization	3
POLS 437	International Security	3
POLS 442	Environmental Politics in Developing World	3
POLS 462	Globalization, Sustainability, and Justice	3
SOC 364	Food, Agriculture and Global Society	3
SPCM 434	Intercultural Communication	3

Immersion: International Business Group 3 – Experiential Learning Requirement (6 credits)

Code	Title	Credits
Select at least one from the following:		6
Education Abroad experience		
Internship with global focus		
L*** language course		

Students are not to utilize the satisfactory/unsatisfactory (S/U) grading option for any Business concentration course or any Business core course (Business and non-Business subject codes) except when a course only allows S/U grading.

Second Concentration Major Completion Map

Distinctive Requirements for Degree Program:

To Declare this Major: Business is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the department for more information.

To prepare for first semester: The curriculum for the Business Administration - Human Resource Management concentration assumes students will be able to successfully complete calculus within their first year.

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
BUS 100	Introduction to Business		X		1
BUS 201	Foundations of Sustainable Enterprise		X		1
CO 150	College Composition (GT-CO2)		X	1A	3
Arts and Humanities			X	3B	3
Biological and Physical Sciences			X	3A	4

Electives			X		3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CIS 200	Business Information Systems		X		3
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)		X	1B	3
Historical Perspectives			X	3D	3
Electives			X		3
BUS 100 and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 210	Introduction to Financial Accounting		X		3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)			3B	3
ECON 204	Principles of Macroeconomics (GT-SS1)		X	3C	3
Biological and Physical Sciences			X	3A	3
Electives			X		3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 220	Introduction to Managerial Accounting		X		3
BUS 260	Social-Ethical-Regulatory Issues in Business				3
BUS 300	Business Writing and Communication (GT-CO3)		X	2	3
International Business Group 2 - Global Focus			X		3
Diversity and Global Awareness			X	3E	3
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
FIN 300	Principles of Finance			4A,4B	3
MGT 320	Contemporary Management Principles/Practices		X		3
MGT 435	Global Ethical Leadership Stakeholder Mgmt		X		3
STAT 204	Statistics for Business Students		X		3
International Business Group 2 - Global Focus			X		3
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
MGT 310	Human Resource Management		X		3
MGT 350	Employment Relations: The Legal Environment		X		3
FIN 475	International Business Finance		X		3
Human Resource Management Group 1 - Select one course from the following:			X		3
MGT 410	Leadership and Organizational Behavior		X		
MGT 411	Leading High Performance Teams		X		
MGT 473	Employment Relations: Labor and Management		X		
MGT 476	Negotiation and Conflict Management		X		
International Business Group 3 - Experiential Learning Requirement			X		3
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
MGT 301	Supply Chain Management	X			3
MGT 374	Total Rewards and Performance Management	X			3
MGT 475	International Business Management	X			3
MKT 300	Marketing	X		4B	3
Human Resource Management Group 1 - Select course from the following:		X			3

MGT 410	Leadership and Organizational Behavior	X			
MGT 411	Leading High Performance Teams	X			
MGT 473	Employment Relations: Labor and Management	X			
MGT 476	Negotiation and Conflict Management	X			
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 479	Strategic Management	X		4A,4C	3
MGT 474	Human Resource Planning and Development	X			3
Human Resource Management Group 1 - Select one course from the following:		X			3
MGT 410	Leadership and Organizational Behavior	X			
MGT 411	Leading High Performance Teams	X			
MGT 473	Employment Relations: Labor and Management	X			
MGT 476	Negotiation and Conflict Management	X			
International Business Group 1 - Select one course from the following:		X			3
MKT 365	International Marketing	X			
MGT 468	Negotiating Globally	X			
MGT 478	Global Supply Chain Management	X			
International Business Group 3 - Experiential Learning Requirement		X			3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Business Administration, Organization and Innovation Management Concentration

This program is designed to provide its students with a comprehensive knowledge of organization and innovation management along with the skills necessary for effective decision making in a business environment that is diverse, global, and highly competitive. Managers are dynamic individuals who are responsible for projects, teams, and processes. They coordinate, motivate, strategize, plan, budget, initiate action, evaluate performance, and control process and activities. They are commonly responsible for overseeing a budget and the activities of others to ensure that the organization's goals and objectives are met. Managers are employed in every industry. It is essential that a manager learn and master key knowledge, skills, and abilities including how to handle conflict, communicate effectively, negotiate, create positive and productive work environments, and effectively manage the numerous issues associated with the human resources of an organization.

Students may choose focused course work in entrepreneurship, supply chain management, and human resource management. These are designed to help students acquire skill sets so that, upon graduation, they will be able to "hit the ground running." In addition to the All-University Core Curriculum, course work for a concentration in organization and innovation management includes the College of Business Core and various management electives that allow the student to structure a program around his or her educational and/or career interests.

Learning Outcomes

Students will demonstrate:

- Knowledge and skills adequate to assume entry-level management positions in the broad spectrum of organizations so they can pursue careers in a wide variety of organizations and industries
- Ethical decision making skills
- An understanding of necessary change management and innovation skills
- An understanding of business principles and practices in an international context

Potential Occupations

Some examples include, but are not limited to the following: account management, analyst, client services, consultant, logistics management, supply management, management trainee, corporate recruiter, business owner, events planner, executive assistant, human resource specialist, project management, relationship management, retail management, team leader, trainer/facilitator.

Requirements

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Effective Fall 2018

Freshman

		AUCC	Credits
BUS 100	Introduction to Business		1
BUS 201[1]	Foundations of Sustainable Enterprise		1
CIS 200	Business Information Systems		3
CO 150	College Composition (GT-CO2)	1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	4
Electives			9
	Total Credits		30

Sophomore

ACT 210	Introduction to Financial Accounting		3
ACT 220	Introduction to Managerial Accounting		3
BUS 220[1]	Ethics in Contemporary Organizations (GT-AH3)	3B	3
BUS 300	Business Writing and Communication (GT-CO3)	2	3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
STAT 204	Statistics for Business Students		3
Biological and Physical Sciences		3A	3
Historical Perspectives		3D	3
Electives			6
	Total Credits		30

Junior

All freshman and sophomore required courses must be completed prior to or concurrent with first enrollment in required junior and senior courses.			
BUS 260	Social-Ethical-Regulatory Issues in Business		3
MGT 301	Supply Chain Management		3
MGT 310	Human Resource Management		3
MGT 320	Contemporary Management Principles/Practices		3
MGT 340	Fundamentals of Entrepreneurship		3
Select one from the following:			3
MGT 410	Leadership and Organizational Behavior		
MGT 411	Leading High Performance Teams		
Electives			12
	Total Credits		30

Senior

BUS 479	Strategic Management	4A,4C	3
FIN 300[2]	Principles of Finance	4A,4B	3
Select four courses from the following not taken in the junior year:			12
MGT 330	Creativity, Innovation, and Value Creation		
MGT 350	Employment Relations: The Legal Environment		
MGT 360	Social and Sustainable Venturing		
MGT 376	Advanced Service and Manufacturing Operations		
MGT 410	Leadership and Organizational Behavior		
MGT 411	Leading High Performance Teams		
MGT 420	New Venture Creation		
MGT 440	New Venture Management		

MGT 468	Negotiating Globally		
MGT 475	International Business Management		
MGT 476	Negotiation and Conflict Management		
MKT 300[2]	Marketing	4B	3
Diversity and Global Awareness		3E	3
Electives[3]			6
	Total Credits		30
	Program Total Credits:		120

1 Students enrolled in the Business Administration major prior to Fall semester 2013, are not required to take BUS 201 and BUS 220.

2 Students who have taken FIN 305 and/or MKT 305 prior to admission to the College of Business may substitute those courses to satisfy the category 4A and 4B requirements. All other students are required to take FIN 300 and MKT 300 to satisfy categories 4A and 4B.

3 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level). A minimum of 6 elective credits must be upper-division.

Students are not to utilize the satisfactory/unsatisfactory (S/U) grading option for any Business concentration course or any Business core course (Business and non-Business subject codes) except when a course only allows S/U grading.

Major Completion Map

Distinctive Requirements for Degree Program:

To Declare this Major: Business is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in Department for more information.

To prepare for first semester: The curriculum for the Business Administration - Organization and Innovation Management concentration assumes students will be able to successfully complete calculus within their first year.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 100	Introduction to Business		X		1
CO 150	College Composition (GT-CO2)		X	1A	3
Biological and Physical Sciences				3A	4
Arts and Humanities				3B	3
Elective					3
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 201	Foundations of Sustainable Enterprise				1
CIS 200	Business Information Systems				3
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	X		1B	3
Electives					6
BUS 100 and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 210	Introduction to Financial Accounting	X			3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)			3B	3
BUS 300	Business Writing and Communication (GT-CO3)		X	2	3
ECON 204	Principles of Macroeconomics (GT-SS1)	X		3C	3
Biological and Physical Sciences				3A	3
CIS 200 must be completed by the end of Semester 3.		X			
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 220	Introduction to Managerial Accounting	X			3
STAT 204	Statistics for Business Students				3
Historical Perspectives				3D	3
Electives					6

BUS 300 must be completed by the end of Semester 4.

	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 260	Social-Ethical-Regulatory Issues in Business				3
MGT 301	Supply Chain Management	X			3
MGT 320	Contemporary Management Principles/Practices	X			3
Electives					6
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
MGT 310	Human Resource Management				3
MGT 340	Fundamentals of Entrepreneurship				3
Select one course from the following:					3
MGT 410	Leadership and Organizational Behavior				
MGT 411	Leading High Performance Teams				
Electives					6
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
FIN 300	Principles of Finance	X		4A,4B	3
MKT 300	Marketing	X		4B	3
Management Electives (See List on Concentration Requirements Tab)					6
Diversity and Global Awareness				3E	3
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 479	Strategic Management	X		4A,4C	3
Management Electives		X			6
Electives		X			6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Second Concentration with International Business

A second concentration in International Business may be taken in conjunction with the Organization and Innovation Management concentration. Upon graduation, both concentrations will be noted on a student's official transcript.

Effective Fall 2019

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Freshman

		AUCC	**Credits**
BUS 100	Introduction to Business		1
BUS 201	Foundations of Sustainable Enterprise		1
CIS 200	Business Information Systems		3
CO 150	College Composition (GT-CO2)	1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	4
Historical Perspectives		3D	3

Electives			6
	Total Credits		30
Sophomore			
ACT 210	Introduction to Financial Accounting		3
ACT 220	Introduction to Managerial Accounting		3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)	3B	3
BUS 260	Social-Ethical-Regulatory Issues in Business		3
BUS 300	Business Writing and Communication (GT-CO3)	2	3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
Biological and Physical Sciences		3A	3
Diversity and Global Awareness		3E	3
International Business Group 2 - Global Focus			3
Electilve			3
	Total Credits		30
Junior			
FIN 300	Principles of Finance	4A,4B	3
FIN 475	International Business Finance		3
MGT 301	Supply Chain Management		3
MGT 310	Human Resource Management		3
MGT 320	Contemporary Management Principles/Practices		3
MGT 340	Fundamentals of Entrepreneurship		3
MGT 435	Global Ethical Leadership Stakeholder Mgmt		3
STAT 204	Statistics for Business Students		3
International Business Group 2 - Global Focus			3
International Business Group 3 - Experiential Learning Requirement			3
	Total Credits		30
Senior			
BUS 479	Strategic Management	4A,4C	3
MGT 468	Negotiating Globally		3
MGT 475	International Business Management		3
MKT 300	Marketing	4B	3
Organizational & Innovation Management Group 1 - Select one course from following:			3
MGT 410	Leadership and Organizational Behavior		
MGT 411	Leading High Performance Teams		
Organizational & Innovation Management Group 2 - Select 6 credits from the following:			6
MGT 330	Creativity, Innovation, and Value Creation		
MGT 350	Employment Relations: The Legal Environment		
MGT 360	Social and Sustainable Venturing		
MGT 376	Advanced Service and Manufacturing Operations		
MGT 410	Leadership and Organizational Behavior		
MGT 411	Leading High Performance Teams		
MGT 420	New Venture Creation		
MGT 440	New Venture Management		
MGT 476	Negotiation and Conflict Management		
International Business Group 3 - Experiential Learning Requirement			3
Electives			6
	Total Credits		30
	Program Total Credits:		120

Interdisciplinary: International Business Group 2 – Global Focus (6 credits)

Code	Title	Credits
Select 6 credits from the following:		6
AM 430	International Retailing	3
ANTH 200	Cultures and the Global System (GT-SS3)	3
ECON 317	Population Economics	3
ECON 332/POLS 332	International Political Economy	3
ECON 440	Economics of International Trade and Policy	3
ECON 442	Economics of International Finance and Policy	3
ECON 460	Economic Development	3
GR 320	Cultural Geography	3
HIST 470	World Environmental History, 1500-Present	3
IE 450/SOWK 450	International Social Welfare and Development	3
IE 470	Women and Development	3
IE 471	Children and Youth in Global Context	3
IE 472	Education for Global Peace	3
IE 478	Managing International Development Programs	3
JTC 412	International Mass Communication	3
NRRT 320	International Issues-Recreation and Tourism	3
POLS 232	International Relations (GT-SS1)	3
POLS 362	Global Environmental Politics	3
POLS 431	International Law	3
POLS 433	International Organization	3
POLS 437	International Security	3
POLS 442	Environmental Politics in Developing World	3
POLS 462	Globalization, Sustainability, and Justice	3
SOC 364	Food, Agriculture and Global Society	3
SPCM 434	Intercultural Communication	3

Immersion: International Business Group 3 – Experiential Learning Requirement (6 credits)

Code	Title	Credits
Select at least one from the following:		6
Education Abroad experience		
Internship with global focus		
L*** language course		

Students are not to utilize the satisfactory/unsatisfactory (S/U) grading option for any Business concentration course or any Business core course (Business and non-Business subject codes) except when a course only allows S/U grading

Second Concentration Major Completion Map

Distinctive Requirements for Degree Program:
To Declare this Major: Business is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the department for more information.
To prepare for first semester: The curriculum for the Business Administration - Organization and Innovation Management concentration assumes students will be able to successfully complete calculus within their first year.

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
BUS 100	Introduction to Business		X		1
BUS 201	Foundations of Sustainable Enterprise		X		1
CO 150	College Composition (GT-CO2)		X	1A	3
Arts and Humanities			X	3B	3
Biological and Physical Sciences			X	3A	4
Elective			X		3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CIS 200	Business Information Systems		X		3
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)		X	1B	3
Historical Perspectives			X	3D	3
Electives			X		3
BUS 100 and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		Critical	Recommended	AUCC	Credits
ACT 210	Introduction to Financial Accounting		X		3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)		X	3B	3

ECON 204	Principles of Macroeconomics (GT-SS1)		X	3C	3
Biological and Physical Sciences			X	3A	3
Electives			X		3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 220	Introduction to Managerial Accounting		X		3
BUS 260	Social-Ethical-Regulatory Issues in Business		X		3
BUS 300	Business Writing and Communication (GT-CO3)		X	2	3
Diversity and Global Awareness			X	3E	3
International Business Group 2 - Global Focus			X		3
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
FIN 300	Principles of Finance		X	4A,4B	3
MGT 320	Contemporary Management Principles/Practices		X		3
MGT 435	Global Ethical Leadership Stakeholder Mgmt		X		3
STAT 204	Statistics for Business Students		X		3
International Business Group 2 - Global Focus			X		3
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
FIN 475	International Business Finance		X		3
MGT 301	Supply Chain Management		X		3
MGT 310	Human Resource Management		X		3
MGT 340	Fundamentals of Entrepreneurship		X		3
International Business Group 3 - Experiential Learning Requirement			X		3
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
MGT 468	Negotiating Globally	X			3
MGT 475	International Business Management	X			3
MKT 300	Marketing	X		4B	3
Organizational & Innovation Management Group 1 - Select one course from the following:		X			3
MGT 410	Leadership and Organizational Behavior	X			
MGT 411	Leading High Performance Teams	X			
Electives					3
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 479	Strategic Management	X		4A,4C	3
Organizational & Innovation Management Group 2 (See Program Requirements - Select 6 credits)		X			6
International Business Group 3 - Experiential Learning Requirement		X			3
Electives		X			3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Business Administration, Supply Chain Management Concentration

This program is designed to develop in students a comprehensive knowledge of global supply chain management (SCM) along with the skills necessary for implementing strategic, efficient and effective SCM practices in contemporary business enterprises. SCM Professionals operate in a dynamic and changing world, managing resources and relationships with suppliers and customers worldwide. They are commonly responsible for practices related to managing products, information and cash flows through the global value chain including product development, forecasting demand, managing production and service operations, purchasing materials, order fulfillment, distribution, returns management, trade compliance, and customer service. SCM Professionals are employed in every industry and are essential in ensuring a company's offerings provide value for its customers. It is essential that an SCM professional learn and master key knowledge, skills, and abilities including critical thinking, ethics, change management, communication, negotiation and conflict management, business acumen, interpersonal skills, and organizational leadership skills. In addition to the All-University Core Curriculum, course work for a concentration in Supply Chain Management includes the College of Business Core and various management electives that allow the student to structure a program around his or her educational and/or career interests.

Learning Outcomes

Students will demonstrate:

- Knowledge and skills adequate to assume entry-level SCM positions in the broad spectrum of organizations and be prepared to pursue careers in a wide variety of organizations and industries
- Knowledge of how global supply chains operate and skills to make decisions to support strategic and tactical activities to manage efficient and effective supply chains
- An understanding of ethical decision making skills with respect to dealing with supplier and customer organizations
- An understanding of the skills required to manage risk, innovation, and the dynamics of supply chains in the current global economy

Potential Occupations

Some examples include, but are not limited to the following titles: Buyer, Supply Manager, Purchasing Manager, Materials Supervisor, Production Manager, Logistics Analyst, Transportation Analyst, Transportation Manager, Account Manager, Warehouse Supervisor, Supply Chain Consultant.

Requirements

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Effective Fall 2018

Freshman

		AUCC	Credits
BUS 100	Introduction to Business		1
BUS 201[1]	Foundations of Sustainable Enterprise		1
CIS 200	Business Information Systems		3
CO 150	College Composition (GT-CO2)	1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	4
Global and Cultural Awareness		3E	3
Electives			9
	Total Credits		33

Sophomore

ACT 210	Introduction to Financial Accounting		3
ACT 220	Introduction to Managerial Accounting		3
BUS 220[1]	Ethics in Contemporary Organizations (GT-AH3)	3B	3
BUS 300	Business Writing and Communication (GT-CO3)	2	3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
STAT 204	Statistics for Business Students		3
Biological and Physical Sciences		3A	3
Historical Perspectives		3D	3
Electives			6
	Total Credits		30

Junior

All freshman and sophomore required courses must be completed prior to or concurrent with first enrollment in required junior and senior courses.			
BUS 260	Social-Ethical-Regulatory Issues in Business		3
MGT 301	Supply Chain Management		3
MGT 320	Contemporary Management Principles/Practices		3
MGT 375	Advanced Supply Management		3
MGT 376	Advanced Service and Manufacturing Operations		3
MGT 377	Advanced Logistics		3
MGT 478	Global Supply Chain Management		3
Electives			9
	Total Credits		30

Senior

BUS 479	Strategic Management	4A,4C	3
FIN 300[2]	Principles of Finance	4A,4B	3
MKT 300[2]	Marketing	4B	3
Select one from the following:			3
MGT 411[3]	Leading High Performance Teams		
MGT 476[3]	Negotiation and Conflict Management		
Select three courses from the following not taken elsewhere:[3]			9
CIS 320	Project Management for Information Systems		
CIS 411	Enterprise Resource Planning Systems		
FIN 370	Financial Management-Theory and Application		
MGT 330	Creativity, Innovation, and Value Creation		
MGT 411[3]	Leading High Performance Teams		
MGT 475	International Business Management		
MGT 476[3]	Negotiation and Conflict Management		
MGT 486	Practicum in Supply Chain Management		
MKT 330	Business Customer Relationships		
Electives[4]			6
	Total Credits		27
	Program Total Credits:		120

1. Students enrolled in the Business Administration major prior to Fall semester 2013, are not required to take BUS 201 and BUS 220.
2. Students who have taken FIN 305 and/or MKT 305 prior to admission to the College of Business may substitute those courses to satisfy the category 4A and 4B requirements. All other students are required to take FIN 300 and MKT 300 to satisfy categories 4A and 4B.
3. Of the two-course selection of MGT 411 and MGT 476 in the senior year, the course not selected may be included among the three-course selection below it. Courses may not double-count for these requirements.
4. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level). A minimum of 6 elective credits must be upper-division.

Students are not to utilize the satisfactory/unsatisfactory (S/U) grading option for any Business concentration course or any Business core course (Business and non-Business subject codes) except when a course only allows S/U grading.

Major Completion Map

Distinctive Requirements for Degree Program:

To Declare this Major: Business is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in Department for more information.

To prepare for first semester: The curriculum for the Business Administration - Supply Chain Management Concentration assumes student will be able to successfully complete calculus within their first year.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
BUS 100	Introduction to Business		X		1
CO 150	College Composition (GT-CO2)		X	1A	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	4
Elective					6
	Total Credits				17

Semester 2		Critical	Recommended	AUCC	Credits
BUS 201	Foundations of Sustainable Enterprise				1
CIS 200	Business Information Systems				3
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	X		1B	3
Global and Cultural Awareness				3E	3
Elective					3
BUS 100 and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				16

Sophomore

Semester 3		Critical	Recommended	AUCC	Credits
ACT 210	Introduction to Financial Accounting	X			3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)			3B	3
BUS 300	Business Writing and Communication (GT-CO3)		X	2	3
ECON 204	Principles of Macroeconomics (GT-SS1)		X	3C	3
Biological and Physical Sciences				3A	3
CIS 200 must be completed by the end of Semester 3.		X			
	Total Credits				15

Semester 4		Critical	Recommended	AUCC	Credits
ACT 220	Introduction to Managerial Accounting	X			3
STAT 204	Statistics for Business Students				3
Historical Perspectives				3D	3
Electives					6
ECON 204 must be completed by the end of Semester 4.		X			
	Total Credits				15

Junior

Semester 5		Critical	Recommended	AUCC	Credits
BUS 260	Social-Ethical-Regulatory Issues in Business	X			3
MGT 301	Supply Chain Management				3
Electives					9
BUS 300 must be completed by the end of Semester 5.		X			
	Total Credits				15

Semester 6		Critical	Recommended	AUCC	Credits
MGT 320	Contemporary Management Principles/Practices	X			3
MGT 375	Advanced Supply Management				3
MGT 376	Advanced Service and Manufacturing Operations				3
MGT 377	Advanced Logistics				3
MGT 478	Global Supply Chain Management				3
	Total Credits				15

Senior

Semester 7		Critical	Recommended	AUCC	Credits
FIN 300	Principles of Finance	X		4A,4B	3
MKT 300	Marketing	X		4B	3

Upper-Division Supply Chain Management Courses (See List on Concentration Requirements Tab)					9
MGT 301 must be completed by the end of Semester 7.		X			
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 479	Strategic Management	X		4A,4C	3
Select one course from the following:		X			3
MGT 411	Leading High Performance Teams				
MGT 476	Negotiation and Conflict Management				
Electives		X			6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12
	Program Total Credits:				120

Second Concentration with International Business

A second concentration in International Business may be taken in conjunction with the Supply Chain Management concentration. Upon graduation, both concentrations will be noted on a student's official transcript.

Effective Fall 2019

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Freshman

		AUCC	Credits
BUS 100	Introduction to Business		1
BUS 201	Foundations of Sustainable Enterprise		1
CIS 200	Business Information Systems		3
CO 150	College Composition (GT-CO2)	1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	4
Historical Perspectives		3D	3
Electives			6
	Total Credits		30

Sophomore

ACT 210	Introduction to Financial Accounting		3
ACT 220	Introduction to Managerial Accounting		3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)	3B	3
BUS 260	Social-Ethical-Regulatory Issues in Business		3
BUS 300	Business Writing and Communication (GT-CO3)	2	3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
STAT 204	Statistics for Business Students		3
Biological and Physical Sciences		3A	3
Diversity and Global Awareness		3E	3
International Business Group 2 - Global Focus			3
	Total Credits		30

Junior

FIN 300	Principles of Finance	4A,4B	3
FIN 475	International Business Finance		3

MGT 301	Supply Chain Management		3
MGT 320	Contemporary Management Principles/Practices		3
MGT 375	Advanced Supply Management		3
MGT 435	Global Ethical Leadership Stakeholder Mgmt		3
Select one course from the following:			3
MGT 411	Leading High Performance Teams		
MGT 476	Negotiation and Conflict Management		
Select one course from the following not taken elsewhere:			3
CIS 320	Project Management for Information Systems		
CIS 411	Enterprise Resource Planning Systems		
FIN 370	Financial Management-Theory and Application		
MGT 330	Creativity, Innovation, and Value Creation		
MGT 411	Leading High Performance Teams		
MGT 476	Negotiation and Conflict Management		
MGT 486	Practicum in Supply Chain Management		
MKT 330	Business Customer Relationships		
International Business Group 2 - Global Focus			3
International Business Group 3 - Experiential Learning Requirement			3
	Total Credits		30

Senior

BUS 479	Strategic Management	4A,4C	3
MGT 376	Advanced Service and Manufacturing Operations		3
MGT 377	Advanced Logistics		3
MGT 475	International Business Management		3
MGT 478	Global Supply Chain Management		3
MKT 300	Marketing	4B	3
Select one course from the following not taken elsewhere:			3
CIS 320	Project Management for Information Systems		
CIS 411	Enterprise Resource Planning Systems		
FIN 370	Financial Management-Theory and Application		
MGT 330	Creativity, Innovation, and Value Creation		
MGT 411	Leading High Performance Teams		
MGT 476	Negotiation and Conflict Management		
MGT 486	Practicum in Supply Chain Management		
MKT 330	Business Customer Relationships		
International Business Group 3 - Experiential Learning Requirement			3
Electives			6
	Total Credits		30
	Program Total Credits:		120

Interdisciplinary: International Business Group 2 – Global Focus (6 credits)

Code	Title	Credits
Select 6 credits from the following:		6
AM 430	International Retailing	3
ANTH 200	Cultures and the Global System (GT-SS3)	3
ECON 317	Population Economics	3
ECON 332/POLS 332	International Political Economy	3
ECON 440	Economics of International Trade and Policy	3
ECON 442	Economics of International Finance and Policy	3
ECON 460	Economic Development	3
GR 320	Cultural Geography	3
HIST 470	World Environmental History, 1500-Present	3
IE 450/SOWK 450	International Social Welfare and Development	3
IE 470	Women and Development	3
IE 471	Children and Youth in Global Context	3
IE 472	Education for Global Peace	3
IE 478	Managing International Development Programs	3

JTC 412	International Mass Communication	3
NRRT 320	International Issues-Recreation and Tourism	3
POLS 232	International Relations (GT-SS1)	3
POLS 362	Global Environmental Politics	3
POLS 431	International Law	3
POLS 433	International Organization	3
POLS 437	International Security	3
POLS 442	Environmental Politics in Developing World	3
POLS 462	Globalization, Sustainability, and Justice	3
SOC 364	Food, Agriculture and Global Society	3
SPCM 434	Intercultural Communication	3

Immersion: International Business Group 3 – Experiential Learning Requirement (6 credits)

Code	Title	Credits
Select at least one from the following:		6
Education Abroad experience		
Internship with global focus		
L*** language course		

Students are not to utilize the satisfactory/unsatisfactory (S/U) grading option for any Business concentration course or any Business core course (Business and non-Business subject codes) except when a course only allows S/U grading.

Second Concentration Major Completion Map

Distinctive Requirements for Degree Program:
To Declare this Major: Business is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the department for more information.
To prepare for first semester: The curriculum for the Business Administration - Supply Chain Management Concentration assumes student will be able to successfully complete calculus within their first year.

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 100	Introduction to Business		X		1
BUS 201	Foundations of Sustainable Enterprise		X		1
CO 150	College Composition (GT-CO2)		X	1A	3
Arts and Humanities			X	3B	3
Biological and Physical Sciences			X	3A	4
Electives			X		3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CIS 200	Business Information Systems		X		3
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)		X	1B	3
Historical Perspectives			X	3D	3
Electives			X		3
BUS 100 and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 210	Introduction to Financial Accounting				3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)		X	3B	3
ECON 204	Principles of Macroeconomics (GT-SS1)		X	3C	3
STAT 204	Statistics for Business Students				3
Biological and Physical Sciences			X	3A	3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 220	Introduction to Managerial Accounting		X		3
BUS 260	Social-Ethical-Regulatory Issues in Business		X		3
BUS 300	Business Writing and Communication (GT-CO3)			2	3
International Business Group 2 - Global Focus			X		3

Diversity and Global Awareness			X	3E	3
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
FIN 300	Principles of Finance		X	4A,4B	3
MGT 301	Supply Chain Management				3
MGT 320	Contemporary Management Principles/Practices				3
MGT 435	Global Ethical Leadership Stakeholder Mgmt		X		3
International Business Group 2 - Global Focus			X		3
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
FIN 475	International Business Finance		X		3
MGT 375	Advanced Supply Management				3
Select one course from the following:					3
MGT 411	Leading High Performance Teams				
MGT 476	Negotiation and Conflict Management				
Upper-Division Supply Chain Management Courses (See List on Concentration Requirements Tab)					3
International Business Group 3 - Experiential Learning Requirement			X		3
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
MGT 376	Advanced Service and Manufacturing Operations				3
MGT 377	Advanced Logistics				3
MGT 475	International Business Management	X			3
MKT 300	Marketing	X		4B	3
Elective					3
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 479	Strategic Management	X		4A,4C	3
MGT 478	Global Supply Chain Management				3
Upper-Division Supply Chain Management Courses (See List on Concentration Requirements Tab)					3
International Business Group 3 - Experiential Learning Requirement		X			3
Elective					3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Minor in Entrepreneurship and Innovation

The minor in Entrepreneurship and Innovation prepares students to play crucial roles (as founders, investors, advisors, policy makers, and executives) in the greater entrepreneurial ecosystem, including new venture start-ups, corporate entrepreneurship, social and sustainable ventures, and government entities. Consisting of 24 credits, the minor combines required entrepreneurship courses from the College of Business with selected electives across majors with an entrepreneurial nature.

Requirements Effective Fall 2019

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Sophomore standing required for acceptance into the minor. Students must have a minimum GPA of 2.500 for acceptance into the minor.

Students must complete each course in the minor with a grade of C or better.

Code	Title	Credits
Required Courses:		
FIN 309	Fundamentals of Entrepreneurial Finance	3
MGT 330	Creativity, Innovation, and Value Creation	3
MGT 340	Fundamentals of Entrepreneurship	3
Select one course from the following:		3
ENGR 422	Technology Entrepreneurship	
MGT 420	New Venture Creation	
MGT 424/ IDEA 424	Ventures in Social Entrepreneurship	
Select one course from the following:		3
MGT 360	Social and Sustainable Venturing	
MGT 440	New Venture Management	
MGT 487	Internship	
Select two courses from the following:		6
BUS 205	Legal and Ethical Issues in Business	
ECON 202	Principles of Microeconomics (GT-SS1)	
ECON 204	Principles of Macroeconomics (GT-SS1)	
MGT 305	Fundamentals of Management	
MKT 305	Fundamentals of Marketing	
Select one course from the following not taken elsewhere in the minor:		3-4
AM 373	Apparel Design and Retail Entrepreneurship	
AREC 328	Small Agribusiness Management	
or AREC 428	Agricultural Business Management	
BIOM 486A	Biomedical Design Practicum: Capstone Design I	
BUS 205	Legal and Ethical Issues in Business	
CBE 451	Chemical and Biological Engineering Design I	
CIVE 402	Senior Design Principles	
ECE 401	Senior Design Project I	
ECON 202	Principles of Microeconomics (GT-SS1)	
ECON 204	Principles of Macroeconomics (GT-SS1)	
FTEC 400	Food Safety	
HES 145	Health and Wellness	
LEAP 310	Creative Industries Career Management	
MECH 486A	Engineering Design Practicum: I	
MGT 301	Supply Chain Management	
MGT 360	Social and Sustainable Venturing	
MKT 370	Digital Marketing	
Program Total Credits:		24-25

Students can only choose 2 courses from their major area to apply to a minor.

Certificate in Entrepreneurship

The Certificate in Entrepreneurship is composed of a series of courses which provides students with the knowledge and skills to successfully develop and assess the viability of for profit and not-for-profit "social and sustainable" business concepts, and plan for the funding and launch of new ventures whether they are stand alone businesses or new ventures within an existing company. The Certificate in Entrepreneurship is open to all students.

Effective Fall 2019

Additional coursework may be required due to prerequisites.

Code	Title	Credits
MGT 340	Fundamentals of Entrepreneurship	3
Select one course from the following:		3
ENGR 422	Technology Entrepreneurship	
MGT 420	New Venture Creation	
MGT 424/ IDEA 424	Ventures in Social Entrepreneurship	
Select one course from the following:		3-4
AM 373	Apparel Design and Retail Entrepreneurship	
AREC 328	Small Agribusiness Management	
or AREC 428	Agricultural Business Management	
BIOM 486A	Biomedical Design Practicum: Capstone Design I	
CBE 451	Chemical and Biological Engineering Design I	
CIVE 402	Senior Design Principles	
ECE 401	Senior Design Project I	
LEAP 310	Creative Industries Career Management	
MECH 486A	Engineering Design Practicum: I	
MGT 330	Creativity, Innovation, and Value Creation	
MGT 360	Social and Sustainable Venturing	
Program Total Credits:		9-10

Certificate in Leadership in Organizations

The College of Business offers the Certificate in Leadership in Organizations to students majoring in Business Administration. This certificate provides students with a research-based understanding of leadership principles and experience-based skill development opportunities. These leadership competencies are valuable for job attainment, job performance, and career progression for students of all concentrations in the College of Business.

Effective Spring 2015

Additional coursework may be required due to prerequisites.

Code	Title	Credits
MGT 410	Leadership and Organizational Behavior	3
MGT 411	Leading High Performance Teams	3
MGT 476	Negotiation and Conflict Management	3
Program Total Credits:		9

Certificate in Managing Human Resources

The College of Business offers the Certificate in Managing Human Resources to students majoring in Business Administration. This certificate will give students a basic understanding of the functional

areas of human resource management to add to their specific major area. Students can expect an introduction to the field of human resource management including employment law, recruitment, selection, training and development, performance management, and compensation.

Effective Spring 2015

Additional coursework may be required due to prerequisites.

Code	Title	Credits
MGT 310	Human Resource Management	3
Select two of the following courses:		6
MGT 350	Employment Relations: The Legal Environment	
MGT 374	Total Rewards and Performance Management	
MGT 474	Human Resource Planning and Development	
Program Total Credits:		9

Certificate in Operations, Logistics and Supply Management

The College of Business offers the Certificate in Operations, Logistics and Supply Management to business students, to give students expertise in the core areas of supply chain management (SCM) and to prepare them for SCM careers. Companies seek employees able to mitigate risk in global supply chains, grasp the cost trade-offs inherent to various SCM activities, and build relationships with key trading partners. This certificate will give students the ability to add value through coordination of functions and firms.

Effective Fall 2018

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Select 3 of the following courses:		9
MGT 375	Advanced Supply Management	
MGT 376	Advanced Service and Manufacturing Operations	
MGT 377	Advanced Logistics	
MGT 486	Practicum in Supply Chain Management	
Program Total Credits:		9

Department of Marketing

Office in Rockwell Hall, Room 111
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Professor David I. Gilliland, Chair

Undergraduate
Major in Business Administration

- Marketing Concentration

Certificates

- Business-to-Business Selling
- Customer Experience Management
- Marketing Communication and Branding
- Market Research and Data Analytics
- Strategic Marketing

Graduate
Certificate

- Marketing Management

Courses
Marketing (MKT)

MKT 300 Marketing Credits: 3 (3-0-0)
Course Description: Market and buyer analysis, product and service development, pricing, promotion, advertising, selling, and distribution.
Prerequisite: (AREC 202 or ECON 202) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online. Credit not allowed for both MKT 300 and MKT 305.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 305 Fundamentals of Marketing Credits: 3 (3-0-0)
Course Description: Overview of marketing activities involved in provision of products and services to customers, including target markets and managerial aspects.
Prerequisite: AREC 202 or ECON 101 or ECON 202.
Registration Information: Credit not allowed for both MKT 305 and MKT 300. Sections may be offered: Face-to-Face, Online, or Mixed Face-to-Face.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 307 Fundamentals of Sports Marketing Credits: 3 (3-0-0)
Course Description: General marketing and the application within sporting related contexts. Focuses on the nature and scope of marketing a sports franchise as well as marketing traditional products or services with the assistance of sports figures.
Prerequisite: None.
Registration Information: This is a partial semester course. Offered as an online course only. Sport Management Minors only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 315 Marketing Communication Design Credits: 3 (3-0-0)
Course Description: Creating multiple kinds of marketing communications using graphic design software.
Prerequisite: MKT 300 or MKT 305.
Registration Information: Business majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 320 Integrated Marketing Communications Credits: 3 (3-0-0)
Course Description: Principles and practices of managing promotional activities including advertising, sales promotion, and other major media.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 330 Business Customer Relationships Credits: 3 (3-0-0)
Course Description: Managing relationships with distribution channel intermediaries and business customers.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 360 Retailing Credits: 3 (3-0-0)
Also Offered As: DM 360.
Course Description: Retail markets, institutions, operations, and problems.
Prerequisite: MKT 300 or MKT 305.
Registration Information: Credit not allowed for both MKT 360 and DM 360. Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 361 Buyer Behavior Credits: 3 (3-0-0)
Course Description: Marketing analysis of buying behavior of individuals, households, businesses, and not-for-profit organizations.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 362 Professional Selling Credits: 3 (3-0-0)
Course Description: Persuasive personal communications in selling consumer and industrial products and services.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 363 Sales Management Credits: 3 (3-0-0)
Course Description: Recruiting, selecting, training, compensating, motivating, supervising, and evaluating a sales force.
Prerequisite: MKT 300 or MKT 305.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 364 Product Design Credits: 3 (3-0-0)
Course Description: Designing innovative products, services, brands, and experiences is critical for creating value within all kinds of organizations in the marketplace and society. Creative problem solving to define design challenges, create concepts with low-fidelity prototyping, evaluate assumptions using co-creation, and communicate ideas with stakeholders. Internalize and practice the frameworks, processes, and tools for leading a product innovation process in any kind of organization.
Prerequisite: MKT 300 or MKT 305.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 365 International Marketing Credits: 3 (3-0-0)
Course Description: Analysis of international markets and development of strategic and tactical options for marketing across national boundaries.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 366 Services Marketing Credits: 3 (3-0-0)
Course Description: Customer service issues and unique challenges involved in marketing and management of services operations.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 367 Sports Marketing Credits: 3 (3-0-0)
Course Description: The nature and scope of applying marketing strategy and tactics in the sports marketing environment.
Prerequisite: MKT 300 or MKT 305.
Registration Information: Credit allowed for only one of the following: MKT 367, MKT 367A, MKT 367B.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 370 Digital Marketing Credits: 3 (3-0-0)
Course Description: Introduction to digital marketing: the landscape and tactics needed to execute marketing strategy in an online, connected, world.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 375 Social Media Marketing Credits: 3 (3-0-0)
Course Description: Provides the knowledge and skills to effectively use social media to market a business. Obtain in-depth knowledge and understanding of the various facets of social media marketing strategy, platforms and tactics, and how social media integrates into the overall marketing and communication plan.
Prerequisite: MKT 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 410 Marketing Research Credits: 3 (3-0-0)
Course Description: Role and methodology of research in business emphasizing selection of study's direction, collecting data, and choosing techniques for analyzing these data.
Prerequisite: (MKT 300 or MKT 305) and (STAT 204 or STAT 301 or STAT 307 or STAT 311 or STAT 315).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 440 Pricing and Financial Analysis in Marketing Credits: 3 (3-0-0)
Course Description: Financial analysis involved in addressing marketing problems; advanced study of pricing strategy and tactics.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 450 Marketing Analytics Credits: 3 (3-0-0)
Course Description: Analytic techniques used by marketers to transform data into decision-making information.
Prerequisite: MKT 410.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 479 Marketing Strategy and Management Credits: 3 (3-0-0)
Course Description: Marketing decisions involving integration of elements of the marketing mix.
Prerequisite: MKT 410.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 482A Study Abroad: Cross-Cultural Marketing in China Credits: 3 (0-0-3)
Course Description: International setting focusing on multi-country contexts. Emphasis on consumer and business customer behavior in today's global environment.
Prerequisite: MKT 300 or MKT 305.
Registration Information: Written consent of instructor.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 486 Marketing Practicum Credits: 3 (0-0-3)
Course Description: To give students the experience of working on a real marketing problem with a team at a sponsoring firm.
Prerequisite: MKT 300 or MKT 305.
Registration Information: Written consent of instructor required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 487 Internship Credits: 3 (0-0-9)
Course Description:
Prerequisite: MKT 300.
Registration Information: Written consent of instructor required. Maximum of 3 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MKT 492 Seminar Credits: 3 (0-0-3)
Course Description:
Prerequisite: MKT 300 or MKT 305.
Registration Information: Written consent of instructor required.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MKT 495 Independent Study Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: 2.75 GPA or better.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MKT 496 Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MKT 498 Research Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MKT 600 Marketing Management and Strategy Credits: 3 (3-0-0)
Course Description: Processes of customer value creation and value capture; marketing strategy analysis.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master's program in business.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 601 Marketing for Social Sustainable Enterprises Credits: 3 (3-0-0)
Course Description: Customer and stakeholder value creation and capture. Marketing strategy with emphasis on social sustainable organizations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to GSSE Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 610 Qualitative Marketing Research Methods Credit: 1 (1-0-0)
Course Description: Overview of qualitative research methods including focus groups, in-depth interviews, observations, and projective techniques.
Prerequisite: BUS 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 611 Quantitative Marketing Research Methods Credit: 1 (1-0-0)
Course Description: Overview of the field of business research, with a focus on quantitative research methods.
Prerequisite: BUS 601 and BUS 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 621 Search Engine Marketing and Optimization Credit: 1 (1-0-0)
Course Description: Focuses on search engine optimization (SEO) and search engine marketing (SEM). Students will improve the visibility of webpage(s) in the "organic results" through a variety of SEO tactics. Use paid activities (using the Google AdWords platform) to drive traffic from the search engine results page. Emphasizes application of class frameworks and concepts.
Prerequisite: BUS 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master's program in business. This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 650 Marketing Analytics I Credits: 2 (2-0-0)
Course Description: Examine the pivotal role of marketing research in the data analytics process. Emphasis on research design, experimental design, sampling theory and various data collection methods. Evaluate the reliability and validity of marketing research data and data analysis tools (SPSS/SAS/R) and report on research findings.
Prerequisite: BUS 601 and BUS 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 651 Marketing Analytics II Credits: 2 (2-0-0)
Course Description: Introduces the scope of the secondary data environment and teaches the analytic techniques used by marketers to transform data into decision making information. Focuses on primary data collection techniques, advanced analytic techniques and their application to marketing decision making.
Prerequisite: MKT 650.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 661 Consumer Behavior Credit: 1 (1-0-0)
Course Description: Marketing analysis of buying behavior of individual consumers.
Prerequisite: BUS 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 662 Strategic Selling for Business Customers Credit: 1 (1-0-0)
Course Description: Examination of sales strategies, sales tactics and best practices in professional selling with a primary context in business selling.
Prerequisite: BUS 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 664 Design Thinking for Sustainable Enterprise Credits: 3 (3-0-0)
Course Description: Guides students in generating sustainable products, services, and business models. Topics build on a foundational understanding of markets and strategies that address triple bottom line imperatives. Emphasizes applying design thinking tools, cross-disciplinary insights, qualitative research, low-fidelity prototyping, and experimentation.
Prerequisite: MKT 601.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 667 Services Marketing Management Credit: 1 (1-0-0)
Course Description: Fundamental concepts and strategies that differentiate the marketing of services from the marketing of tangible goods, including customer satisfaction.
Prerequisite: BUS 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 670 Digital Marketing Credit: 1 (1-0-0)
Course Description: Overview of digital marketing tactics. Focuses on the practical application of tactics in support of basic business strategies as they apply to the online world of marketing, including websites, analytics, content marketing, email marketing, and emerging technologies, among other digital based topics. Particular focus will be given to measurement in a digital world through analytics and metrics.
Prerequisite: BUS 655 and MKT 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 692 Seminar Credits: 3 (0-0-3)
Course Description: Critical review and discussion of relevant marketing topics.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MKT 695 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: 3.25 GPA or better.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Business Administration, Marketing Concentration

This program will provide its students with a comprehensive knowledge of marketing along with the skills necessary for effective decision making in a business environment that is diverse, global, and highly competitive. As defined by the American Marketing Association, marketing is the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customer, clients, partners, and society at large. Organizations engage in marketing activities, such as conducting market research, developing new products, establishing pricing approaches, designing marketing communications, and building customer relationships. Marketing is people-oriented and ever changing. A person's analytical and creative abilities are brought to bear on developing solutions to various marketing problems while operating within a continuously evolving marketplace. In addition to the All-University Core Curriculum, course work for a major in business administration/marketing includes calculus, economics, statistics, and business foundation classes along with courses that specifically examine marketing issues and practices.

Learning Outcomes

Students will demonstrate:

- The ability to identify a marketing problem and key influences on that problem, to use appropriate qualitative and quantitative analysis and market research techniques to evaluate the marketing problem, and to evaluate alternative solutions
- The ability to make a final recommendation that thoroughly addresses the problem/opportunity based on: making reasonable assumptions; considering appropriate customer, competitor, and company constraints; clearly addressing the marketing issues; and demonstrating an understanding of the interrelationships of marketing concepts
- The ability to use marketing terminology correctly
- The ability to develop persuasive and convincing arguments that support recommendations
- The ability to design a marketing plan

Potential Occupations

Between one-fourth and one-third of the civilian labor force is employed in marketing-related positions. Examples of possible careers include, but are not limited to: marketing strategy planning, brand management, product development, market research, digital marketing, pricing management, sales management, advertising, and promotion management.

Requirements

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Effective Fall 2017

Freshman

		AUCC	Credits
BUS 100	Introduction to Business		1
BUS 201[1]	Foundations of Sustainable Enterprise		1
CIS 200	Business Information Systems		3
CO 150	College Composition (GT-CO2)	1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	4
Electives			9
	Total Credits		30

Sophomore

ACT 210	Introduction to Financial Accounting		3
ACT 220	Introduction to Managerial Accounting		3
BUS 220[1]	Ethics in Contemporary Organizations (GT-AH3)	3B	3
BUS 260	Social-Ethical-Regulatory Issues in Business		3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
STAT 204	Statistics for Business Students		3
Biological and Physical Sciences		3A	3
Historical Perspectives		3D	3

Electives			6
	Total Credits		30

Junior

All freshman and sophomore required courses must be completed prior to or concurrent with first enrollment in required junior and senior courses.

BUS 300	Business Writing and Communication (GT-CO3)	2	3
FIN 300[2]	Principles of Finance	4A,4B	3
MGT 301	Supply Chain Management		3
MKT 300[2]	Marketing	4B	3
Select two courses from the following:			6
MKT 315	Marketing Communication Design		
MKT 320	Integrated Marketing Communications		
MKT 330	Business Customer Relationships		
MKT 360/DM 360	Retailing		
MKT 362	Professional Selling		
MKT 363	Sales Management		
MKT 364	Product Design		
MKT 365	International Marketing		
MKT 366	Services Marketing		
MKT 367	Sports Marketing		
MKT 370	Digital Marketing		
MKT 440	Pricing and Financial Analysis in Marketing		
MKT 450	Marketing Analytics		
MKT 487	Internship		
MKT 492	Seminar		
MKT 361	Buyer Behavior		3
Electives			9
	Total Credits		30

Senior

BUS 479	Strategic Management	4A,4C	3
MGT 320	Contemporary Management Principles/Practices		3
Select two courses from the following not taken in the junior year:			6
MKT 315	Marketing Communication Design		
MKT 320	Integrated Marketing Communications		
MKT 330	Business Customer Relationships		
MKT 360/DM 360	Retailing		
MKT 362	Professional Selling		
MKT 363	Sales Management		
MKT 364	Product Design		
MKT 365	International Marketing		
MKT 366	Services Marketing		
MKT 367	Sports Marketing		
MKT 370	Digital Marketing		
MKT 440	Pricing and Financial Analysis in Marketing		
MKT 450	Marketing Analytics		
MKT 487	Internship		
MKT 492	Seminar		
MKT 410	Marketing Research		3
MKT 479	Marketing Strategy and Management		3
Diversity and Global Awareness		3E	3

Electives[3]		9
	Total Credits	30
	Program Total Credits:	120

1 Students enrolled in the Business Administration major prior to Fall semester 2013, are not required to take BUS 201 and BUS 220.

2 Students who have taken FIN 305 and/or MKT 305 prior to admission to the College of Business may substitute those courses to satisfy the category 4A and 4B requirements. All other students are required to take FIN 300 and MKT 300 to satisfy categories 4A and 4B.

3 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level). A minimum of 6 elective credits must be upper-division.

Students are not to utilize the satisfactory/unsatisfactory (S/U) grading option for any Business concentration course or any Business core course (Business and non-Business subject codes) except when a course only allows S/U grading.

Major Completion Map

Distinctive Requirements for Degree Program:
To Declare this Major: Business is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in Department for more information.
To prepare for first semester: The curriculum for the Business Administration - Marketing concentration assumes students will be able to successfully complete calculus within their first year.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 100	Introduction to Business		X		1
CO 150	College Composition (GT-CO2)		X	1A	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	4
Elective					3
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 201	Foundations of Sustainable Enterprise				1
CIS 200	Business Information Systems	X			3
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	X		1B	3
Electives					6
BUS 100 and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 210	Introduction to Financial Accounting	X			3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)			3B	3
ECON 204	Principles of Macroeconomics (GT-SS1)	X		3C	3
Biological and Physical Sciences				3A	3
Elective					3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 220	Introduction to Managerial Accounting	X			3
BUS 260	Social-Ethical-Regulatory Issues in Business				3
STAT 204	Statistics for Business Students				3
Historical Perspectives				3D	3
Elective					3
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 300	Business Writing and Communication (GT-CO3)	X		2	3
FIN 300	Principles of Finance		X	4A,4B	3
MKT 300	Marketing	X		4B	3

Electives					6
STAT 204 must be completed by the end of Semester 5.					
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
MGT 301	Supply Chain Management	X			3
MKT 361	Buyer Behavior				3
Upper-Division MKT electives (except for MKT 305, MKT 495, MKT 496, and MKT 498) (See List on Concentration Requirements Tab)					6
Elective					3
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
MGT 320	Contemporary Management Principles/Practices	X			3
Diversity and Global Awareness				3E	3
Upper-Division MKT elective (except for MKT 305, MKT 495, MKT 496, and MKT 498) (See List on Concentration Requirements Tab)					3
Electives					6
FIN 300 and MKT 410 must be completed by the end of Semester 7.		X			
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 479	Strategic Management	X		4A,4C	3
MKT 410	Marketing Research	X			3
MKT 479	Marketing Strategy and Management	X			3
Upper-Division MKT elective (except for MKT 305, MKT 495, MKT 496, and MKT 498) (See List on Concentration Requirements Tab)		X			3
Elective		X			3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Second Concentration with International Business

A second concentration in International Business may be taken in conjunction with the Marketing concentration. Upon graduation, both concentrations will be noted on a student's official transcript.

Effective Fall 2019

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Freshman

		AUCC	Credits
BUS 100	Introduction to Business		1
BUS 201	Foundations of Sustainable Enterprise		1
CIS 200	Business Information Systems		3
CO 150	College Composition (GT-CO2)	1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	4
Historical Perspectives		3D	3
Electives			6
	Total Credits		30

Sophomore

ACT 210	Introduction to Financial Accounting		3
ACT 220	Introduction to Managerial Accounting		3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)	3B	3
BUS 260	Social-Ethical-Regulatory Issues in Business		3
BUS 300	Business Writing and Communication (GT-CO3)	2	3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
Biological and Physical Sciences		3A	3
Diversity and Global Awareness		3E	3
International Business Group 2 - Global Focus			3
Electives			3
	Total Credits		30

Junior

FIN 300	Principles of Finance	4A,4B	3
MGT 320	Contemporary Management Principles/Practices		3
MGT 435	Global Ethical Leadership Stakeholder Mgmt		3
MKT 300	Marketing	4B	3
MKT 361	Buyer Behavior		3
STAT 204	Statistics for Business Students		3
Select 6 credits from the following:			6
MKT 315	Marketing Communication Design		
MKT 320	Integrated Marketing Communications		
MKT 330	Business Customer Relationships		
MKT 360/DM 360	Retailing		
MKT 362	Professional Selling		
MKT 363	Sales Management		
MKT 364	Product Design		
MKT 366	Services Marketing		
MKT 367	Sports Marketing		
MKT 370	Digital Marketing		
MKT 440	Pricing and Financial Analysis in Marketing		
MKT 450	Marketing Analytics		
MKT 487	Internship		
MKT 492	Seminar		
International Business Group 2 - Global Focus			3
International Business Group 3 - Experiential Learning Requirement			3
	Total Credits		30

Senior

BUS 479	Strategic Management	4A,4C	3
FIN 475	International Business Finance		3
MGT 301	Supply Chain Management		3
MGT 475	International Business Management		3
MKT 365	International Marketing		3
MKT 410	Marketing Research		3
MKT 479	Marketing Strategy and Management		3
Select 3 credits from the following (not previously taken):			3
MKT 315	Marketing Communication Design		
MKT 320	Integrated Marketing Communications		
MKT 330	Business Customer Relationships		

MKT 360/DM 360	Retailing	
MKT 362	Professional Selling	
MKT 363	Sales Management	
MKT 364	Product Design	
MKT 366	Services Marketing	
MKT 367	Sports Marketing	
MKT 370	Digital Marketing	
MKT 440	Pricing and Financial Analysis in Marketing	
MKT 450	Marketing Analytics	
MKT 487	Internship	
MKT 492	Seminar	
International Business Group 3 - Experiential Learning Requirement		3
Elective		3
	Total Credits	30
	Program Total Credits:	120

Interdisciplinary: International Business Group 2 – Global Focus (6 credits)

Code	Title	Credits
Select 6 credits from the following:		6
AM 430	International Retailing	3
ANTH 200	Cultures and the Global System (GT-SS3)	3
ECON 317	Population Economics	3
ECON 332/POLS 332	International Political Economy	3
ECON 440	Economics of International Trade and Policy	3
ECON 442	Economics of International Finance and Policy	3
ECON 460	Economic Development	3
GR 320	Cultural Geography	3
HIST 470	World Environmental History, 1500-Present	3
IE 450/SOWK 450	International Social Welfare and Development	3
IE 470	Women and Development	3
IE 471	Children and Youth in Global Context	3
IE 472	Education for Global Peace	3
IE 478	Managing International Development Programs	3
JTC 412	International Mass Communication	3
NRRT 320	International Issues-Recreation and Tourism	3
POLS 232	International Relations (GT-SS1)	3
POLS 362	Global Environmental Politics	3
POLS 431	International Law	3
POLS 433	International Organization	3
POLS 437	International Security	3
POLS 442	Environmental Politics in Developing World	3
POLS 462	Globalization, Sustainability, and Justice	3
SOC 364	Food, Agriculture and Global Society	3
SPCM 434	Intercultural Communication	3

Immersion: International Business Group 3 – Experiential Learning Requirement (6 credits)

Code	Title	Credits
Select at least one from the following:		6
Education Abroad experience		
Internship with global focus		
L*** language course		

Students are not to utilize the satisfactory/unsatisfactory (S/U) grading option for any Business concentration course or any Business core course (Business and non-Business subject codes) except when a course only allows S/U grading

Second Concentration Major Completion Map

Distinctive Requirements for Degree Program:

To Declare this Major: Business is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the department for more information.

To prepare for first semester: The curriculum for the Business Administration - Marketing concentration assumes students will be able to successfully complete calculus within their first year.

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
BUS 100	Introduction to Business		X		1
BUS 201	Foundations of Sustainable Enterprise		X		1
CO 150	College Composition (GT-CO2)		X	1A	3
Arts and Humanities			X	3B	3

Biological and Physical Sciences			X	3A	4
Electives			X		3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CIS 200	Business Information Systems		X		3
ECON 202	Principles of Microeconomics (GT-SS1)		X	3C	3
MATH 141	Calculus in Management Sciences (GT-MA1)		X	1B	3
Historical Perspectives			X	3D	3
Electives			X		3
BUS 100 and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 210	Introduction to Financial Accounting		X		3
BUS 220	Ethics in Contemporary Organizations (GT-AH3)			3B	3
ECON 204	Principles of Macroeconomics (GT-SS1)		X	3C	3
Biological and Physical Sciences				3A	3
Electives					3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 220	Introduction to Managerial Accounting		X		3
BUS 260	Social-Ethical-Regulatory Issues in Business		X		3
BUS 300	Business Writing and Communication (GT-CO3)		X	2	3
International Business Group 2 - Global Focus			X		3
Diversity and Global Awareness			X	3E	3
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
MGT 320	Contemporary Management Principles/Practices		X		3
MGT 435	Global Ethical Leadership Stakeholder Mgmt		X		3
MKT 300	Marketing		X	4B	3
STAT 204	Statistics for Business Students		X		3
International Business Group 2 - Global Focus			X		3
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
FIN 300	Principles of Finance		X	4A,4B	3
MKT 361	Buyer Behavior		X		3
MKT Elective (see Program Requirements - Select 6 credits)			X		6
International Business Group 3 - Experiential Learning Requirement			X		3
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
FIN 475	International Business Finance		X		3
MGT 301	Supply Chain Management		X		3
MGT 475	International Business Management				3
MKT 365	International Marketing				3
MKT 410	Marketing Research		X		3
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 479	Strategic Management	X		4A,4C	3
MKT 479	Marketing Strategy and Management	X			3
MKT Elective (see Program Requirements - Select 3 credits)		X			3

International Business Group 3 - Experiential Learning Requirement	X	3
Electives	X	3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X	
Total Credits		15
Program Total Credits:		120

Certificate in Business-To-Business Selling

The Certificate in Business-To-Business Selling gives students in-depth understanding of: 1) what business customers expect from vendors and business partners; 2) how to conduct customer and competitive analyses as an input into the sales process; 3) the planning and implementation of trust-based sales encounters, and 4) the management of the sales process to include defining sales strategy, recruiting, selection, training, leadership, and determining sales force effectiveness.

Effective Fall 2016

Additional coursework may be required due to prerequisites.

Code	Title	Credits
MKT 330	Business Customer Relationships	3
MKT 362	Professional Selling	3
MKT 363	Sales Management	3
Program Total Credits:		9

Certificate in Customer Experience Management

The Certificate in Customer Experience Management provides undergraduate students with management skills and strategic insights for providing consumers with satisfying experiences across a cross-section of markets including retailing, hospitality, and entertainment. Customers' experiences often extend into online contexts and therefore students pursuing this certificate will gain an understanding of digital tools used in attracting customers and addressing their needs for information and online services.

Effective Summer 2016

Additional coursework may be required due to prerequisites.

Code	Title	Credits
MKT 360	Retailing	3
or MKT 367	Sports Marketing	
MKT 366	Services Marketing	3
MKT 370	Digital Marketing	3
Program Total Credits:		9

Certificate in Market Research and Data Analytics

This certificate enables students to gain valuable insight into the traditional qualitative and quantitative research methods used to collect primary data as well as the advanced analytic techniques used by marketers to transform secondary data into decision making information. Upon completion of this certificate, students will have also learned how to manage social media and websites and how to develop an understanding of content marketing, web analytics and search engine optimization.

Effective Fall 2016

Additional coursework may be required due to prerequisites.

Code	Title	Credits
MKT 370	Digital Marketing	3
MKT 410	Marketing Research	3
MKT 450	Marketing Analytics	3
Program Total Credits:		9

Certificate in Marketing Communication and Branding

The Certificate in Marketing Communication and Branding provides undergraduate students with an understanding of approaches for effectively communicating with customers across a variety of channels and in developing effective branding strategies. Students completing this certificate could pursue employment at an ad agency or an agency specializing in branding, digital marketing, or sales promotion. Students gain knowledge, skills, and experiences for employment (at a wide variety of organizations) as a marketing communications or digital marketing specialist.

Effective Summer 2016

Additional coursework may be required due to prerequisites.

Code	Title	Credits
MKT 315	Marketing Communication Design	3
MKT 320	Integrated Marketing Communications	3
MKT 370	Digital Marketing	3
Program Total Credits:		9

Certificate in Strategic Marketing

The Certificate in Strategic Marketing provides undergraduate students with considerable experience in marketing decision making and planning. Students will be exposed to frameworks and concepts that are central to developing marketing strategies. In completing this certificate students will select three courses each centered on a different component of the marketing mix, and as such, will gain experience in addressing a wide variety of marketing problems.

Effective Summer 2016

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Select three courses from the following:		9
MKT 320	Integrated Marketing Communications	
MKT 330	Business Customer Relationships	
MKT 364	Product Design	
MKT 440	Pricing and Financial Analysis in Marketing	
Program Total Credits:		9

Graduate Certificate in Marketing Management

The Graduate Certificate in Marketing Management provides students with a foundation in marketing and the opportunity to acquire an in-depth understanding of marketing topics. The initial required courses introduce marketing concepts. Students will develop marketing strategy and planning skills in a second required course. Elective courses allow students to develop deeper knowledge in areas of interest, including sales management, consumer behavior, services marketing, search engine optimization, and market research. The program should benefit current MBA students as well as business people seeking to gain additional marketing knowledge. The program stresses application, and targets working managers.

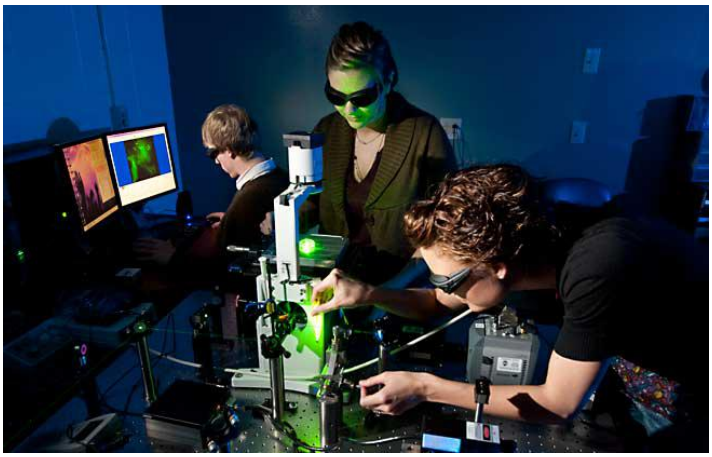
Effective Fall 2019

Additional coursework may be required due to prerequisites.

Code	Title	Credits
BUS 655	Marketing Management	2
BUS 656	Marketing Strategy and Planning	2
Select five courses from the following:		5
MKT 610	Qualitative Marketing Research Methods	
MKT 611	Quantitative Marketing Research Methods	
MKT 621	Search Engine Marketing and Optimization	
MKT 661	Consumer Behavior	
MKT 662	Strategic Selling for Business Customers	
MKT 667	Services Marketing Management	
MKT 670	Digital Marketing	
Program Total Credits:		9

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Walter Scott, Jr. College of Engineering



Scott Bioengineering Building, Suite 202
(970) 491-3366
engr.colostate.edu (http://www.engr.colostate.edu)

Professor David I. McLean, Dean
Professor Anthony Marchese, Associate Dean

Undergraduate Majors

Biomedical Engineering
Chemical and Biological Engineering
Civil Engineering
Computer Engineering
Electrical Engineering
Engineering Science
Environmental Engineering
Mechanical Engineering

Interdepartmental Majors

Major in Engineering Science

Dual Degree Programs

Biomedical Engineering (B.S.) combined with Chemical and Biological Engineering (B.S.)
Biomedical Engineering (B.S.) combined with Electrical Engineering, Electrical Engineering Concentration (B.S.)
Biomedical Engineering (B.S.) combined with Electrical Engineering, Lasers and Optical Engineering Concentration (B.S.)
Biomedical Engineering (B.S.) combined with Mechanical Engineering (B.S.)
Engineering Science (B.S.) and International Studies (B.A.)
Interdisciplinary Liberal Arts (B.A.) and Engineering Science (B.S.)

Undergraduate Minors

Biomedical Engineering Interdisciplinary Minor
Environmental Engineering

For a complete list of departmental program offerings (including certificates), see individual department catalog pages.

College-Wide Graduate Programs

Master's Programs

Master of Engineering, Plan C, Biomedical Engineering Specialization
Master of Engineering, Plan C, Chemical Engineering Specialization
Master of Engineering, Plan C, Civil Engineering Specialization
Master of Engineering, Plan C, Computer Engineering Specialization
Master of Engineering, Plan C, Electrical Engineering Specialization
Master of Engineering, Plan C, Engineering Management Specialization
Master of Engineering, Plan C, Mechanical Engineering Specialization
Master of Engineering, Plan C, Systems Engineering Specialization

The mission of the Walter Scott, Jr. College of Engineering is to educate, innovate, cultivate and engage in order to generate new knowledge, improve quality of life and positively impact society.

Engineers are critically involved in every facet of modern technological society, processing information, designing systems and equipment, maintaining society's infrastructure, solving environmental and energy problems, and helping attain desired levels of efficiency and comfort. The Walter Scott, Jr. College of Engineering continues its tradition —a tradition as old as CSU—of providing world-class training in the basic fields of engineering through both undergraduate instruction and graduate programs strongly supported by modern research facilities and distinguished faculty.

College Programs

The Engineering Accreditation Commission of ABET (http://www.abet.org) accredits all engineering undergraduate programs.

Undergraduate programs are administered by the Departments of Chemical and Biological Engineering, Civil and Environmental Engineering, Electrical and Computer Engineering, and Mechanical Engineering. These departments offer four-year programs leading to Bachelor of Science degrees. Although emphasis is on broad training in basic engineering, students may specialize to some extent by proper choice of technical electives. Additionally, the School of Biomedical Engineering offers a program in which students attain two degrees in five-years. Graduates of this program receive two degrees: one B.S. in biomedical engineering and the other B.S. in one of three traditional engineering areas: chemical and biological engineering , electrical engineering, or mechanical engineering.

A program leading to a Bachelor of Science degree with a major in Engineering Science is coordinated by the Associate Dean for Academic Affairs in the Walter Scott, Jr. College of Engineering. This program offers three concentrations: Engineering Physics, Space Engineering, Teacher Education, and two dual degrees offered through the College of Liberal Arts resulting in degrees in both Liberal Arts and Engineering.

Students may consider simultaneously completing the requirements for a second major. See Second Major Requirements for a complete description of the program. A student may pursue a minor program of study inside or outside the Walter Scott, Jr. College of Engineering in conjunction with the desired engineering major.

Walter Scott, Jr. College of Engineering General Objectives and Outcomes

Outcomes

Graduates of the undergraduate engineering programs will be able to:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. An ability to communicate effectively with a range of audiences
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Objectives

Individual program outcomes and objectives are provided within the respective departments' websites and below, in this catalog.

Cooperative Education Program

The cooperative education program is an academic rotational program in which students work at least three semesters, two of which are fall or spring, in an assignment related to their major. Each work semester, cooperative education students register for one credit hour of *Engineering Cooperative Experience* to maintain their full-time student status. Three cooperative education credit hours may be substituted for a technical elective in their major. Cooperative education students gain at least a year of work experience, typically with the same employer, while earning a competitive salary. The cooperative education program allows participants to explore their chosen engineering discipline, build a powerful resume, develop a network of professional contacts, and support their academic expenses.

International Opportunities

Education abroad programs are available to students in the Walter Scott, Jr. College of Engineering. Because knowledge of other cultures is valuable in understanding our own, students are strongly encouraged to take a summer or semester to study outside the United States as part of their overall program at CSU. Students interested in study abroad should plan far in advance by discussing opportunities with their academic advisor and by visiting the Office of International Programs (http://international.colostate.edu) in Laurel Hall.

Registration as a Professional Engineer

Registration and licensing are required under certain legally defined circumstances in order to practice as an engineer. The Walter Scott, Jr. College of Engineering actively encourages all of its students to fulfill the necessary requirements as soon as they are eligible. The Fundamentals of Engineering Examination (FE) administered by the State Board of

Registration for Professional Engineers and Professional Land Surveyors may be taken by seniors from ABET accredited programs during the two semesters prior to graduation. After the required practical experience is completed, the Principles and Practice of Engineering Examination (PE) may be taken for licensure in the engineering profession.

Career Readiness

Within the Walter Scott Jr. College of Engineering, the Engineering Success Center (http://www.engr.colostate.edu/engineering-success-center) provides comprehensive career services and career preparation as part of the Office of Academic and Student Affairs. The center delivers a full spectrum of programs supporting the professional development and placement of undergraduate engineers while considering the workforce needs of its industry partners. Student services include resume reviews, job search advice, career fairs, salary negotiation tactics, mock interviews, cooperative education partnerships, and the opportunity to engage with diverse student organizations.

Admission Information

Students may be admitted to a specific undergraduate major in this college or as undecided engineering freshmen (Engineering Open Option). Undecided engineering students must specify their choice of major prior to registration for the sophomore year. Should the demand for any engineering major exceed the capacity to maintain a high-quality education, the college may find it necessary to limit enrollment in some majors. The Engineering Open Option student who wishes to transfer to one of these majors may be at a disadvantage when demand exceeds capacity. In general, students are better served by selecting one of the college's majors at admission and then changing majors, if necessary, rather than entering as undecided freshmen.

High School Graduates

See General Policies for Undergraduate Admissions for specific Walter Scott, Jr. College of Engineering requirements. The required units listed are minimums. Students desiring to enter the engineering majors are urged to take available advanced math, English, computer skills, and natural sciences classes.

Course Placement and Advising for Freshmen

All entering freshmen are required to take the Mathematics Placement Examination (MPE) (https://placement.math.colostate.edu/welcome/directory.html) prior to registration during their respective summer Ram Orientation session. The examination results, together with other information about students, are used by both professional and faculty advisors to counsel students. Those with weaknesses in mathematics may be advised to take up to five math courses (MATH 117, MATH 118, MATH 124, MATH 125, MATH 126) before enrolling in calculus (MATH 160).

Transfer Students

Advisors in each department are available to assist students who wish to transfer. Should the demand for any engineering major exceed the capacity to maintain a high-quality education, individual departments may find it necessary to enforce more stringent requirements.

Transfer of credits earned at other colleges and universities within Colorado is facilitated by the articulation agreements from one university to another on course equivalencies.

Change of Major to Engineering

Students who wish to change from another CSU major are selected for admission once at the end of each term; students are admitted based on academic criteria. Some majors may specify more stringent requirements in math and science or other courses. Engineering courses are normally open to engineering majors only.

Curricular Requirements

The curricula of the Walter Scott, Jr. College of Engineering include courses in engineering, mathematics, science, humanities, and social sciences. During the first two years, all engineering students take coursework emphasizing mathematics, physics, chemistry, and basic engineering; because all branches of engineering rely on this foundation. The junior and senior years are devoted primarily to a balanced selection of specialized engineering courses. The minimum number of credits for graduation with a Bachelor of Science degree varies with the engineering major.

Good engineers are not only competent to render professional service in their fields of specialization, but are able to assume leadership roles as citizens. To broaden students' perspectives in non-technical areas, the programs in engineering require a minimum of 12 to 15 credits in arts and humanities and behavioral and social sciences to be selected from anthropology, economics, foreign languages, history, literature, philosophy, political science, psychology, and sociology. Courses in art, geography, music, speech, and theater may also be selected with the prior approval of the advisor. These courses must be selected in such a way that they also meet All-University Core Curriculum requirements.

The ability to express oneself clearly and concisely in both written and oral forms is a great asset to the engineer who is often called upon to prepare reports in which clarity, organization, and precision are essential. For this reason, engineering students must do more than meet the minimum English course requirements. In fact, the development of communication skills is emphasized throughout the engineering curricula. This emphasis is especially evident in laboratory and design-oriented courses, in which the presentation of both oral and written reports is a major component.

The Walter Scott, Jr. College of Engineering requires a minimum grade point average of 2.000 in required engineering, mathematics, chemistry, and physics courses as a graduation requirement. Additional minimum grade requirements apply in some engineering majors.

An engineer applies physical understanding and analytical techniques to the *design* of devices and systems needed by modern society. The preparation of an engineer, therefore, must include engineering design experience. To meet this objective, all undergraduate engineering students must participate in a well-structured sequence of design-related courses culminating in a capstone design experience in order to graduate.

Graduate Programs in Biomedical Engineering

Programs leading to a Master of Engineering, Master of Science, and Doctor of Philosophy degrees are offered at CSU. The graduate programs in Bioengineering (M.S. and Ph.D.) integrate physical, chemical, and mathematical sciences with engineering principles and clinical studies. There are boundless opportunities for research, ranging from new therapies and imaging modalities for fighting cancer, to improving the design of vital medical equipment used in open heart surgery, or

developing the next generation of gene therapies and engineered tissues. CSU is uniquely positioned to offer this advanced degree program. The highly-ranked Veterinary Medical Center and the Professional Veterinary Medicine Program are co-located with engineering and sciences on the CSU campus, providing a rich environment for interdisciplinary research and day-to-day collaborations.

Other Graduate Programs under the Walter Scott, Jr. College of Engineering

The Walter Scott, Jr. College of Engineering also offers an M.S. and a Ph.D. in Systems Engineering, as well as graduate-level interdisciplinary studies programs in Extreme Ultraviolet and Optical Science and Technology, and Systems Engineering. Students interested in graduate work should refer to the Graduate and Professional Bulletin.

Major in Engineering Science

Scott Bioengineering Building, Suite 102
(970) 491-6220

Professor Anthony Marchese, Program Chair
Shannon Wagner, Undergraduate Key Advisor

Engineering Science is an interdisciplinary major that allows students to acquire a strong base in mathematics, the physical sciences, and engineering fundamentals while pursuing a broad background in the liberal arts or other areas of interest in preparation for specialized careers or graduate studies. The major provides comprehensive undergraduate engineering education in selected fields which are not served by traditional engineering programs available at CSU. Three concentrations are available—Engineering Physics, Space Engineering, Teacher Education, and two dual-degree programs combining Engineering Science and programs within the College of Liberal Arts. Regardless of the concentration, graduates are well prepared for a professional career.

Program Educational Objectives

The Engineering Science program seeks to develop graduates who will be able to do the following within the first few years after graduation:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. An ability to communicate effectively with a range of audiences
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Student Learning Outcomes

At graduation, CSU Engineering Science undergraduates are expected to have:

- An ability to apply knowledge of mathematics, science, and engineering
- An ability to design and conduct experiments, as well as to analyze and interpret data
- An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- An ability to function on multidisciplinary teams
- An ability to identify, formulate, and solve engineering problems
- An ability to understand professional and ethical responsibilities
- An ability to use the techniques, skills, and modern engineering, as well as the tools necessary for engineering practice, and communicate effectively
- The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- A recognition of the need for, and an ability to engage in life-long learning
- Knowledge of contemporary issues
- An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

The Engineering Science major and each of its concentrations is accredited by the Engineering Accreditation Commission of ABET (http://abet.org).

Potential Occupations

Engineering Science graduates are well rounded in mathematics, sciences, humanities, and social and behavioral sciences. They are well prepared to enter a career in engineering, or to proceed to graduate school in one of the traditional engineering disciplines. Graduates of the Liberal Arts/Engineering Science dual major often move on to professional programs in medicine, law, veterinary medicine, or business. Moreover, these graduates are suited for a broad range of occupations in addition to engineering. Participation in internships or volunteer activities is highly recommended to enhance practical training and development. Graduates who continue on with advanced studies can attain more responsible positions with the possibility of rising to top professional levels. Some examples include: space engineer, solid-state electronics engineer, and aerospace engineer.

Concentrations

- Engineering Physics Concentration
- Space Engineering Concentration
- Teacher Education Concentration

Dual Degree Programs

See the College of Liberal Arts for information on dual degree opportunities.

Major in Engineering Science, Engineering Physics Concentration

The Engineering Physics concentration prepares students to work in high technology areas in which solid engineering training combined with a broader background in physics is valuable. Through the appropriate choice of technical electives, students can specialize in modern laser physics, energy engineering, solid-state electronics, or energy conversion. The technical electives are chosen predominantly from the Departments of Electrical and Computer Engineering and Mechanical Engineering in the Walter Scott, Jr. College of Engineering and the Departments of Computer Science, Mathematics, and Physics in the College of Natural Sciences.

Requirements Effective Fall 2018

To qualify for graduation, Engineering Science majors must achieve a minimum 2.000 grade point average at CSU in all courses in engineering, mathematics, computer science, statistics, physics, and chemistry as well as courses taken as technical electives.

Freshman

		AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
ECE 102	Digital Circuit Logic		4
ECE 103	DC Circuit Analysis		3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
Diversity and Global Awareness		3E	3
	Total Credits		31

Sophomore

CIVE 260	Engineering Mechanics-Statics		3
CIVE 261	Engineering Mechanics-Dynamics		3
ECE 202	Circuit Theory Applications		4
ECE 251	Introduction to Microprocessors		4
MATH 261	Calculus for Physical Scientists III		4
MATH 340	Introduction to Ordinary Differential Equations	4A,4B	4
MECH 237	Introduction to Thermal Sciences		3
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	5
Social Behavioral Sciences		3C	3
	Total Credits		33

Junior

CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
Select one from the following:			3-4
CIVE 300 & CIVE 301	Fluid Mechanics		
MECH 342	Mechanics and Thermodynamics of Flow Processes		
ECE 341	Electromagnetic Fields and Devices I		3
ECE 342	Electromagnetic Fields and Devices II		3
PH 314	Introduction to Modern Physics		4
PH 315	Modern Physics Laboratory		2
Advanced Writing		2	3
Arts and Humanities		3B	6
Historical Perspectives		3D	3
	Total Credits		31-32

Senior

ECE 401	Senior Design Project I	4A	3
ECE 402	Senior Design Project II	4C	3
PH 353	Optics and Waves		4
STAT 315	Statistics for Engineers and Scientists		3
Mathematics[1]			3
Technical Electives[2]			17-18
Electives			5
	Total Credits		38-39
	Program Total Credits:		134

1 Mathematics elective (300 level or higher). Select course with advisor's approval.

2 Select courses with advisor's approval.

Major Completion Map

Distinctive Requirements for Degree Program:

TO DECLARE MAJOR: Engineering is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the department for more information.

TO PREPARE FOR FIRST SEMESTER: The curriculum for this major assumes students enter college prepared to take calculus. To qualify for graduation, engineering science majors must achieve a minimum 2.000 grade point average at CSU in all courses in engineering, mathematics, computer science, statistics, physics, and chemistry as well as courses taken as technical electives.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
CO 150	College Composition (GT-CO2)		X	1A	3
ECE 102	Digital Circuit Logic	X			4
MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	4
	Total Credits				16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
ECE 103	DC Circuit Analysis	X			3
MATH 161	Calculus for Physical Scientists II (GT-MA1)	X		1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	X		3A	5
Diversity and Global Awareness				3E	3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CIVE 260	Engineering Mechanics-Statics	X			3
ECE 251	Introduction to Microprocessors	X			4
MATH 261	Calculus for Physical Scientists III	X			4
PH 142	Physics for Scientists and Engineers II (GT-SC1)	X		3A	5
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
CIVE 261	Engineering Mechanics-Dynamics	X			3
ECE 202	Circuit Theory Applications	X			4
MATH 340	Introduction to Ordinary Differential Equations	X		4A,4B	4
MECH 237	Introduction to Thermal Sciences	X			3
Social and Behavioral Sciences				3C	3
	Total Credits				17

Junior

Semester 5		Critical	Recommended	AUCC	Credits
CHEM 113	General Chemistry II		X		3
CHEM 114	General Chemistry Lab II		X		1
Select one group from the following:					3-4
Group A:					
CIVE 300	Fluid Mechanics	X			
CIVE 301	Fluid Mechanics Laboratory	X			
Group B:					
MECH 342	Mechanics and Thermodynamics of Flow Processes	X			
ECE 341	Electromagnetic Fields and Devices I	X			3
Advanced Writing				2	3
Arts and Humanities				3B	3
	Total Credits				16-17

Semester 6		Critical	Recommended	AUCC	Credits
ECE 342	Electromagnetic Fields and Devices II	X			3
PH 314	Introduction to Modern Physics	X			4
PH 315	Modern Physics Laboratory	X			2
Arts and Humanities				3B	3
Historical Perspectives				3D	3
	Total Credits				15

Senior

Semester 7		Critical	Recommended	AUCC	Credits
ECE 401	Senior Design Project I	X		4A	3
PH 353	Optics and Waves	X			4
Technical Electives					9
Upper-Division MATH		X			3
	Total Credits				19

Semester 8		Critical	Recommended	AUCC	Credits
ECE 402	Senior Design Project II	X		4C	3
STAT 315	Statistics for Engineers and Scientists	X			3
Electives		X			5
Technical Electives		X			8-9
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				19-20
	Program Total Credits:				134

Major in Engineering Science, Space Engineering Concentration

The Space Engineering concentration provides students with a broad background in aerospace and space engineering. The curriculum is based on a solid foundation of engineering disciplines and applied mathematics.

Requirements Effective Fall 2019

To qualify for graduation, Engineering Science majors must achieve a minimum 2.000 grade point average at CSU in all courses in engineering, mathematics, computer science, statistics, physics, and chemistry as well as courses taken as technical electives.

Freshman

		AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
Select one group from the following:			6
Group A:			

CIVE 102	Introduction to Civil and Environmental Engr		
CIVE 103	Engineering Graphics and Computing		
Group B:			
MECH 105	Mechanical Engineering Problem Solving		
MECH 200	Introduction to Manufacturing Processes		
CO 150	College Composition (GT-CO2)	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
Diversity and Global Awareness		3E	3
	Total Credits		30

Sophomore

CIVE 260	Engineering Mechanics-Statics		3
CIVE 261	Engineering Mechanics-Dynamics		3
ECE 204	Introduction to Electrical Engineering		3
MATH 261	Calculus for Physical Scientists III		4
MATH 340	Introduction to Ordinary Differential Equations	4A,4B	4
MECH 201	Engineering Design I		2
MECH 337	Thermodynamics		4
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	5
Historical Perspectives		3D	3
	Total Credits		31

Junior

CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
MECH 342	Mechanics and Thermodynamics of Flow Processes		3
CIVE 360	Mechanics of Solids		3
CIVE 367	Structural Analysis		3
MECH 301A[1]	Engineering Design III: Finite Element Analysis		1
MECH 301B[1]	Engineering Design III: Computational Fluid Dynamics		1
MECH 307	Mechatronics and Measurement Systems		4
Advanced Writing		2	3
Arts and Humanities		3B	6
Social and Behavioral Sciences		3C	3
	Total Credits		31

Senior

Select one group from the following:			6-8
Group A:			
CIVE 402[1]	Senior Design Principles		
CIVE 403	Senior Project Design	4C	
Group B:			
MECH 486A[1]	Engineering Design Practicum: I	4C	
MECH 486B	Engineering Design Practicum: II	4C	
MECH 402 or STAT 315	Mechanical Engineering Experimental Analysis Statistics for Engineers and Scientists		3
MECH 344	Heat and Mass Transfer		3
MECH 417	Control Systems		3
MECH 460	Aeronautics		3
MECH 468	Space Propulsion and Power Engineering		3

MATH *** Mathematics, upper division		6
Technical Electives[2]		11-12
Electives		3-6
	Total Credits	45
	Program Total Credits:	137

1 Space engineering students will need to obtain a registration override from the appropriate department to take this course.

2 Select courses with advisor's approval.

Major Completion Map

Distinctive Requirements for Degree Program:

TO DECLARE MAJOR: Engineering is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the department for more information.

TO PREPARE FOR FIRST SEMESTER: The curriculum for this major assumes students enter college prepared to take calculus. To qualify for graduation, engineering science majors must achieve a minimum 2.000 grade point average at CSU in all courses in engineering, mathematics, computer science, statistics, physics, and chemistry as well as courses taken as technical electives.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
Select one course from the following:					3
CIVE 102	Introduction to Civil and Environmental Engr	X			
MECH 105	Mechanical Engineering Problem Solving	X			
CO 150	College Composition (GT-CO2)		X	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	4
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
CIVE 103	Engineering Graphics and Computing	X			
MECH 200	Introduction to Manufacturing Processes	X			
MATH 161	Calculus for Physical Scientists II (GT-MA1)	X		1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	X		3A	5
Diversity and Global Awareness				3E	3
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CIVE 260	Engineering Mechanics-Statics	X			3
MECH 201	Engineering Design I	X			2
MATH 261	Calculus for Physical Scientists III	X			4
PH 142	Physics for Scientists and Engineers II (GT-SC1)	X		3A	5
Historical Perspectives				3D	3
	Total Credits				17
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
CIVE 261	Engineering Mechanics-Dynamics	X			3
ECE 204	Introduction to Electrical Engineering	X			3
MATH 340	Introduction to Ordinary Differential Equations	X		4A,4B	4
MECH 337	Thermodynamics	X			4
CO 150 must be completed at the end of semester 4.		X			
	Total Credits				14

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II		X		3
CHEM 114	General Chemistry Lab II		X		1

CIVE 360	Mechanics of Solids	X			3
MECH 307	Mechatronics and Measurement Systems	X			4
MECH 342	Mechanics and Thermodynamics of Flow Processes	X			3
Arts and Humanities				3B	3
	Total Credits				17
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
CIVE 367	Structural Analysis	X			3
MECH 301A	Engineering Design III: Finite Element Analysis	X			1
MECH 301B	Engineering Design III: Computational Fluid Dynamics	X			1
Advanced Writing				2	3
Arts and Humanities				3B	3
Social and Behavioral Sciences				3C	3
	Total Credits				14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3-4
CIVE 402	Senior Design Principles	X			
MECH 486A	Engineering Design Practicum: I	X		4C	
MECH 417	Control Systems	X			3
MECH 468	Space Propulsion and Power Engineering	X			3
Electives					3-6
Technical Electives					6-7
Upper-Division MATH course					3
	Total Credits				25
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3-4
CIVE 403	Senior Project Design	X		4C	
MECH 486B	Engineering Design Practicum: II	X		4C	
MECH 344	Heat and Mass Transfer	X			3
MECH 460	Aeronautics	X			3
Select one course from the following:					3
MECH 402	Mechanical Engineering Experimental Analysis	X			
STAT 315	Statistics for Engineers and Scientists	X			
Technical Electives		X			5
Upper-Division MATH		X			3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				20
	Program Total Credits:				137

Major in Engineering Science, Teacher Education Concentration

The Teacher Education concentration provides students with the engineering and teaching experience to enter junior and senior high school classrooms and laboratories to teach engineering design principles and concepts in an exciting technology education classroom.

Detailed information about the Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu) and licensure requirements can be found in the Education Building, Room 111.

Requirements Effective Fall 2019

To qualify for graduation, Engineering Science majors must achieve a minimum 2.000 grade point average at CSU in all courses in engineering, mathematics, computer science, statistics, physics, and chemistry as well as courses taken as technical electives.

Freshman

		AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
Select one group from the following:			6-7
Group A:			
CBE 101	Introduction to Chemical and Biological Engr		
CBE 160	MATLAB for Chemical and Biological Eng		
CBE 205	Fundamentals of Biological Engineering		
Group B:			
CIVE 102	Introduction to Civil and Environmental Engr		
CIVE 103	Engineering Graphics and Computing		
Group C:			
ECE 102	Digital Circuit Logic		
ECE 103	DC Circuit Analysis		
Group D:			
MECH 105	Mechanical Engineering Problem Solving		
MECH 200	Introduction to Manufacturing Processes		
CO 150	College Composition (GT-CO2)	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
Arts and Humanities		3B	6
	Total Credits		33-34

Sophomore

CIVE 260	Engineering Mechanics-Statics		3
CIVE 261	Engineering Mechanics-Dynamics		3
ECE 204	Introduction to Electrical Engineering		3
EDUC 275	Schooling in the United States (GT-SS3)	3C	3
EDUC 340	Literacy and the Learner		3
MATH 261	Calculus for Physical Scientists III		4
MATH 340	Introduction to Ordinary Differential Equations	4A,4B	4
MECH 201[1]	Engineering Design I		2
MECH 237	Introduction to Thermal Sciences		3
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	5
	Total Credits		33

Junior

CIVE 300	Fluid Mechanics		3
CIVE 301	Fluid Mechanics Laboratory		1
CIVE 360	Mechanics of Solids		3
CIVE 367	Structural Analysis		3
EDUC 331	Educational Technology and Assessment		2
EDUC 350	Instruction I-Individualization/Management		3
EDUC 386	Practicum-Instruction I		1
MECH 307[2]	Mechatronics and Measurement Systems		4
STAT 315	Statistics for Engineers and Scientists		3
Technical Electives[3]			7
	Total Credits		30

Senior

Select one group from the following:			6-8
Group A:			
CIVE 402[2]	Senior Design Principles		
CIVE 403	Senior Project Design	4C	
Group B:			
MECH 486A[2]	Engineering Design Practicum: I	4C	
MECH 486B	Engineering Design Practicum: II	4C	
EDCT 465	Methods and Materials in Technology Education		3
EDUC 450	Instruction II-Standards and Assessment		4
EDUC 486E	Practicum: Instruction II		1
MECH 325	Machine Design		3
CO 300 or JTC 300	Writing Arguments (GT-CO3) Professional and Technical Communication (GT-CO3)	2	3
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
	Total Credits		29-31

Fifth Year

EDCT 492	Seminar-Professional Relations	1
EDUC 485B or EDCT 485	Student Teaching: Secondary Student Teaching	11
	Total Credits	12
	Program Total Credits:	137-140

1 Students who do not take the MECH sequence in the freshman year may need to get a registration override from the Department of Mechanical Engineering to register for this course.

2 Students will need to obtain a registration override from the appropriate department to take this course.

3 If planning to take MECH 486A and MECH 486B in the senior year, take MECH 301A, MECH 301B, and MECH 331; otherwise select courses with advisor's approval.

TO DECLARE MAJOR: Engineering is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the department for more information.

TO PREPARE FOR FIRST SEMESTER: The curriculum for this major assumes students enter college prepared to take calculus. To qualify for graduation, engineering science majors must achieve a minimum 2.000 grade point average at CSU in all courses in engineering, mathematics, computer science, statistics, physics, and chemistry as well as courses taken as technical electives.

Major Completion Map

Distinctive Requirements for Degree Program:

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one option from the following:					3-4
CBE 101 & CBE 160 (Group A)	Introduction to Chemical and Biological Engr	X			
CIVE 102 (Group B)	Introduction to Civil and Environmental Engr	X			
ECE 102 (Group C)	Digital Circuit Logic	X			
MECH 105 (Group D)	Mechanical Engineering Problem Solving	X			
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1

CO 150	College Composition (GT-CO2)		X	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	4
	Total Credits				15-16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
CBE 205 (Group A)	Fundamentals of Biological Engineering				
CIVE 103 (Group B)	Engineering Graphics and Computing	X			
ECE 103 (Group C)	DC Circuit Analysis	X			
MECH 200 (Group D)	Introduction to Manufacturing Processes	X			
MATH 161	Calculus for Physical Scientists II (GT-MA1)	X		1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	X		3A	5
Arts and Humanities				3B	6
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				18
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CIVE 260	Engineering Mechanics-Statics	X			3
EDUC 275	Schooling in the United States (GT-SS3)	X		3C	3
MATH 261	Calculus for Physical Scientists III	X			4
MECH 201	Engineering Design I	X			2
PH 142	Physics for Scientists and Engineers II (GT-SC1)	X		3A	5
	Total Credits				17
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
CIVE 261	Engineering Mechanics-Dynamics	X			3
ECE 204	Introduction to Electrical Engineering	X			3
EDUC 340	Literacy and the Learner	X			3
MATH 340	Introduction to Ordinary Differential Equations	X		4A,4B	4
MECH 237	Introduction to Thermal Sciences	X			3
	Total Credits				16
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
CIVE 300	Fluid Mechanics	X			3
CIVE 301	Fluid Mechanics Laboratory	X			1
CIVE 360	Mechanics of Solids	X			3
EDUC 331	Educational Technology and Assessment	X			2
MECH 307	Mechatronics and Measurement Systems	X			4
Technical Elective (See Concentration Requirements Tab)		X			3
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
CIVE 367	Structural Analysis	X			3
EDUC 350	Instruction I-Individualization/Management	X			3
EDUC 386	Practicum-Instruction I	X			1
STAT 315	Statistics for Engineers and Scientists	X			3
Technical Electives (See Concentration Requirements Tab)		X			4
	Total Credits				14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3-4
CIVE 402	Senior Design Principles	X			

MECH 486A	Engineering Design Practicum: I	X		4C	
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
EDCT 465	Methods and Materials in Technology Education	X			3
MECH 325	Machine Design	X			3
Diversity and Global Awareness				3E	3
	Total Credits				15-16
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3-4
CIVE 403	Senior Project Design	X		4C	
MECH 486B	Engineering Design Practicum: II	X		4C	
EDUC 450	Instruction II-Standards and Assessment	X			4
EDUC 486E	Practicum: Instruction II	X			1
Historical Perspectives				3D	3
Social and Behavioral Sciences				3C	3
	Total Credits				14-15
Semester 9		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					11
EDCT 485	Student Teaching	X			
EDUC 485B	Student Teaching: Secondary	X			
EDCT 492	Seminar-Professional Relations	X			1
The benchmark courses for the 9th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12
	Program Total Credits:				137-140

Master of Engineering, Plan C, Biomedical Engineering Specialization

The Master of Engineering, Plan C, Biomedical Engineering Specialization focuses on enhancing the expertise of working engineering professionals. Engineers and scientists who want to further their careers with engineering related firms and governmental agencies should consider this degree. Students will have flexibility to develop a plan of study in their area of interest. Students interested in graduate work should refer to CSU's Graduate and Professional Bulletin and the website for the School of Biomedical Engineering (http://www.engr.colostate.edu/sbme).

Requirements Effective Fall 2017

Students must take a minimum of 15 semester credits of biomedical engineering (BIOM) courses[1]

Code	Title	Credits
Core Course Requirements		
BIOM 570/MECH 570	Bioengineering	3
BMS 500	Mammalian Physiology I	4
Foundation Courses		
Select a minimum of 12 credits from the following:		12
BIOM 525/ MECH 525	Cell and Tissue Engineering	
BIOM 526/ ECE 526	Biological Physics	
BIOM 531/ MECH 531	Materials Engineering	
BIOM 532/ MECH 532	Material Issues in Mechanical Design	
BIOM 533/ CIVE 533	Biomolecular Tools for Engineers [2]	
or CIVE 534	Applied and Environmental Molecular Biology	
BIOM 543/ CBE 543	Membranes for Biotechnology and Biomedicine	
BIOM 573/ MECH 573	Structure and Function of Biomaterials	
BIOM 671/ MECH 671	Orthopedic Tissue Biomechanics	
Depth Courses		
Select a minimum of 8 credits from the following not taken in another category:		8
ANEQ 565	Interpreting Animal Science Research	
BC 565	Molecular Regulation of Cell Function	
BIOM 531/ MECH 531	Materials Engineering	
BIOM 592	Seminar	
BMS 501	Mammalian Physiology II	
BMS 575	Human Anatomy Dissection	
BMS 631	Mechanisms of Hormone Action	
CBE 503	Transport Phenomena Fundamentals	

ECE 512	Digital Signal Processing	
ERHS 712	Physics of Diagnostic Imaging	
HES 531	Muscle and Joint Mechanics	
MECH 530	Advanced Composite Materials	
MIP 651	Immunobiology	
NB 505/BMS 505	Neuronal Circuits, Systems and Behavior	
Breadth Courses		
Select a minimum of 3 credits from the following:		3
MATH 545	Partial Differential Equations I	
STAT 512	Design and Data Analysis for Researchers II	
STAT 520	Introduction to Probability Theory	
STAT 521	Stochastic Processes I	
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

1 Additional courses may need to be taken as supplemental requirements to satisfy provisional admission requirements, course prerequisites, or supplemental coursework stipulations.

2 Students with a strong background in Cellular and Molecular Biology may substitute CM 502 for BIOM 533 or CIVE 534.

Seminar, thesis, and independent study credits will not apply toward degree.

Master of Engineering, Plan C, Engineering Management Specialization

Please see the Department of Mechanical Engineering (http://www.engr.colostate.edu/me) for program of study requirements.

Master of Engineering, Plan C, Systems Engineering Specialization

Effective Fall 2019

Code	Title	Credits
Core Courses		
Select one course from the following:		3
CIS 600	Information Technology and Project Management	
CIS 670	Advanced IT Project Management	
ENGR 502	Engineering Project and Program Management	
ENGR 501	Foundations of Systems Engineering	3
ENGR 530	Overview of Systems Engineering Processes	3
ENGR 531	Engineering Risk Analysis	3
Courses in Depth		
Select three courses from the following:		9
CIS 610	Software Development Methodology	
ENGR 510	Engineering Optimization: Method/ Application	
ENGR 520	Engineering Decision Support/Expert Systems	
ENGR 532/ ECE 532	Dynamics of Complex Engineering Systems	
ENGR 565/ ECE 565	Electrical Power Engineering	
ENGR 567	Systems Engineering Architecture	
MECH 513	Simulation Modeling and Experimentation	
Group Study		
ENGR 695	Independent Study [1]	3
Electives		
Electives [2]		6
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

1 Complete 3 credits of ENGR 695 or select a comparable 3 credit course with approval of graduate advisor.

2 400-level or above regular course credits consistent with the student's program of study.
NOTE: One course cannot satisfy multiple requirements.

Department of Atmospheric Science

About the Department

Our top-rated department focuses on graduate education, cutting-edge research, and public service. We currently have 19 faculty members, 80 graduate students, 50 full-time researchers, and an outstanding and dedicated support staff. Our diverse areas of research (https://www.atmos.colostate.edu/research) include Cloud Microphysics, Severe Storms and Mesoscale Meteorology, Atmospheric Chemistry and Air Quality, Radiation and Remote Sensing, Climate and Atmosphere-Ocean Dynamics, and Global Biogeochemical Cycles and Ecosystems. We offer graduate degrees at both the M.S. and Ph.D. levels. Graduate students typically find employment in government research laboratories, academic institutions, military services, and private industry.

For additional information on graduate programs and the application process, please visit the Department of Atmospheric Science (https://www.atmos.colostate.edu) website, Application Overview (https://www.atmos.colostate.edu/grad-prog/graduate-program), and Atmospheric Science Graduate Student Guide (http://www.atmos.colostate.edu/documents/GraduateStudentGuide2019.pdf).

Contact Information

Professor Jeffrey L. Collett, Jr., Department Head
Professor Eric Maloney, Associate Department Head
Sarah Tisdale, Graduate Coordinator

Main Atmospheric Science Building, Foothills Campus
3915 W. Laporte Ave, Building A
Fort Collins, CO 80521
Email: info@atmos.colostate.edu

Undergraduate

No undergraduate major is offered. Undergraduates interested in atmospheric science at the graduate level are encouraged to major in engineering, physics, chemistry, mathematics, or atmospheric science.

Graduate

The department offers a Master of Science and a Doctor of Philosophy in Atmospheric Science.

M.S. Program

Students that complete the M.S. program will have acquired the knowledge and proficiency needed to seek employment in the field of atmospheric science. This knowledge and proficiency are gained through completion of a required core curriculum, elective graduate courses chosen from a wide selection of offerings, and by participation in scientific research with their advisors.

M.S. graduates are prepared for a wide choice of professionally satisfying work in private industry, the consulting field, and with many government agencies. Graduates of the M.S. program can also choose to continue their studies and research in the Ph.D. program. A student is eligible to seek admission to the Ph.D. program after successfully completing a thesis-based M.S. degree with a positive recommendation from their M.S. committee. Students holding thesis-based M.S. degrees from institutions other than CSU may be directly admitted into the Ph.D. program. These students follow the normal application procedures to our program.

In addition to meeting the formal credit requirements for the M.S., described below, all graduate students enrolled in the department are expected to attend the weekly department colloquium series. These colloquia are an important part of the total instructional program. Details can be found on the colloquium page (http://www.atmos.colostate.edu/colloquia) on the ATS website.

Prerequisites

- Bachelor of Science (B.S.) degree in physics, math, atmospheric science, engineering, chemistry, or related field with a cumulative GPA of at least 3.0
- Calculus-based math course sequence including differential equations and vector analysis
- Calculus-based physics course sequence including kinetics, electricity and magnetism, and some modern topics

Plan A (Thesis)

A minimum of 30 semester credits plus thesis is required. At least 19 credits must be earned in structured academic courses. 11 credits may be in special studies, graduate seminars, and research. Of the total 30 credits, 20 must be ATS subject code.

All MS students must complete the following required courses (required courses account for 13 credit hours):

- ATS 601 Atmospheric Dynamics I (2 credits)
- ATS 606 Introduction to Climate (2 credits)
- ATS 620 Thermodynamics and cloud physics (2 credits)
- ATS 621 Atmospheric Chemistry (2 credits)
- ATS 622 Atmospheric Radiation (2 credits)
- ATS 693 Responsible Research in Atmospheric Science (1 credit)
- One of the following:
  - ATS 640 Introduction to synoptic dynamics (2 credits)
  - ATS 641 Introduction to mesoscale dynamics (2 credits)

All MS students must also complete 6 elective credit hours in structured classes. Electives may include any structured class at the 500/600 level. With *written* advisor approval, electives may also include structured 700 level classes and/or structured graduate courses in other departments. Audits do not count towards the MS degree.

A student may substitute a required class for an alternative course if:

1. A course similar to the required class has already been completed at the graduate level with a grade of B or higher
2. The student's advisor, the department head, and the instructor of the required course approve the substitution in writing.

A student 's program of study, and any deviations therein from department degree requirements, requires department head approval.

ATS 784 does not count toward the 19 structured credits. ATS 699A-O and ATS 784 are graded as S/U.

Ph.D. Program

The department offers a Ph.D. program for students who want to obtain the highest academic degree available in the field of atmospheric science. Students who earn a Ph.D. must demonstrate significant intellectual achievement, high scholarly ability, and a great breadth of knowledge.

In addition to meeting the formal credit requirements for the Ph.D., described below, all graduate students enrolled in the department are expected to attend the weekly department colloquium series. These colloquia are an important part of the total instructional program. Details can be found on the colloquium page (http://www.atmos.colostate.edu/colloquia) on the ATS website.

Prerequisites

- Successful completion of an M.S. degree with thesis in atmospheric science, physics, math, engineering, chemistry, or related field
- Demonstration of aptitude for research

Course Requirements

- Ph.D. students must take a minimum of 42 semester credits beyond the (thesis option) master's degree (or 72 semester credits beyond the bachelor's degree). At least 21 credits beyond the master's degree (or 37 credits beyond the bachelor's degree) must be earned in courses numbered 500 or above.
- Ph.D. students are required to take two structured courses per academic year. Students must register for the courses, and only one may be taken as an audit. The structured courses can be selected from the 500, 600, or 700 level. With written advisor approval, the courses may also include structured graduate classes from other departments. When the student is within one semester of graduation, the student and advisor may petition the Department Head, in writing, for a waiver of the "two courses per year" requirement. While ATS 784 (Supervised College Teaching) is not considered a structured academic course, it is allowed to count towards the two courses per academic year Ph.D. requirement.
- Successful completion of ATS 693 (1 cr), Responsible Conduct of Research, offered every spring semester.

- Audits count towards the department's requirement that all GRAs enroll for at least 15 credit hours each semester (section L). But audits do not count towards the total required course credits for the Ph.D., and may not be listed on the GS Form 6.

Evaluation Mechanisms

- Successful completion of the department preliminary exam that includes background, methods, and current research that applies to the specific area(s) encompassing the candidate's proposed research topic
- Successful research topic proposal presentation
- Dissertation prepared under the mentorship of the student's advisor and graduate committee that meets the following criteria: displays original and creative scholarship, contributes new knowledge to the field of atmospheric science, and expresses good literate style.
- Successful defense of a dissertation before the student's graduate committee and any other members of the academic and scientific communities who desire to attend

The student's Graduate Committee is charged with ensuring the student gains breadth in Atmospheric Science during his/her tenure in the program. Accordingly the Graduate Committee may make recommendations on coursework to be completed prior to graduation.

Courses

Atmospheric Science (ATS)

ATS 150 Science of Global Climate Change Credits: 3 (3-0-0)
Course Description: Physical basis of climate change. Energy budget of the earth, the greenhouse effect, carbon cycle, paleoclimate, projections of 21st-century climate.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 350 Introduction to Weather and Climate Credits: 2 (2-0-0)
Course Description: Behavior of atmosphere and its influence upon human's activities.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 351 Introduction to Weather and Climate Lab Credit: 1 (0-3-0)
Course Description: Actual weather data, visualization of meteorological phenomena, in-depth discussion of current environmental issues.
Prerequisite: ATS 350, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 543 Current Topics in Climate Change Credits: 2 (2-0-0)
Also Offered As: ESS 543.
Course Description: Climate fundamentals and current topics in climate change.
Prerequisite: BZ 300 to 499 or ECOL 300 to 499 or LIFE 300 to 499 or CHEM 300 to 499.
Registration Information: Credit not allowed for both ATS 543 and ESS 543. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ATS 555 Air Pollution Credits: 3 (3-0-0)
Course Description: Nature, ambient concentrations, sources, sinks, and physiological activities of pollutants; meteorology; legislation; social and economic factors.
Prerequisite: (CHEM 113) and (MATH 261 or MATH 340) and (PH 122 or PH 142).
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 560 Air Pollution Measurement Credits: 2 (1-3-0)
Course Description: Examination and application of techniques for air pollution measurement. Includes sampling and analysis of gases, aerosols, and precipitation.
Prerequisite: CHEM 114.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 601 Atmospheric Dynamics I Credits: 2 (2-0-0)
Course Description: Equations of motion; earth's rotation; balanced motion; vorticity and Rossby waves; shallow water models; potential vorticity.
Prerequisite: MATH 261 and MATH 530.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 602 Atmospheric Dynamics II Credits: 2 (2-0-0)
Course Description: Sound waves, gravity waves, Rossby waves; numerical weather predication; baroclinic instability; general circulation; tropical dynamics.
Prerequisite: ATS 601.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 604 Atmospheric Modeling Credits: 3 (3-0-0)
Course Description: Design of numerical models of the atmosphere; applications to current problems. Emphasis on practical understanding of relevant numerical methods.
Prerequisite: ATS 601.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 605 Atmospheric Circulations Credits: 3 (3-0-0)
Course Description: Observations and theory of the general circulation of the atmosphere, with emphasis on understanding physical mechanisms.
Prerequisite: ATS 602, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 606 Introduction to Climate Credits: 2 (2-0-0)
Course Description: Global energy balance, surface energy balance, the hydrological cycle, atmosphere general circulation, ocean general circulation, climate variability, climate sensitivity and feedbacks.
Prerequisite: MATH 261 and MATH 530.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 607 Computational Methods for Atmospheric Science Credits: 3 (3-0-0)
Course Description: Computer programming tools unique to and common in the atmospheric sciences.
Prerequisite: ATS 601, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 610 Physical Oceanography Credits: 3 (3-0-0)
Course Description: Foundations of ocean circulation theory and the general circulation of the oceans using observational data and rotating tank experiments.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 620 Thermodynamics and Cloud Physics Credits: 2 (2-0-0)
Course Description: Equilibrium thermodynamics, cloud microphysics, precipitation formation, and cloud electrification.
Prerequisite: MATH 340 and PH 142.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 621 Atmospheric Chemistry Credits: 2 (2-0-0)
Course Description: Overview of chemical kinetics and equilibria; sources and sinks of pollutants; photochemistry and smog formation; aqueous-phase chemistry; acid rain.
Prerequisite: CHEM 114 and MATH 340 and PH 142.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 622 Atmospheric Radiation Credits: 2 (2-0-0)
Course Description: Role of radiation in the energy balance of the climate system; Absorption and scattering of solar radiation; Emission and absorption of terrestrial radiation; Interactions of radiation with clouds and aerosols; Role of radiative active trace gases.
Prerequisite: ATS 620.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 623 Atmospheric Boundary Layer Credits: 2 (2-0-0)
Course Description: Equations for shallow atmospheric motions; thermal instability of a fluid layer; atmospheric turbulence; flow stability; 1-D mixed layer models.
Prerequisite: ATS 601, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 631 Introduction to Atmospheric Aerosols Credits: 2 (1-3-0)
Course Description: Physical, chemical and microphysical characteristics of atmospheric particulate matter; measurement principles and techniques.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 632 Interpreting Satellite Observations Credits: 2 (1-3-0)
Course Description: Broad theoretical and practical overview of satellite observations of atmospheric composition. Introduction to the theoretical foundations of satellite composition retrievals of both gases and aerosols, and the associated strengths and weaknesses of commonly used atmospheric products.
Prerequisite: ATS 621 and ATS 622.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both ATS 632 and ATS 681A1.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 640 Synoptic Meteorology Credits: 2 (1-2-0)
Course Description: Synoptic-scale weather systems; thermodynamic diagrams; vertical motion; fronts; cyclones and anticyclones.
Prerequisite: ATS 601, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 641 Mesoscale Meteorology Credits: 2 (1-2-0)
Course Description: Mesoscale weather systems; instabilities; orographic flows; dynamics of convective storms; organized convection.
Prerequisite: ATS 640.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 650 Measurement Systems and Theory Credits: 2 (2-0-0)
Course Description: Surface and upper air measurement systems; theory and system response, sensor design; automated data collection, analysis and display systems.
Prerequisite: PH 142 and STAT 301.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 651 Data Assimilation in Numerical Models Credits: 3 (3-0-0)
Course Description: Methods for combining theoretical understanding encoded in complex weather and climate models with real-world observations. Applications include weather prediction and other problems in the geosciences.
Prerequisite: (MATH 530) and (MATH 340 and STAT 301).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 652 Atmospheric Remote Sensing Credits: 2 (2-0-0)
Course Description: Concepts of electromagnetic and acoustic wave propagation; active and passive remote sensing techniques including radar, lidar, thermal emission systems.
Prerequisite: ATS 622.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 655 Objective Analysis in Atmospheric Sciences Credits: 3 (3-0-0)
Course Description: Objective analysis of geophysical data: general statistics; matrix methods; time series analysis. Emphasis on applications to real-world data.
Prerequisite: ATS 601 or MATH 530.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 693 Responsible Research in Atmospheric Science Credit: 1 (0-0-1)
Course Description: Scientific misconduct; ethical publishing; record keeping; data management; professional skills applicable to atmospheric science.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must be admitted to Atmospheric Science degree program.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ATS 695A Independent Study: Atmosphere/Ocean Coupling Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 695B Independent Study: Atmospheric Science Topics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699A Thesis: Atmospheric Dynamics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699B Thesis: Land-Atmosphere Interactions Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699C Thesis: Tropical Meteorology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ATS 699D Thesis: Weather Systems Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699E Thesis: Remote Sensing Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699F Thesis: Ocean-Atmosphere Interactions Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699G Thesis: General Circulation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699H Thesis: Remote Sensing of Climate Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699I Thesis: Atmospheric Chemistry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699J Thesis: Aerosol and Cloud Microphysics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699K Thesis: Dynamic Meteorology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699L Thesis: Satellite Applications Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699M Thesis: Mesoscale Meteorology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699N Thesis: Dynamics and Physics of Clouds Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699O Thesis: Mesoscale Modeling Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699P Thesis: Radiation Theory Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699Q Thesis: Radar Meteorology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699R Thesis: Aerosol and Cloud Chemistry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699S Thesis: Climate Dynamics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699T Thesis: Chemistry in the Atmosphere-Earth Systems Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ATS 699U Thesis: Tropospheric Chemistry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699V Thesis: Atmospheric Variability Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 703 Numerical Weather Prediction Credits: 2 (2-0-0)
Course Description: Quasi-geostrophic approximation; barotropic, baroclinic, primitive equation, and general circulation models; numerical methods.
Prerequisite: ATS 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 704 Large-Scale Atmospheric Dynamics Credits: 2 (2-0-0)
Course Description: Quasi-static, quasi-geostrophic equations; planetary waves; geostrophic adjustment; barotropic, baroclinic instability; frontogenesis; tropical cyclones.
Prerequisite: ATS 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 707 Atmospheric Waves and Vortices Credits: 3 (2-0-1)
Course Description: Atmospheric wave motions and embedded vortices spanning mountain waves to large-scale Rossby waves and critical layers.
Prerequisite: ATS 605.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 708 Middle Atmospheric Dynamics Credits: 3 (3-0-0)
Course Description: Dynamics of the stratosphere and mesosphere with emphasis on the lower and middle stratosphere.
Prerequisite: ATS 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 710 Geophysical Vortices Credits: 3 (3-0-0)
Course Description: Observational, experimental, and theoretical aspects of geophysical vortices, such as hurricanes, polar lows, tornadoes, and dust devils.
Prerequisite: ATS 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 711 Microclimate Credits: 2 (2-0-0)
Course Description: Momentum, heat, water, and trace gas fluxes near the earth's surface, including fluxes between the atmosphere and the land/ocean/ice surfaces.
Prerequisite: MATH 340 and ATS 623.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 712 Dynamics of Clouds Credits: 3 (3-0-0)
Course Description: General theory of cloud dynamics; parameterization of microphysics and radiation; models of fog, stratocumuli, cumulonimbi, and orographic clouds.
Prerequisite: ATS 623.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 715 Atmospheric Oxidation Processes Credits: 2 (2-0-0)
Course Description: Atmospheric hydrocarbon and nitrogen oxide reactions; aqueous phase scavenging and reactions; chemical pathways in the atmosphere.
Prerequisite: ATS 621.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 716 Air Quality Characterization Credits: 2 (1-2-0)
Course Description: Planning, executing, and reporting on a measurement campaign to characterize local air quality.
Prerequisite: (ATS 560) and (ATS 555 or ATS 621).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 721 Theoretical Topics in Radiative Transfer Credits: 3 (3-0-0)
Course Description: Physics of atmospheric radiation; theoretical techniques used to show radiation transfer equation.
Prerequisite: ATS 622.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 722 Atmospheric Radiation and Energetics Credits: 3 (2-0-1)
Course Description: Radiative transfer in the atmosphere; implications on remote sensing and energetics.
Prerequisite: ATS 622.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 724 Cloud Microphysics Credits: 2 (2-0-0)
Course Description: Theories and observations of nucleation; cloud droplet spectria broadening;
precipitation growth and breakup; ice multiplication; cloud electrification.
Prerequisite: ATS 621.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 730 Mesoscale Modeling Credits: 3 (3-0-0)
Course Description: Development of basic equations used in mesoscale models and methodology of solution
Prerequisite: ATS 602 and ATS 623.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 735 Mesoscale Dynamics Credits: 3 (3-0-0)
Course Description: Analysis of physical and dynamical processes that initiate, maintain, and modulate atmospheric mesoscale phenomena.
Prerequisite: ATS 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 737 Satellite Observation of Atmosphere and Earth Credits: 3 (3-0-0)
Course Description: Satellite measurements; basic orbits and observing systems; applications of remote probing and imaging to investigations of atmospheric processes.
Prerequisite: ATS 622 and ATS 652.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 740 Atmospheric Electricity Credits: 2 (2-0-0)
Course Description: Foundations of atmospheric electricity, including global electric circuit and the role of thunderstorms in maintaining this circuit, thunderstorm electrification processes based on non-inductive charging theory, lightning detection based on RF and optical sensing, and lightning phenomena including Transient Luminous Events.
Prerequisite: ATS 620.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Credit not allowed for both ATS 740 and ATS 780A3.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 741 Radar Meteorology Credits: 3 (3-0-0)
Course Description: Radar systems; radar equation and applications; multiple Doppler observation and processing; radar studies of mesoscale systems.
Prerequisite: ATS 652.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 742 Tropical Meteorology Credits: 2 (2-0-0)
Course Description: Overview of the tropical atmosphere, monsoons, intraseasonal variability, hurricanes, theory of tropical convection and the large-scale circulation.
Prerequisite: ATS 601 and ATS 602 and ATS 606.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 743 Interactions of the Ocean and Atmosphere Credits: 3 (3-0-0)
Course Description: Ocean-atmosphere interactions in observations, theory, and models. Time mean atmosphere-ocean circulations through climate variability and change.
Prerequisite: ATS 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 745 Atmospheric General Circulation Modeling Credits: 3 (3-0-0)
Course Description: Current problems in modeling of the general circulation of the atmosphere.
Prerequisite: ATS 602 and ATS 605.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 750 Climate Dynamics: Atmospheric Variability Credits: 3 (3-0-0)
Course Description: Analysis and interpretation of large-scale patterns of climate variability and observed climate change.
Prerequisite: ATS 605 and ATS 655.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 752 Inverse Methods in Atmospheric Science Credits: 2 (2-0-0)
Course Description: Introduction to inverse modeling, with particular application to remote sensing retrievals, flux inversions and data assimilation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Ph.D. standing in Atmospheric Science required.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 753 Global Hydrologic Cycle Credits: 3 (3-0-0)
Course Description: Hydrologic cycle, moisture transport and air-ground exchange; water budgets of meteorological phenomena; climatology of atmospheric water.
Prerequisite: (ATS 601) and (ATS 622 or ATS 652).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 755 Theoretical and Applied Climatology Credits: 3 (3-0-0)
Course Description: Current topics in climate research.
Prerequisite: ATS 606.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 760 Global Carbon Cycle Credits: 2 (2-0-0)
Course Description: Exchanges of CO2 between the atmosphere, the land surface, and oceans. Biogeochemical processes. Micrometeorological and inverse flux estimation.
Prerequisite: ATS 606.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 761 Land-Atmosphere Interactions Credits: 2 (2-0-0)
Course Description: Exchange of energy, water, momentum, and carbon between the land surface and the atmosphere.
Prerequisite: ATS 606.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 762 Biosphere-Chemistry-Climate Interactions Credits: 2 (2-0-0)
Course Description: Explore the sensitivity of the climate system to atmospheric chemical composition with emphasis on connections to biospheric processes and feedbacks.
Prerequisite: ATS 621.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 765 Climate Dynamics-Ocean Variability Credits: 3 (3-0-0)
Course Description: Climate variability on time scales of years to millennia with focus on the role of the ocean circulation. Approach through dynamical systems theory.
Prerequisite: ATS 606.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 770 Ocean Modeling Credits: 3 (3-0-0)
Course Description: Conceptual and numerical ocean models and their application to current problems in climate science and biogeochemical cycles.
Prerequisite: ATS 601.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 772 Aerosol Physics, Chemistry, Clouds & Climate Credits: 3 (3-0-0)
Course Description: The physics and chemistry of atmospheric aerosols including composition, size, and interaction with radiation and clouds, including the development of research-grade models of aerosols, clouds, and radiation.
Prerequisite: (CHEM 114 and MATH 161) and (PH 122 or PH 142).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 786 Practicum Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 796 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799A Dissertation: Atmospheric Dynamics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799B Dissertation: Land-Atmosphere Interactions Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799C Dissertation: Tropical Meteorology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799D Dissertation: Weather Systems Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799E Dissertation: Remote Sensing Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799F Dissertation: Ocean-Atmosphere Interactions Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799G Dissertation: General Circulation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799H Dissertation: Remote Sensing of Climate Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799I Dissertation: Atmospheric Chemistry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799J Dissertation: Aerosol and Cloud Microphysics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799K Dissertation: Dynamic Meteorology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799L Dissertation: Satellite Applications Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799M Dissertation: Mesoscale Meteorology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799N Dissertation: Dynamics and Physics of Clouds Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799O Dissertation: Mesoscale Modeling Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799P Dissertation: Radiation Theory Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799Q Dissertation: Radar Meteorology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799R Dissertation: Aerosol and Cloud Chemistry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799S Dissertation: Climate Dynamics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799T Dissertation: Chemistry in the Atmosphere-Earth Systems Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ATS 799U Dissertation: Tropospheric Chemistry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799V Dissertation: Atmospheric Variability Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Department of Chemical and Biological Engineering

Office in Engineering, Room AR102
(970) 491-5252
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Professor David S. Dandy, Department Head

Undergraduate Majors

- Major in Chemical and Biological Engineering
- Major in Biomedical Engineering combined with Chemical and Biological Engineering

Graduate

Graduate Programs in Chemical and Biological Engineering

The department offers graduate programs leading to Master of Engineering, Master of Science, and Doctor of Philosophy degrees. Students interested in graduate work should refer to the Graduate and Professional Bulletin or the Department of Chemical and Biological Engineering. (https://www.engr.colostate.edu/cbe)

Master's Programs

- Master of Science in Chemical Engineering, Plan A*
- Master of Science in Chemical Engineering, Plan B*
- Master of Engineering, Plan C, Chemical Engineering Specialization*
- Professional Science Master's in Biomanufacturing and Biotechnology

Ph.D.

Ph.D. in Chemical Engineering*

* Please see department for program of study.

Courses

Chemical and Biological Engineering (CBE)

CBE 101 Introduction to Chemical and Biological Engr Credits: 3 (2-2-0)
Course Description: Engineering design and problem solving; technical presentation skills; basic computer programming.
Prerequisite: CBE 160, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CBE 160 MATLAB for Chemical and Biological Eng Credit: 1 (0-2-0)
Course Description: Introduction to MATLAB programming for Chemical and Biological Engineering applications.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 201 Material and Energy Balances Credits: 3 (3-0-0)
Course Description: Principles of chemistry, physics, and mathematics applied to development of material and energy balances; illustration of concepts.
Prerequisite: (CBE 101 or CBE 160, may be taken concurrently or MATH 151, may be taken concurrently) and (LIFE 102, may be taken concurrently and CHEM 111 and PH 141, may be taken concurrently).
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 205 Fundamentals of Biological Engineering Credits: 3 (3-0-0)
Course Description: Introduction to the application of the principles of engineering and biology to the analysis, design, and optimization of bioprocesses.
Prerequisite: CBE 101 and CBE 160 and LIFE 102.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 210 Thermodynamic Process Analysis Credits: 3 (3-0-0)
Course Description: Thermodynamic fundamentals and applications to ideal and non-ideal mixtures, power cycles, and chemical equilibria.
Prerequisite: CBE 201 with a minimum grade of C and MATH 261, may be taken concurrently.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Traditional.
Special Course Fee: No.

CBE 310 Molecular Concepts and Applications Credits: 3 (3-0-0)
Course Description: Application of modern molecular theory to chemical and biological engineering problems in thermodynamics, chemical kinetics, and transport phenomena.
Prerequisite: (CBE 210 with a minimum grade of C) and (MATH 340).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 320 Chemical and Biological Reactor Design Credits: 3 (3-0-0)
Course Description: Mechanisms and rates of chemical reactions; design of homogeneous and heterogeneous reactors; biological reactions and reactors.
Prerequisite: CBE 205 with a minimum grade of C and CBE 310 with a minimum grade of C and CBE 330 with a minimum grade of C and CBE 332, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 330 Process Simulation Credits: 3 (3-0-0)
Course Description: Analysis of chemical and biological engineering problems by numerical simulation.
Prerequisite: (CBE 210 with a minimum grade of C) and (MATH 340).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 331 Momentum Transfer and Mechanical Separations Credits: 3 (3-0-0)
Course Description: Fluid properties; conservation equations; compressible and incompressible flow; pumping and metering; mixing; separation of fluid-solid mixtures.
Prerequisite: (CBE 210 with a minimum grade of C) and (MATH 340).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 332 Heat and Mass Transfer Fundamentals Credits: 3 (3-0-0)
Course Description: Thermal processes; steady and unsteady conduction; convective heat transfer; radiation; heat exchanger design; mass transfer by diffusion and convection.
Prerequisite: CBE 330 with a minimum grade of C and CBE 331 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 333 Chemical and Biological Engineering Lab I Credits: 2 (0-5-0)
Course Description: Laboratory experiments involving material balances, thermodynamics, and momentum and heat transfer. Data analysis; written and oral reports.
Prerequisite: CBE 332.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

CBE 406 Introduction to Transport Phenomena Credits: 3 (3-0-0)
Course Description: Fundamental treatment of momentum and mass transport processes; dimensional analysis for parameter identification and order of magnitude estimation.
Prerequisite: CBE 332.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 430 Process Control and Instrumentation Credits: 3 (3-0-0)
Course Description: Measurement and control of process variables; transient chemical and biological processes; feedback, feedforward, and computer control concepts.
Prerequisite: CBE 320 with a minimum grade of C and CBE 442 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 439 Environmental Engineering Chemical Concepts Credits: 3 (2-3-0)
Also Offered As: CIVE 439.
Course Description: Application of chemical principles to environmental engineering problems.
Prerequisite: CHEM 113 and MATH 340.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CBE 439 and CIVE 439.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 442 Separation Processes Credits: 4 (4-0-0)
Course Description: Analysis of chemical and biological separations based on thermodynamics, diffusion, and convective mass transfer; design of separations equipment.
Prerequisite: CBE 332 with a minimum grade of C.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 443 Chemical and Biological Engineering Lab II Credits: 2 (0-5-0)
Course Description: Laboratory experiments involving advanced chemical and biological engineering concepts. Data analysis; written and oral reports.
Prerequisite: CBE 442.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CBE 451 Chemical and Biological Engineering Design I Credits: 3 (3-0-0)
Course Description: Chemical and biological process synthesis and simulation; engineering economics principles.
Prerequisite: CBE 442, may be taken concurrently and CBE 320 with a minimum grade of C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 452 Chemical and Biological Engineering Design II Credits: 3 (2-2-0)
Course Description: Projects requiring students to design a chemical and/or biological process with cost estimation and constraint analysis; written and oral reports.
Prerequisite: CBE 442 with a minimum grade of C and CBE 451 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 493 Professional Development Seminar Credit: 1 (0-0-1)
Course Description: Topics in engineering professional development, including ethics, role of engineers in society, and life-long learning.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CBE 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CBE 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CBE 501 Chemical Engineering Thermodynamics Credits: 3 (3-0-0)
Course Description: Definition, correlation, and estimation of thermodynamic properties; nonideal chemical and physical equilibria.
Prerequisite: CBE 202 and MATH 340.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 502 Advanced Reactor Design Credits: 3 (3-0-0)
Course Description: Nonideal flow and tracers, reactions and diffusion, evaluation of complex kinetics, stability of reactors. Biochemical reactor examples.
Prerequisite: CBE 320 and CBE 332.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 503 Transport Phenomena Fundamentals Credits: 3 (3-0-0)
Course Description: General topics in transport phenomena; analytical and numerical solutions of laminar flows; perturbation techniques; coupled transport.
Prerequisite: CBE 406.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 504 Fundamentals of Biochemical Engineering Credits: 3 (3-0-0)
Also Offered As: BIOM 504.
Course Description: Application of chemical engineering principles to enzyme kinetics, fermentation and cell culture, product purification, and bioprocess design.
Prerequisite: (MIP 300) and (MATH 255 or MATH 340) and (BIOM 306, may be taken concurrently or BTEC 306, may be taken concurrently or CBE 320, may be taken concurrently).
Registration Information: Credit not allowed for both CBE 504 and BIOM 504.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 505 Biochemical Engineering Laboratory Credit: 1 (0-3-0)
Course Description: Fermentation technology, bioprocess control, and protein purification.
Prerequisite: CBE 504, may be taken concurrently.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

CBE 514 Polymer Science and Engineering Credits: 3 (3-0-0)
Course Description: Fundamentals of polymer science: synthesis, characterization, processing of polymers. Physical properties of polymers; rheology of melts and solutions.
Prerequisite: (CHEM 343 or CHEM 346) and (CBE 310 or CHEM 474).
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 521 Mathematical Modeling for Chemical Engineers Credits: 3 (3-0-0)
Course Description: Application of mathematical models to analysis and design of chemical reactors and separation processes.
Prerequisite: MATH 340.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 522 Bioseparation Processes Credits: 3 (2-2-0)
Also Offered As: BIOM 522.
Course Description: Analysis of processes to recover and purify fermentation products.
Prerequisite: CBE 331.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CBE 522 and BIOM 522.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 524 Bioremediation Credit: 1 (1-0-0)
Course Description: Use of biotechnology for site remediation. Biodegradation, bioreactor design, and in situ bioremediation.
Prerequisite: CBE 540 or CIVE 540.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 540 Advanced Biological Wastewater Processing Credits: 3 (3-0-0)
Also Offered As: CIVE 540.
Course Description: Fundamentals of environmental biotechnology: environmental microbiology, microbial kinetics, basic reactor design, wastewater treatment.
Prerequisite: CBE 320 or CIVE 438.
Registration Information: Sections may be offered: Online. Credit not allowed for both CBE 540 and CIVE 540.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 543 Membranes for Biotechnology and Biomedicine Credits: 3 (3-0-0)
Also Offered As: BIOM 543.
Course Description: Polymeric membrane formation, modification, module design and applications to bioseparation and biomedical separations and tissue engineering.
Prerequisite: CHEM 343 and CBE 310.
Registration Information: Credit not allowed for both CBE 543 and BIOM 543. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 570 Biomolecular Engineering/Synthetic Biology Credits: 3 (3-0-0)
Course Description: Rational design and evolutionary methods for engineering functional protein and nucleic acid systems.
Prerequisite: (BC 351) and (CHEM 341 or CHEM 345).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 613 Advanced Transport Phenomena Credits: 3 (3-0-0)
Course Description: Fundamental studies of multicomponent mass, energy, and momentum transport, with applications in advanced materials, biomedical and biochemical systems.
Prerequisite: (MATH 530) and (ATS 601 or CIVE 502 or CBE 503).
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 621 Advanced Process Control Credits: 3 (3-0-0)
Course Description: Application of modern control theory to chemical processes. Computer control aspects emphasized.
Prerequisite: CBE 430.
Restriction: Must be a: Graduate, Professional.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 660 System and Parameter Identification Credits: 3 (3-0-0)
Course Description: Principles and methods for selecting the most appropriate equations, and properties within those equations, to mathematically simulate physical phenomena.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 687 Internship Credits: Var[1-10] (0-0-0)
Course Description: Supervised work at an approved organization with periodic faculty evaluation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

CBE 693 Seminar I Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CBE 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CBE 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CBE 707 Advanced Topics in Biochemical Engineering Credit: 1 (1-0-0)
Course Description: Advanced biochemical engineering topics.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 793 Seminar II Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CBE 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CBE 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Chemical and Biological Engineering

Chemical and biological engineering is a powerful blend of basic sciences and the skills to quantitatively describe, predict, and control all changes of matter. This provides the foundation to create cutting-edge materials and products, to design new devices to improve health or the environment, and to design processes for the safe production of chemicals and biochemicals, the production of alternative energy sources, and prevention of hazardous waste.

The Chemical and Biological Engineering curriculum is based on the sciences of physics, chemistry, biology, and mathematics. It includes engineering science and design methods, as well as humanities and social sciences. Students can pursue interdisciplinary studies programs or minors. Popular options include minors in chemistry, mathematics, environmental engineering, and biomedical engineering. The curriculum is well-aligned to meet pre-health profession requirements. The Chemical and Biological Engineering program provides an environment that promotes a sense of professionalism, the development of project management skills, and an appreciation for the value of life-long learning. Graduates of our program are well prepared to enter a variety of professions, or to pursue further education. The broad, strong scientific basis of chemical and biological engineering has kept our graduates consistently near or at the top in salary and demand among B.S. graduates.

The Chemical and Biological Engineering major is accredited by the Engineering Accreditation Commission of ABET (http://abet.org).

Program Educational Objectives

The Chemical and Biological Engineering program at CSU will empower graduates with the educational foundation to:

- Be highly successful, as defined by accomplishments, advanced certifications, and job satisfaction, in chemical and biological engineering practice, post-graduate education, or other careers making use of engineering knowledge.
- Be identified for both their mastery of fundamental chemical and biological engineering principles and their creative application of those principles to the solution of problems across a diverse range of career disciplines.
- Be recognized as critical, creative and independent thinkers who use their technical expertise and leadership to address the needs of society and advance their fields of expertise.
- Be recognized for their effectiveness in teamwork, communication, and service to society through their professional contributions.
- Hold paramount health and safety of the public and the environment.
- Demonstrate the highest standards of professional, ethical, and civic responsibility in all endeavors.
- Demonstrate continued professional growth through a commitment to lifelong learning.

Student Outcomes

Graduates of the undergraduate Chemical and Biological Engineering programs will have:

- an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- an ability to communicate effectively with a range of audiences
- an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Potential Occupations

Chemical and Biological Engineering graduates find employment in the biotechnology, biomedical, microelectronics, environmental, consulting, alternative energy, petroleum, chemical, food, pharmaceutical and other private sector industries and with government agencies. Participation in internships, volunteer activities, or cooperative education opportunities is highly recommended to enhance practical training and development. Graduates who go on for advanced studies can attain more responsible positions with the possibility of rising to top professional levels. In addition to pursuing M.S. and Ph.D. degrees in chemical and biological engineering and related fields, some of our graduates have obtained M.D., D.V.M., law, and M.B.A. degrees.

Requirements Effective Fall 2018

Freshman

		AUCC	Credits
CBE 101	Introduction to Chemical and Biological Engr		3
CBE 160	MATLAB for Chemical and Biological Eng		1
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CO 150	College Composition (GT-CO2)	1A	3

LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
	Total Credits		33

Sophomore

CBE 201	Material and Energy Balances		3
CBE 205	Fundamentals of Biological Engineering		3
CBE 210	Thermodynamic Process Analysis		3
CHEM 341	Modern Organic Chemistry I		3
CHEM 343	Modern Organic Chemistry II		3
CHEM 344	Modern Organic Chemistry Laboratory		2
MATH 261	Calculus for Physical Scientists III		4
MATH 340	Introduction to Ordinary Differential Equations		4
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	5
Arts and Humanities		3B	3
	Total Credits		33

Junior

BC 351	Principles of Biochemistry		4
CBE 310	Molecular Concepts and Applications		3
CBE 320	Chemical and Biological Reactor Design		3
CBE 330	Process Simulation		3
CBE 331	Momentum Transfer and Mechanical Separations		3
CBE 332	Heat and Mass Transfer Fundamentals		3
CBE 493	Professional Development Seminar		1
Bioscience elective			3
Technical elective[1]			3
Advanced Writing		2	3
Global and Cultural Awareness		3E	3
Historical Perspectives		3D	3
	Total Credits		35

Senior

CBE 333	Chemical and Biological Engineering Lab I		2
CBE 430	Process Control and Instrumentation		3
CBE 442	Separation Processes		4
CBE 443	Chemical and Biological Engineering Lab II		2
CBE 451	Chemical and Biological Engineering Design I	4A,4B,4C	3
CBE 452	Chemical and Biological Engineering Design II	4A,4B,4C	3
Engineering elective[1]			3
Technical elective[1]			3
Arts and Humanities		3B	3
Social and Behavioral Sciences		3C	3
	Total Credits		29
	Program Total Credits:		130

[1] Select from departmental list of approved courses.

TO PREPARE FOR FIRST SEMESTER: The curriculum for this major assumes students enter college prepared to take calculus.

Major Completion Map

Distinctive Requirements for Degree Program:

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CBE 101	Introduction to Chemical and Biological Engr	X			3
CBE 160	MATLAB for Chemical and Biological Eng	X			1
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	4
MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	4
	Total Credits				17
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II	X			3
CHEM 114	General Chemistry Lab II	X			1
CO 150	College Composition (GT-CO2)	X		1A	3
MATH 161	Calculus for Physical Scientists II (GT-MA1)	X		1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	X		3A	5
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CBE 201	Material and Energy Balances	X			3
CBE 205	Fundamentals of Biological Engineering	X			3
CHEM 341	Modern Organic Chemistry I	X			3
MATH 261	Calculus for Physical Scientists III	X			4
Arts and Humanities			X	3B	3
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
CBE 210	Thermodynamic Process Analysis	X			3
CHEM 343	Modern Organic Chemistry II	X			3
CHEM 344	Modern Organic Chemistry Laboratory	X			2
MATH 340	Introduction to Ordinary Differential Equations	X			4
PH 142	Physics for Scientists and Engineers II (GT-SC1)	X		3A	5
	Total Credits				17

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 351	Principles of Biochemistry	X			4
CBE 310	Molecular Concepts and Applications	X			3
CBE 330	Process Simulation	X			3
CBE 331	Momentum Transfer and Mechanical Separations	X			3
Technical Elective					3
Advanced Writing		X		2	3
	Total Credits				19
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
CBE 320	Chemical and Biological Reactor Design	X			3
CBE 332	Heat and Mass Transfer Fundamentals	X			3
CBE 493	Professional Development Seminar	X			1
Bioscience Elective		X			3
Global and Cultural Awareness			X	3E	3
Historical Perspectives			X	3D	3
	Total Credits				16

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
CBE 333	Chemical and Biological Engineering Lab I	X			2

CBE 442	Separation Processes	X			4
CBE 451	Chemical and Biological Engineering Design I	X		4A,4B,4C	3
Technical Elective					3
Arts and Humanities			X	3B	3
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
CBE 430	Process Control and Instrumentation	X			3
CBE 443	Chemical and Biological Engineering Lab II	X			2
CBE 452	Chemical and Biological Engineering Design II	X		4A,4B,4C	3
Engineering Elective		X			3
Social and Behavioral Sciences		X		3C	3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				14
	Program Total Credits:				130

Professional Science Master's in Biomanufacturing and Biotechnology

The Professional Science Master's in Biomanufacturing and Biotechnology is ideal for students who want to prepare for careers in a variety of industries that use bioprocesses, biomanufacturing, and biotechnology. The program is also designed to provide opportunities for professionals working in these industries to get the training they may need to advance in their careers. The program includes a balanced combination of bioscience, engineering, and business courses, appropriate for students with either a science or engineering background. The program culminates with an internship experience at a partnering organization, company, government entity, or non-profit, where the student puts into practice their bioscience, engineering, and business training.

Requirements Effective Fall 2019

First Year		
Fall		**Credits**
BC 411	Physical Biochemistry	4
BC 563	Molecular Genetics	4
BUS 500	Business Systems and Processes	2
	Total Credits	10
Spring		
BC 565	Molecular Regulation of Cell Function	4
BC 571	Quantitative Biochemistry	1
BUS 601	Quantitative Business Analysis	2
Select a 3-credit technical elective from:		3
BIOM 525/ MECH 525	Cell and Tissue Engineering	
CBE 570	Biomolecular Engineering/Synthetic Biology	
GES 542	Biobased Fuels, Energy, and Chemicals	
	Total Credits	10
Second Year		
Fall		
BUS 614	Accounting Concepts	2
BUS 620	Leadership and Teams	2
CBE 504/BIOM 504	Fundamentals of Biochemical Engineering	3
CBE 505	Biochemical Engineering Laboratory	1
CBE 522/BIOM 522	Bioseparation Processes	3
Select a 2-credit business elective from:		2
BUS 626[1]	Managing Human Capital	
BUS 640	Financial Principles and Practice	
BUS 655	Marketing Management	
	Total Credits	13
Spring		
CBE 687	Internship	7
	Total Credits	7
	Program Total Credits:	40

[1] Offered Spring term only.

Department of Civil and Environmental Engineering

Office in Engineering Building, Room A203
(970) 491-5048
engr.colostate.edu/ce (http://www.engr.colostate.edu/ce/index.shtml)

Professor Charles D. Shackelford, Department Head
Laurie Alburn, Academic Advisor

The Department of Civil and Environmental Engineering administers undergraduate and graduate degrees in Civil Engineering and an undergraduate degree in Environmental Engineering.

Undergraduate

Majors

- Major in Civil Engineering
- Major in Environmental Engineering

Minor

- Minor in Environmental Engineering

Graduate

Graduate Programs in Civil and Environmental Engineering

In Civil Engineering, programs leading to the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees are offered. Focus areas include construction engineering and management (Ph.D. only), environmental engineering, geoengineering, groundwater engineering, hydraulic engineering/stream restoration and river mechanics, hydrologic science and engineering, irrigation and drainage engineering, structural engineering and structural mechanics, water and international development, water resources planning and management, and fluid mechanics/dynamics.

A practice-oriented, course-work only, Master of Engineering (M.E.) degree program is available to students with a baccalaureate degree in engineering. Graduates of some science programs also are eligible for the M.E., but typically are required to complete background engineering courses at the undergraduate level in addition to the required courses for their graduate degree. Master of Engineering tracks are offered in environmental engineering, geotechnical engineering, infrastructure engineering, irrigation engineering, structural engineering, and water resources engineering.

Students interested in graduate work should refer to the Graduate and Professional Bulletin or the Civil Engineering Department (http://www.engr.colostate.edu/ce/degreeinfo.shtml).

Master's Programs

- Master of Science in Civil Engineering, Plan A*
- Master of Science in Civil Engineering, Plan B*
- Master of Engineering, Plan C, Civil Engineering Specialization

Ph.D.

- Ph.D. in Civil Engineering*

* Please see department for program of study.

Courses

Civil Engineering (CIVE)

CIVE 102 Introduction to Civil and Environmental Engr Credits: 3 (2-2-0)
Course Description: Civil and environmental engineering professions, computer applications related to civil and environmental engineering; engineering design concepts.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Must register for lecture and laboratory. Walter Scott College of Engineering majors only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 103 Engineering Graphics and Computing Credits: 3 (2-3-0)
Course Description: Introduction to the profession and academia; principles of civil engineering design; graphical, and written communication.
Prerequisite: CIVE 102 or ENGR 101.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 202 Numerical Modeling and Optimization Credits: 3 (2-2-0)
Course Description: Fundamentals of programming and application to numerical modeling and optimization of civil and environmental engineering systems.
Prerequisite: (CIVE 103) and (MATH 159, may be taken concurrently or MATH 160, may be taken concurrently).
Registration Information: Must register for lecture and laboratory. Civil Engineering, Environmental Engineering or Engineering Science majors only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 203 Engineering Systems and Decision Analysis Credits: 3 (2-2-0)
Course Description: Civil engineering infrastructure systems, numerical and decision analysis techniques, applications of risk analysis.
Prerequisite: CIVE 202.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 260 Engineering Mechanics-Statics Credits: 3 (3-0-0)
Course Description: Forces using vector notation; static equilibrium of rigid bodies; friction, virtual work, centroids, and moments of inertia.
Prerequisite: (MATH 159 or MATH 160) and (PH 141).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 261 Engineering Mechanics-Dynamics Credits: 3 (3-0-0)
Course Description: Kinematics and kinetics of particles and rigid bodies; concepts of work-energy and impulse-momentum; computer applications; vector notation.
Prerequisite: CIVE 260.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 300 Fluid Mechanics Credits: 3 (3-0-0)
Course Description: Fluid properties; statics, kinematics, and dynamics of fluid motion including viscous and gravitational effects.
Prerequisite: (CIVE 261 and MATH 340, may be taken concurrently) and (MECH 237, may be taken concurrently or MECH 337, may be taken concurrently).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 301 Fluid Mechanics Laboratory Credit: 1 (0-3-0)
Course Description: Fluid properties; statics, kinematics, and dynamics of fluid motion including viscous and gravitational effects.
Prerequisite: CIVE 300, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 302 Evaluation of Civil Engineering Materials Credits: 3 (2-3-0)
Course Description: Behavior and properties of construction materials, instrumentation, use of statistical tools, material standards, material selection, quality control.
Prerequisite: CHEM 111 and CIVE 360.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 303 Infrastructure and Transportation Systems Credits: 3 (3-0-0)
Course Description: Principles of infrastructure systems, transportation systems, applications of spatial data and GIS, project management and engineering economy.
Prerequisite: CIVE 260.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 305 Intermediate AutoCAD Credits: 3 (2-2-0)
Course Description: Creating layouts and templates, objects, graphic patterns and symbols, inserting and managing external references, and creating isometric drawings.
Prerequisite: CIVE 103.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 322 Basic Hydrology Credits: 3 (3-0-0)
Course Description: Hydrologic cycle, soil moisture, groundwater, runoff processes, applications in water resources and environmental engineering.
Prerequisite: (CIVE 300 or CBE 331 or WR 416) and (CIVE 203 or STAT 301 or STAT 315).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 330 Ecological Engineering Credits: 3 (3-0-0)
Course Description: Principles of ecological engineering and design of sustainable ecosystems.
Prerequisite: (BZ 110 and BZ 111 or BZ 120 or LIFE 102 or SOCR 240) and (CHEM 113) and (CIVE 300 or LIFE 320).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 339 Environmental Engineering Concepts Credits: 3 (3-0-0)
Course Description: Fundamental topics of environmental engineering, including water chemistry, chemical and biological reactions for water and wastewater treatment, reactor design for water and wastewater treatment processes, sanitary and storm sewer design, hazardous waste management, noise pollution, and sanitary landfill design.
Prerequisite: (CHEM 113) and (CBE 331 or CIVE 300 or MECH 342).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 355 Introduction to Geotechnical Engineering Credits: 3 (3-0-0)
Course Description: Soil behavior, stress-strain and strength properties, application to earth pressure, slope and foundation problems.
Prerequisite: CIVE 360.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 356 Geotechnical Engineering Laboratory Credit: 1 (0-3-0)
Course Description: Laboratory to demonstrate standard methods of soils testing, methods of data collection, analysis of results.
Prerequisite: CIVE 355, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 360 Mechanics of Solids Credits: 3 (3-0-0)
Course Description: Stresses and deformations in structural members and machine elements, combined stresses, stress transformation.
Prerequisite: CIVE 260.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 367 Structural Analysis Credits: 3 (3-0-0)
Course Description: Determination of actions in and deformations of determinate and indeterminate structures.
Prerequisite: CIVE 360.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 401 Hydraulic Engineering Credits: 3 (3-0-0)
Course Description: Basic principles of fluid mechanics applied to practical problems in hydraulic engineering.
Prerequisite: CIVE 300.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 402 Senior Design Principles Credits: 3 (2-2-0)
Course Description: Design of civil engineering systems, nontechnical and economic design considerations, project organization, design project development and presentation.
Prerequisite: (CIVE 300) and (CIVE 303 or CHEM 245).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 403 Senior Project Design Credits: 3 (2-2-0)
Course Description: Design of civil engineering systems, nontechnical and economic design considerations, project organization, design project development and presentation.
Prerequisite: CIVE 402.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 413 Environmental River Mechanics Credits: 3 (3-0-0)
Course Description: Fluvial geomorphology, river hydraulics, sediment transport, and river response with special emphasis on environmental aspects.
Prerequisite: CIVE 300 or WR 416.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 423 Groundwater Engineering Credits: 3 (3-0-0)
Course Description: Development of groundwater resources; origin, movement, distribution of water below ground surface.
Prerequisite: CIVE 300 or CBE 331 or WR 416.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 424 Modern Gas and Oil Credits: 3 (3-0-0)
Also Offered As: GEOL 424.
Course Description: Introduction to opportunities and challenges of modern gas and oil development, including synergies with other energy sources.
Prerequisite: None.
Registration Information: Junior standing or above; completion of AUCC category 3A. Credit not allowed for both CIVE 424 and GEOL 424.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 425 Soil and Water Engineering Credits: 3 (2-3-0)
Course Description: Control of the soil-water-plant medium for optimum plant growth and environmental protection.
Prerequisite: CBE 331 or CIVE 300 or SOCR 240.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 437 Wastewater Treatment Facility Design Credits: 3 (3-0-0)
Course Description: Design concepts and principles for wastewater treatment systems and unit processes, principles of treatment plant operation.
Prerequisite: (CIVE 300) and (CIVE 438, may be taken concurrently).
Registration Information: Credit not allowed for both CIVE 437 and ENVE 437.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 438 Environmental Engr Concepts for Civil Engrs Credits: 3 (3-0-0)
Course Description: Core topics of environmental engineering including water quality and chemistry, wastewater removal and treatment, air pollution, noise pollution, and sanitary landfill design. Sustainability, green engineering and ethics are also discussed.
Prerequisite: (CBE 331 or CIVE 300 or MECH 342) and (CHEM 113).
Registration Information: Walter Scott Jr. College of Engineering majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 439 Environmental Engineering Chemical Concepts Credits: 3 (2-3-0)
Also Offered As: CBE 439.
Course Description: Application of chemical principles to environmental engineering problems.
Prerequisite: CHEM 113 and MATH 340.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CBE 439 and CIVE 439.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 440 Nonpoint Source Pollution Credits: 3 (3-0-0)
Course Description: Principles, processes, impacts and control of nonpoint source pollution of surface and groundwater.
Prerequisite: CIVE 300 or CIVE 322 or SOCR 240 or WR 416.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 441 Water Quality Analysis and Treatment Credits: 3 (2-3-0)
Course Description: Physical, chemical and biological methods for the characterization of waters and wastewaters.
Prerequisite: CIVE 438, may be taken concurrently or CIVE 440, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 442 Air Quality Engineering Credits: 3 (3-0-0)
Course Description: Air pollution problems and solutions, at scales ranging from local to global. Quantitative analysis of chemical and physical processes governing air pollutants in natural and built environments.
Prerequisite: (CBE 331 or CIVE 300 or MECH 342) and (CHEM 113).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 455 Applications in Geotechnical Engineering Credits: 3 (3-0-0)
Course Description: Geotechnical engineering applications of earth retaining structures, foundations, dams and embankments, geosynthetics, waste containment systems.
Prerequisite: CIVE 355.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 458 Environmental Geotechnics Credits: 3 (3-0-0)
Course Description: Application of principles from soil physics, soil chemistry, soil mechanics, hydrogeology, and geotechnical engineering to solve problems in Environmental Geotechnics related to engineered containment of contaminants and remediation of contaminated sites for the protection of human health and the environment.
Prerequisite: CIVE 355.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 466 Design and Behavior of Steel Structures Credits: 3 (3-0-0)
Course Description: Loads acting on a structure; behavior and design of steel members, connections, and systems.
Prerequisite: CIVE 367.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 467 Design of Reinforced Concrete Structures Credits: 3 (3-0-0)
Course Description: Design and behavior of reinforced concrete structural members.
Prerequisite: CIVE 367.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 502 Fluid Mechanics Credits: 3 (3-0-0)
Course Description: Fundamental physical concepts of fluid mechanics; ideal and viscous fluid flows; boundary-layer concepts.
Prerequisite: CIVE 300.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 504 Wind Engineering Credits: 3 (3-0-0)
Course Description: Influence of wind on humanity. Applications to structures, air pollution, wind energy, agricultural aerodynamics, snow movement, human comfort.
Prerequisite: CIVE 300.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 506 Wind Effects on Structures Credits: 3 (3-0-0)
Course Description: Analysis of wind effects on buildings and structures; deterministic and probabilistic methods; aerodynamic loading and response; codes and standards.
Prerequisite: CIVE 504.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 507 Transportation Engineering Credits: 3 (3-0-0)
Course Description: Principles of highway engineering, transportation engineering and bridge engineering with a focus on design.
Prerequisite: CIVE 261 and CIVE 303 and CIVE 367.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 508 Bridge Engineering Credits: 3 (3-0-0)
Course Description: Introduces the fundamentals of bridge engineering, including bridge basics, bridge loads, bridge analysis and bridge design.
Prerequisite: CIVE 367.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 510 Applied Hydraulic System Design Credits: 3 (3-0-0)
Course Description: Operational management systems, data collection, real-time control, management modeling, rehabilitation and retrofit, maintenance.
Prerequisite: CIVE 401.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 511 Coastal Engineering Credits: 3 (3-0-0)
Course Description: Coastal processes (waves, tides, storm surge, currents, coastal morphology, deltas) and their effects on infrastructure design and eco-protection.
Prerequisite: CIVE 401.
Registration Information: Bachelor's degree required. Credit not allowed for both CIVE 511 and CIVE 580A6.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 512 Irrigation Systems Design Credits: 3 (3-0-0)
Course Description: Irrigation systems principles and design procedures for operation of sprinkler, trickle, and surface irrigation systems.
Prerequisite: CIVE 322 or CIVE 425.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 513 Morphodynamic Modeling Credits: 3 (3-0-0)
Course Description: Principles and techniques for simultaneous modeling of flow, sediment transport, and channel evolution to address problems in river morphodynamics.
Prerequisite: CIVE 300.
Registration Information: Credit not allowed for both CIVE 513 and CIVE 581A9.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 514 Hydraulic Structures/Systems Credits: 3 (3-0-0)
Course Description: Analysis and design of hydraulic structures which make up components of water resource systems.
Prerequisite: CIVE 401.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 518 Sprinkler and Trickle Irrigation Systems Credits: 3 (3-0-0)
Course Description: Basic principles, design, and evaluation of pressurized irrigation systems.
Prerequisite: CIVE 300 and CIVE 425.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 519 Irrigation Water Management Credits: 3 (3-0-0)
Course Description: Soil, plant, water, and atmospheric engineering principles for the determination of crop water needs to sustain agricultural production and the environment.
Prerequisite: CIVE 322 or SOCR 370.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 520 Physical Hydrology Credits: 3 (3-0-0)
Course Description: Hydrologic, atmospheric processes in the water cycle; linear systems, hydrologic response; geomorphologic description of hydrologic processes, response.
Prerequisite: CIVE 322 or CIVE 322.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 521 Hydrometry Credits: 3 (2-3-0)
Course Description: Principles, methods, instruments, and equipment for measuring water quantity and water quality variables in nature.
Prerequisite: CIVE 322.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 522 Engineering Hydrology Credits: 3 (3-0-0)
Course Description: Hydrologic design under uncertainty; conventional and remote sensing; design flows and storms; river routing; reservoir design; watershed models.
Prerequisite: CIVE 520.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 524 Modeling Watershed Hydrology Credits: 3 (2-2-0)
Also Offered As: WR 524.
Course Description: Development and application of watershed models: structure, calibration, evaluation, sensitivity analysis, simulation.
Prerequisite: (CIVE 322 or WR 416) and (STAT 315 or STAT 301 or CIVE 202).
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CIVE 524 and WR 524.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 525 Water Engineering: International Development Credits: 3 (3-0-0)
Course Description: Planning and design of small-scale and low-cost water supply and wastewater systems for rural communities in developing countries.
Prerequisite: CIVE 401 or CIVE 438.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 531 Groundwater Hydrology Credits: 3 (3-0-0)
Course Description: Groundwater occurrence, distribution, movement, exploration and recharge, well hydraulics and design, interaction of ground and surface water.
Prerequisite: CIVE 300 or CBE 331 or MECH 342.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 532 Wells and Pumps Credits: 3 (3-0-0)
Course Description: Well field hydraulics, well drilling methods, well design, aquifer test methods, pumping systems, well maintenance, storage/distribution systems.
Prerequisite: (CIVE 423 and CHEM 111) and (CIVE 531 or GEOL 452).
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 533 Biomolecular Tools for Engineers Credits: 3 (2-3-0)
Also Offered As: BIOM 533.
Course Description: Theoretical and practical aspects of biomolecular laboratory tools--PCR, cloning, sequencing, single-molecule optical techniques and live-cell imaging.
Prerequisite: BMS 300 or MIP 300.
Registration Information: Must register for lecture and laboratory. Credit not allowed for BIOM 533, CIVE 533 and ECE 533.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 534 Applied and Environmental Molecular Biology Credits: 3 (2-2-0)
Course Description: Environmental microbiology and molecular biology tools used to investigate both natural systems and engineered processes.
Prerequisite: CIVE 540.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 537 Residuals Management Credits: 3 (3-0-0)
Course Description: Planning and design for processing and disposal of residuals including solid wastes, sludges, and hazardous wastes.
Prerequisite: CIVE 300.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 538 Aqueous Chemistry Credits: 3 (3-0-0)
Course Description: Principles of solution chemistry applied to aquatic systems.
Prerequisite: CHEM 113 and MATH 340.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 539 Water and Wastewater Analysis Credits: 3 (2-3-0)
Course Description: Chemical and biological methods of assessing water quality; significance of chemicals in aquatic systems.
Prerequisite: CHEM 113 and MATH 340.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 540 Advanced Biological Wastewater Processing Credits: 3 (3-0-0)
Also Offered As: CBE 540.
Course Description: Fundamentals of environmental biotechnology: environmental microbiology, microbial kinetics, basic reactor design, wastewater treatment.
Prerequisite: CBE 320 or CIVE 438.
Registration Information: Sections may be offered: Online. Credit not allowed for both CIVE 540 and CBE 540.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 541 Environmental Unit Operation-Treatment-Design Credits: 4 (3-3-0)
Course Description: Reactor theory, filtration, adsorption, ion exchange, gas transfer, oxidation, membranes, biological reactors, disinfection.
Prerequisite: CIVE 439 or CBE 439.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 542 Water Quality Modeling Credits: 3 (3-0-0)
Course Description: Chemical, physical, and biological processes defining surface water quality, construction and application of computer models for lakes and streams.
Prerequisite: None.
Registration Information: Must have taken two semesters of chemistry; one course in hydrology or water quality.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 543 Instrumental Environmental Analysis Credits: 3 (2-3-0)
Course Description: Environmental sampling and preservation techniques followed by the instrumental analysis of the samples.
Prerequisite: CHEM 113.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 544 Water Resources Planning and Management Credits: 3 (3-0-0)
Course Description: Management and planning of natural and constructed water systems. Integrated management and case studies of water use and environmental resources.
Prerequisite: CIVE 322.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 546 Water Resource Systems Analysis Credits: 3 (2-2-0)
Course Description: Applications of systems analysis and optimization techniques in water resources planning and management.
Prerequisite: (CIVE 322, may be taken concurrently) and (ENGR 510, may be taken concurrently or MATH 510, may be taken concurrently).
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 547 Statistics for Environmental Monitoring Credits: 3 (3-0-0)
Also Offered As: STAT 547.
Course Description: Applications of statistics in environmental pollution studies involving air, water, or soil monitoring; sampling designs; trend analysis; censored data.
Prerequisite: STAT 301.
Registration Information: Credit not allowed for both CIVE 547 and STAT 547. Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 549 Drainage and Wetland Engineering Credits: 3 (3-0-0)
Course Description: Drainage and wetlands design for agricultural and natural resource applications. Water table modification for nonpoint sources pollution control.
Prerequisite: CIVE 322 or SOCR 370 or SOCR 470.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 550 Foundation and Retaining Wall Engineering Credits: 3 (3-0-0)
Course Description: Mechanics and methodology of foundation engineering, selection and design of foundation systems, retaining wall design, and application of principles to related special problems.
Prerequisite: CIVE 355.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 555 Mining Geotechnics Credits: 3 (3-0-0)
Course Description: Challenges associated with mine tailings and mine waste management, including relevant geotechnical and geoenvironmental engineering factors. Case studies are used to illustrate important concepts.
Prerequisite: CIVE 355.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 556 Slope Stability, Seepage, and Earth Dams Credits: 3 (3-0-0)
Course Description: Slope stability, seepage analysis and control, and earth dam and embankment design in Geotechnical Engineering practice. Students will gain an understanding of the theory, design, and analysis necessary to evaluate slope stability, seepage, and earth dam problems.
Prerequisite: CIVE 355.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 558 Containment Systems for Waste Disposal Credits: 3 (3-0-0)
Course Description: Basic principles governing the design of containment systems used in waste disposal applications.
Prerequisite: CIVE 355.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 559 Special Topics in Geotechnical Engineering Credits: 3 (3-0-0)
Course Description: Advanced topics in geotechnical engineering including expansive soils, unsaturated soil mechanics, soil-structure interaction and mining geotechnics.
Prerequisite: CIVE 355.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 560 Advanced Mechanics of Materials Credits: 3 (3-0-0)
Course Description: Analysis of stress and strain failure theory; selected topics in solid mechanics, plate analysis; introduction to elastic stability.
Prerequisite: CIVE 360.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 561 Advanced Steel Behavior and Design Credits: 3 (3-0-0)
Course Description: Behavior of steel components and systems. Design of composite members, plate girders, and bolted and welded connections.
Prerequisite: CIVE 466.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 562 Fundamentals of Vibrations Credits: 3 (3-0-0)
Course Description: Free and forced vibrations of single, two, and multiple degree of freedom systems. Closed-form and numerical solutions.
Prerequisite: CIVE 261 and CIVE 360.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 563 Structural Reliability: Theory, Application Credits: 3 (3-0-0)
Course Description: Theory of structural reliability as it relates to analysis, design, construction, and maintenance of structural and mechanical systems.
Prerequisite: CIVE 203 or STAT 315.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 564 Principles of Structural Load Modeling Credits: 3 (3-0-0)
Course Description: Modern structural load modeling and analysis techniques for buildings and other structures exposed to natural and man-made hazards.
Prerequisite: (CIVE 203) and (CIVE 466 or CIVE 467).
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Credit not allowed for both CIVE 564 and CIVE 581A7.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 565 Finite Element Method Credits: 3 (3-0-0)
Course Description: Theory and application in elasticity, porous flow, heat conduction, and other engineering problems.
Prerequisite: MATH 340.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 566 Intermediate Structural Analysis Credits: 3 (3-0-0)
Course Description: Work and energy concepts, curved members and arches, matrix analysis of linear systems, numerical techniques.
Prerequisite: CIVE 367.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 567 Advanced Concrete Design Credits: 3 (3-0-0)
Course Description: Behavior of reinforced and prestressed concrete members; development of design methods; behavior and design of slabs, shearwalls, and buildings.
Prerequisite: CIVE 467.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 568 Design of Masonry and Wood Structures Credits: 3 (3-0-0)
Course Description: Behavior and design of structures and structural components constructed of masonry or engineered wood.
Prerequisite: CIVE 466 or CIVE 467.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 571 Pipeline Engineering and Hydraulics Credits: 3 (3-0-0)
Course Description: Water supply, wastewater, stormwater, oil and gas, and industrial applications. Emphasis on pressurized water pipelines.
Prerequisite: CIVE 300.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 572 Analysis of Urban Water Systems Credits: 3 (2-2-0)
Course Description: Behavior and interaction of urban water distribution and collection systems; how system state and driving variables affect system performance.
Prerequisite: CIVE 300 and CIVE 401.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 573 Urban Stormwater Management Credits: 3 (3-0-0)
Course Description: Effects of urbanization on watershed hydrology and receiving waters; control practices to mitigate effects using mathematical models.
Prerequisite: (CIVE 322) and (CIVE 401).
Registration Information: Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 574 Civil Engineering Project Management Credits: 3 (3-0-0)
Course Description: Principles of civil engineering project management including proposals, contracts, scheduling, quality assurance, budgeting, and risk management.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 575 Sustainable Water and Waste Management Credits: 3 (3-0-0)
Course Description: The science, engineering, and policy behind sustainable water and waste practices. Sustainable urban water and wastewater management.
Prerequisite: CIVE 322.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 576 Engineering Applications of GIS and GPS Credits: 3 (2-2-0)
Course Description: Integration of GPS and GIS in the planning and decision making process, application to case study.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 577 GIS in Civil and Environmental Engineering Credits: 3 (2-2-0)
Course Description: GIS technology for spatial design/analysis; applications in facilities management, urban infrastructure, water resources, environmental engineering.
Prerequisite: (CIVE 300) and (CIVE 322).
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 578 Infrastructure and Utility Management Credits: 3 (3-0-0)
Course Description: Infrastructure and utility planning, management, and security. Systems approach to life cycle management. Problems, analysis, decision support systems.
Prerequisite: None.
Registration Information: Ten credits of engineering, economics, public administration, or planning courses. Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 584 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 592A Seminar: Fluid Mechanics and Wind Engineering Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 592E Seminar: Geotechnical Engineering Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 592G Seminar: Environmental Engineering Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 592L Seminar: Space Engineering Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596A Group Study: Fluid Mechanics/Wind Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596B Group Study: Hydraulics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596C Group Study: Hydrology and Water Resources Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596D Group Study: Mechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596E Group Study: Geotechnical Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596F Group Study: Structures Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596G Group Study: Environmental Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596H Group Study: Water Resource Planning and Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596I Group Study: Groundwater Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596J Group Study: Bioresource and Agricultural Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 604 Fluid Turbulence and Modeling Credits: 3 (3-0-0)
Course Description: Engineering concepts for transport of pollutants, toxic and flammable species, sand, and snow. Fluid modeling, numerical and analytical approaches.
Prerequisite: CIVE 502 or CIVE 504.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 607 Computational Fluid Dynamics Credits: 3 (3-0-0)
Course Description: Numerical methods used in computational solutions of hydraulics, environmental and wind engineering problems.
Prerequisite: CIVE 300.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 610 Special Topics in Hydraulics Credits: 3 (3-0-0)
Course Description: Advanced topics in hydraulics, hydromechanics, environmental hydraulics, and computational hydraulics.
Prerequisite: CIVE 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 612 Open Channel Flow Credits: 4 (4-0-0)
Course Description: Steady, uniform, and non-uniform flow; backwater curves; flow through bridge piers, transitions, and culverts; spatially varied and unsteady flow.
Prerequisite: CIVE 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 613 River Restoration Design Credits: 3 (3-0-0)
Course Description: Analysis and design for assisting the recovery of hydrologic, geomorphic, and ecological processes and ecosystem services in degraded river systems.
Prerequisite: CIVE 401.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 622 Risk Analysis of Water/Environmental Systems Credits: 3 (3-0-0)
Course Description: Risk and uncertainty analysis applied to hydrology, hydraulics, groundwater, water resources, and environmental engineering systems.
Prerequisite: (CIVE 322) and (STAT 315).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 625 Quantitative Eco-Hydrology Credits: 3 (3-0-0)
Course Description: Quantitative examination of the hydrologic and ecologic mechanisms underlying climate-soil-vegetation and soil moisture dynamics.
Prerequisite: CIVE 322 or WR 416.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 626 Integrated Analysis of Coupled Water Issues Credits: 3 (3-0-0)
Course Description: Integrative systems and policy analysis applied to coupled human-water systems from interdisciplinary technical and institutional perspectives.
Prerequisite: GR 304 or WR 304.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 631 Computational Methods in Subsurface Systems Credits: 3 (3-0-0)
Course Description: Numerical flow models; finite difference and finite element methods; parameter identification, stochastic modeling and advanced analytical solutions.
Prerequisite: (MATH 340) and (CIVE 531).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 638 Groundwater Quality and Contaminant Transport Credits: 3 (3-0-0)
Course Description: Analysis of hydrochemical data. Advection with and without mixing. Retardation of reactive solutes. Design of groundwater quality investigations.
Prerequisite: CIVE 531.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 645 Computer-Aided Water Management and Control Credits: 3 (2-2-0)
Course Description: Real-time management and control of water resource systems; applications of computer control concepts to improve system performance.
Prerequisite: CIVE 546 or CIVE 577.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 655 Advanced Soil Mechanics Credits: 3 (3-0-0)
Course Description: Advanced topics in shear strength and consolidation of soils; stress paths; anisotropy; submergence; partial and radial drainage; numerical methods.
Prerequisite: CIVE 355.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 657 Oral Communication in Geo-Engineering Credit: 1 (1-0-0)
Course Description: Principles of technical oral communication in geotechnical engineering, creating presentations, delivering presentations, listening and responding to questions.
Prerequisite: CIVE 550 or CIVE 556 or CIVE 558 or CIVE 655.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 658 Remediation Systems - Subsurface Contamination Credits: 3 (3-0-0)
Course Description: Applications in geoenvironmental engineering practice involving design of in situ containment and remediation systems.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 661 Stochastic Methods in Structural Dynamics Credits: 3 (3-0-0)
Course Description: Time-dependent excitations are modeled using stochastic processes, enabling prediction of random dynamic response under time-dependent excitations.
Prerequisite: CIVE 562.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both CIVE 661 and CIVE 681A3.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 662 Foundations of Solid Mechanics Credits: 3 (3-0-0)
Course Description: Analysis of stress and strain in solids emphasizing linear elasticity and plasticity; introduction to creep, viscoelasticity, and finite deformations.
Prerequisite: CIVE 560.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 663 Structural Stability Credits: 3 (3-0-0)
Course Description: Structural stability analysis of buildings and other structures; mathematical and mechanics tools for investigating stability of equilibrium.
Prerequisite: CIVE 560 and CIVE 566.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both CIVE 663 and CIVE 680A6.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 664 Mechanics of Fatigue and Fracture Credits: 3 (3-0-0)
Course Description: Fracture mechanics including linear elastic, elastic-plastic, and dynamic fracture; on ductile and cleavage fracture in metals.
Prerequisite: CIVE 560.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 667 Advanced Structural Analysis Credits: 3 (3-0-0)
Course Description: Analysis program development, application of finite element analysis, computer-assisted analysis, introduction to nonlinear analysis.
Prerequisite: CIVE 566.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695A Independent Study: Fluid Mechanics and Wind Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695B Independent Study: Hydraulics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695C Independent Study: Hydrology and Water Resources Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695D Independent Study: Mechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695E Independent Study: Geotechnical Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695F Independent Study: Structures Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695G Independent Study: Environmental Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695H Independent Study: Water Resource Planning and Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695I Independent Study: Groundwater Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695J Independent Study: Bioresource and Agricultural Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695K Independent Study: Water and International Development Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695L Independent Study: Construction Engineering and Management Credits: Var[1-18] (0-0-0)
Course Description: A) Fluid mechanics and wind engineering. B) Hydraulics. C) Hydrology and water resources. D) Mechanics. E) Geotechnical engineering, F) Structures, G) Environmental Engineering. H) Water resource planning and management, I) Groundwater. J) Bioresource and agricultural engineering. K) Water and International Development, L) Construction Engineering & Management.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696A Group Study: Fluid Mechanics and Wind Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696B Group Study: Hydraulics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696C Group Study: Hydrology and Water Resources Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696D Group Study: Mechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696E Group Study: Geotechnical Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696F Group Study: Structures Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696G Group Study: Environmental Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696H Group Study: Water Resource Planning and Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696I Group Study: Groundwater Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696J Group Study: Bioresource and Agricultural Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699A Thesis: Fluid Mechanics and Wind Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699B Thesis: Hydraulics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699C Thesis: Hydrology and Water Resources Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699D Thesis: Mechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699E Thesis: Geotechnical Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699F Thesis: Structures Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699G Thesis: Environmental Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699H Thesis: Water Resource Planning and Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699I Thesis: Groundwater Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699J Thesis: Bioresource and Agricultural Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699K Thesis: Water and International Development Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 703 Special Topics in Fluid Mechanics Credits: 3 (3-0-0)
Course Description: Advanced topics in fluid mechanics; associated experimental and numerical techniques.
Prerequisite: CIVE 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 716 Erosion and Sedimentation Credits: 3 (3-0-0)
Course Description: Sediment properties; resistance to flow; incipient motion and bedforms; sediment transport, reservoir sedimentation.
Prerequisite: CIVE 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 717 River Mechanics Credits: 3 (3-0-0)
Course Description: Characteristics of rivers, mechanics of sediment and water discharge emphasizing alluvial systems, channel stabilization, control, response.
Prerequisite: CIVE 716.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 721 Stochastic Water and Environmental Systems Credits: 3 (3-0-0)
Course Description: Stochastic analysis of water and environmental systems. Simulation, forecasting, spatial analysis, modeling changes, stochastic differential equations.
Prerequisite: CIVE 622.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 724 River Basin Morphology Credits: 3 (3-0-0)
Course Description: Analysis of river basin properties including their connections to statistical theories and erosion processes and their hydrologic implications.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 742 Advanced Topics in Environmental Engineering Credits: 3 (2-3-0)
Course Description: Selected topics from current environmental engineering research including molecular methods, water/wastewater treatment, hazardous water remediation.
Prerequisite: CIVE 540.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 751 Soil Dynamics Credits: 3 (3-0-0)
Course Description: Soil behavior under dynamic loading; stress wave propagation; foundation response to vibratory and transient loading; elements of earthquake effects.
Prerequisite: CIVE 355.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 766 Theory of Plates and Shells Credits: 3 (3-0-0)
Course Description: Classical plate, shell and membrane theory for isotropic and layered anisotropic media. Analytic and computational solution techniques.
Prerequisite: CIVE 560.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 767 Structural Dynamics and Earthquake Engineering Credits: 3 (3-0-0)
Course Description: Analysis, behavior, and design of structural systems subjected to dynamic loads, including earthquakes, wind, and ocean waves.
Prerequisite: CIVE 562 and CIVE 667.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 799A Dissertation: Fluid Mechanics and Wind Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799B Dissertation: Hydraulics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799C Dissertation: Hydrology and Water Resources Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799D Dissertation: Mechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799E Dissertation: Geotechnical Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799F Dissertation: Structures Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799G Dissertation: Environmental Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799H Dissertation: Water Resource Planning and Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799I Dissertation: Groundwater Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799J Dissertation: Bioresource and Agricultural Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799K Dissertation: Water and International Development Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799L Dissertation: Construction Engineering and Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Civil Engineering

The undergraduate Civil Engineering program provides a solid base in the physical sciences, mathematics, engineering fundamentals, and design and management concepts. The All-University Core Curriculum provides a broad background in communication, liberal arts, humanities, and social sciences. In addition to offering courses in the various sub-disciplines of Civil Engineering, the Civil Engineering curriculum covers design practices, information technology, technical communications, project management, and engineering ethics. The program culminates in a year-long, term-based, senior capstone design experience. Preparation for high-level professional practice is emphasized. The Fundamentals of Engineering (FE) exam is the first step toward registration as a Professional Engineer (PE), an important professional credential for civil engineers. Thus, students in this major are strongly encouraged to take the FE exam prior to graduation. Graduates of our Civil Engineering major consistently have a passing rate on the FE exam that is significantly above the national average.

Participation in internships, volunteer activities, professional organizations, and cooperative education opportunities is highly recommended to enhance practical training and development. Graduates who pursue advanced studies are prepared for higher level technical responsibilities.

The educational outcomes and objectives of this major can be found on the Department of Civil and Environmental Engineering website (http://www.engr.colostate.edu/ce/undergrad.shtml). The Civil Engineering major is accredited by the Engineering Accreditation Commission of ABET (http://abet.org).

Potential Occupations

Civil engineers are employed in many different organizations, including small and large consulting firms, local, state, and federal governmental agencies, and industrial companies such as construction, petroleum, and aerospace firms. Civil engineers also may find opportunities in specialized design, research, and teaching.

Some example job titles for graduates with a Bachelor of Science degree in Civil Engineering (BSCE) include, but are not limited to, civil engineer, transportation engineer, hydraulic engineer, water resources engineer, structural engineer, geotechnical engineer, geoenvironmental engineer, groundwater engineer, hydrologist, wind engineer, urban/regional planner, infrastructure engineer or manager, contract administrator, construction engineer or manager, building construction inspector, facilities engineer or manager, industrial transportation specialist, industrial designer/engineer, construction materials engineer, irrigation engineer, mining engineer, mining and petroleum research engineer, technical sales engineer, and educator.

Requirements
Effective Fall 2019

Freshman

		AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CIVE 102	Introduction to Civil and Environmental Engr		3
CIVE 103	Engineering Graphics and Computing		3

CO 150	College Composition (GT-CO2)	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
Arts and Humanities		3B	3
	Total Credits		30

Sophomore

CHEM 113	General Chemistry II		3
CIVE 202	Numerical Modeling and Optimization		3
CIVE 203	Engineering Systems and Decision Analysis		3
CIVE 260	Engineering Mechanics-Statics		3
CIVE 261	Engineering Mechanics-Dynamics		3
CIVE 360	Mechanics of Solids		3
MATH 261	Calculus for Physical Scientists III		4
MECH 237	Introduction to Thermal Sciences		3
Science Technical Elective (see list below)			3
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
	Total Credits		34

Junior

CIVE 300	Fluid Mechanics		3
CIVE 301	Fluid Mechanics Laboratory		1
CIVE 302	Evaluation of Civil Engineering Materials		3
CIVE 303	Infrastructure and Transportation Systems		3
CIVE 322	Basic Hydrology		3
CIVE 355	Introduction to Geotechnical Engineering		3
CIVE 356	Geotechnical Engineering Laboratory		1
CIVE 367	Structural Analysis		3
CIVE 467	Design of Reinforced Concrete Structures		3
MATH 340	Introduction to Ordinary Differential Equations		4
Advanced Writing		2	3
Arts and Humanities		3B	3
	Total Credits		33

Senior

CIVE 401	Hydraulic Engineering		3
CIVE 402	Senior Design Principles	4A,4B	3
CIVE 403	Senior Project Design	4C	3
CIVE 438	Environmental Engr Concepts for Civil Engrs		3
CIVE 466	Design and Behavior of Steel Structures		3
Civil Engineering Technical Electives (see list below)			15
Diversity and Global Awareness		3E	3
	Total Credits		33
	Program Total Credits:		130

Science Technical Electives – Select a minimum of 3 credits

Code	Title	Credits
ATS 350	Introduction to Weather and Climate	2
ATS 351	Introduction to Weather and Climate Lab	1
BSPM 102	Insects, Science, and Society (GT-SC2)	3
BZ 110	Principles of Animal Biology (GT-SC2)	3
BZ 120	Principles of Plant Biology (GT-SC1)	4
ESS 210/GR 210	Physical Geography	3
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)	3

GEOL 122	The Blue Planet - Geology of Our Environment (GT-SC2)	3
GEOL 150	Physical Geology for Scientists and Engineers	4
HORT 171/SOCR 171	Environmental Issues in Agriculture (GT-SS3)	3
LAND 220/LIFE 220	Fundamentals of Ecology (GT-SC2)	3
LIFE 102	Attributes of Living Systems (GT-SC1)	4
MIP 149	The Microbial World	3
NR 120A	Environmental Conservation (GT-SC2)	3
NR 130	Global Environmental Systems (GT-SC2)	3
NR 150	Oceanography (GT-SC2)	3
SOCR 240	Introductory Soil Science	4

Civil Engineering Technical Electives – Select a minimum of 15 credits

Select a minimum of 9 credits from the Engineering Technical Electives; a maximum of 6 credits may be selected from the Additional Technical Electives. Only 3 credits of a 4- or 5-credit course will apply toward this requirement.

Code	Title	Credits
Engineering Technical Electives – Select 9-15 credits from the following:		
BIOM 533/CIVE 533	Biomolecular Tools for Engineers	3
CBE 439/CIVE 439	Environmental Engineering Chemical Concepts	3
CBE 540/CIVE 540	Advanced Biological Wastewater Processing	3
CIVE 305	Intermediate AutoCAD	3
CIVE 330	Ecological Engineering	3
CIVE 413	Environmental River Mechanics	3
CIVE 423	Groundwater Engineering	3
CIVE 424/GEOL 424	Modern Gas and Oil	3
CIVE 437	Wastewater Treatment Facility Design	3
CIVE 440	Nonpoint Source Pollution	3
CIVE 442	Air Quality Engineering	3
CIVE 455	Applications in Geotechnical Engineering	3
CIVE 458	Environmental Geotechnics	3
CIVE 502	Fluid Mechanics	3
CIVE 506	Wind Effects on Structures	3
CIVE 507	Transportation Engineering	3
CIVE 508	Bridge Engineering	3
CIVE 510	Applied Hydraulic System Design	3
CIVE 511	Coastal Engineering	3
CIVE 512	Irrigation Systems Design	3
CIVE 513	Morphodynamic Modeling	3
CIVE 514	Hydraulic Structures/Systems	3
CIVE 519	Irrigation Water Management	3
CIVE 520	Physical Hydrology	3
CIVE 521	Hydrometry	3
CIVE 522	Engineering Hydrology	3
CIVE 524/WR 524	Modeling Watershed Hydrology	3
CIVE 525	Water Engineering: International Development	3
CIVE 531	Groundwater Hydrology	3
CIVE 532	Wells and Pumps	3
CIVE 538	Aqueous Chemistry	3
CIVE 541	Environmental Unit Operation-Treatment-Design	4
CIVE 544	Water Resources Planning and Management	3
CIVE 549	Drainage and Wetland Engineering	3
CIVE 550	Foundation and Retaining Wall Engineering	3
CIVE 556	Slope Stability, Seepage, and Earth Dams	3
CIVE 558	Containment Systems for Waste Disposal	3
CIVE 559	Special Topics in Geotechnical Engineering	3
CIVE 560	Advanced Mechanics of Materials	3
CIVE 561	Advanced Steel Behavior and Design	3
CIVE 562	Fundamentals of Vibrations	3
CIVE 565	Finite Element Method	3
CIVE 566	Intermediate Structural Analysis	3
CIVE 567	Advanced Concrete Design	3
CIVE 568	Design of Masonry and Wood Structures	3
CIVE 571	Pipeline Engineering and Hydraulics	3
CIVE 572	Analysis of Urban Water Systems	3
CIVE 573	Urban Stormwater Management	3
CIVE 574	Civil Engineering Project Management	3
CIVE 575	Sustainable Water and Waste Management	3
CIVE 576	Engineering Applications of GIS and GPS	3
CIVE 577	GIS in Civil and Environmental Engineering	3
CIVE 578	Infrastructure and Utility Management	3
ENGR 550/ MATH 550	Numerical Methods in Science and Engineering	3
Additional Technical Electives – Select 0-6 credits from the following:		
BC 351	Principles of Biochemistry	4
CHEM 245	Fundamentals of Organic Chemistry	4
CHEM 341	Modern Organic Chemistry I	3
CON 370	Asphalt Pavement Materials and Construction [1]	3
ERHS 446	Environmental Toxicology	3
GEOL 442	Applied Geophysics	4
GR 323/NR 323	Remote Sensing and Image Interpretation	3
LIFE 320	Ecology	3
MATH 332	Partial Differential Equations	3
MATH 369	Linear Algebra I	3
MIP 300	General Microbiology	3
NR 319	Geospatial Applications in Natural Resources	4
NR 322	Introduction to Geographic Information Systems	4
WR 304/GR 304	Sustainable Watersheds	3
A maximum of one course may be selected from the following:		
FIN 305	Fundamentals of Finance [1]	3

MGT 305	Fundamentals of Management [1]	3
MKT 305	Fundamentals of Marketing [1]	3

[1] Students may need to obtain an override or approval from the respective department to take this course.

Major Completion Map

Distinctive Requirements for Degree Program:

TO PREPARE FOR FIRST SEMESTER: The curriculum for this major assumes students enter college prepared to take calculus.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CIVE 102	Introduction to Civil and Environmental Engr	X			3
CO 150	College Composition (GT-CO2)	X		1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	X		3A	5
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 111	General Chemistry I (GT-SC2)			3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)			3A	1
CIVE 103	Engineering Graphics and Computing	X			3
MATH 161	Calculus for Physical Scientists II (GT-MA1)	X		1B	4
Arts and Humanities				3B	3
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II				3
CIVE 202	Numerical Modeling and Optimization	X			3
CIVE 260	Engineering Mechanics-Statics	X			3
MATH 261	Calculus for Physical Scientists III	X			4
Science Technical Elective (See List on Major Requirements Tab)					3
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
CIVE 203	Engineering Systems and Decision Analysis	X			3
CIVE 261	Engineering Mechanics-Dynamics	X			3
CIVE 360	Mechanics of Solids	X			3
MECH 237	Introduction to Thermal Sciences	X			3
Historical Perspectives				3D	3
Social and Behavioral Sciences				3C	3
	Total Credits				18

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
CIVE 300	Fluid Mechanics	X			3
CIVE 301	Fluid Mechanics Laboratory				1
CIVE 302	Evaluation of Civil Engineering Materials	X			3
CIVE 367	Structural Analysis		X		3
MATH 340	Introduction to Ordinary Differential Equations	X			4
Advanced Writing				2	3
	Total Credits				17
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
CIVE 303	Infrastructure and Transportation Systems	X			3
CIVE 322	Basic Hydrology				3
CIVE 355	Introduction to Geotechnical Engineering				3
CIVE 356	Geotechnical Engineering Laboratory				1
CIVE 467	Design of Reinforced Concrete Structures	X			3

Arts and Humanities				3B	3
CIVE 367 must be completed by the end of Semester 6.		X			
	Total Credits				16

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
CIVE 401	Hydraulic Engineering				3
CIVE 402	Senior Design Principles	X		4A,4B	3
CIVE 466	Design and Behavior of Steel Structures				3
Civil Engineering Technical Electives (See List on Major Requirements tab)					6
Diversity and Global Awareness				3E	3
	Total Credits				18

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
CIVE 403	Senior Project Design	X		4C	3
CIVE 438	Environmental Engr Concepts for Civil Engrs	X			3
Civil Engineering Technical Electives (See list on Major Requirements tab)		X			9
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				130

Major in Environmental Engineering

Environmental engineers design solutions that prevent future pollution as well as correct existing pollution problems. The undergraduate curriculum in Environmental Engineering is based on a strong foundation in physical and biological sciences, mathematics, and engineering fundamentals. The All-University Core Curriculum provides a broad background in communication, liberal arts, humanities, and social sciences. Upper-division courses address engineering applications for prevention and control of air, water, and land pollution. Required courses that are specific to the Environmental Engineering major come from several engineering and science disciplines, including organic and environmental chemistry, microbiology, hydrology, statistics, environmental toxicology, and water treatment. Technical electives provide specialization in a particular area of interest. Seniors complete the same year-long, capstone design experience as Civil Engineering majors, working in teams on real-world engineering problems.

Participation in student professional societies, other campus organizations, internships, and volunteer activities is highly recommended to foster personal growth and professional development. The Fundamentals of Engineering (FE) exam is the first step toward registration as a Professional Engineer, an important professional credential for environmental engineers. Therefore, students are strongly encouraged to take the FE exam prior to graduation. Similar to Civil Engineering majors, our graduates consistently achieve a passing rate on the FE exam that is above the national average. The educational outcomes and objectives for the Environmental Engineering program, along with additional information on this major, are given at engr.colostate.edu/ce (http://www.engr.colostate.edu/ce/undergrad.shtml). The Environmental Engineering major is accredited by the Engineering Accreditation Commission of ABET (http://abet.org).

Potential Occupations

The expansion of our population and economy, along with increased public concern and regulation of environmental quality, will contribute to the increased demand for the services of environmental engineers, both in the U.S. and abroad. Environmental engineers typically are employed in designing pollution prevention equipment and systems, designing environmental monitoring systems, implementing both government and industry environmental regulations, designing water and wastewater treatment systems, and restoring ecosystem health.

Students who obtain a Bachelor of Science in Environmental Engineering from CSU are well prepared for entry-level positions with regulatory agencies, engineering consulting firms, and environmental divisions of large corporations, particularly in the energy and manufacturing industries. Some example job titles for graduates include, but are not limited to, hydraulic engineer, water resources engineer, environmental engineer, geoenvironmental engineer, reclamation engineer, stormwater engineer, floodplain manager, groundwater engineer, hydrologist, urban/regional planner, water infrastructure engineer or manager, contract administrator, facilities engineer or manager, irrigation engineer, ecological engineer, and educator. Graduate study in a specific area of interest is highly recommended to enhance the ability to undertake more advanced technical responsibilities upon graduation.

Requirements Effective Fall 2019

Freshman

		AUCC	**Credits**
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CIVE 102	Introduction to Civil and Environmental Engr		3

CIVE 103	Engineering Graphics and Computing		3
CO 150	College Composition (GT-CO2)	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
Select four credits from the following course or course pair:			4
Group A:			
BZ 110	Principles of Animal Biology (GT-SC2)	3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	3A	
Group B:			
BZ 120	Principles of Plant Biology (GT-SC1)	3A	
Group C:			
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
	Total Credits		31

Sophomore

CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CHEM 245	Fundamentals of Organic Chemistry		4
CIVE 202	Numerical Modeling and Optimization		3
CIVE 203	Engineering Systems and Decision Analysis		3
CIVE 260	Engineering Mechanics-Statics		3
CIVE 261	Engineering Mechanics-Dynamics		3
CIVE 360	Mechanics of Solids		3
MATH 261	Calculus for Physical Scientists III		4
MECH 237	Introduction to Thermal Sciences		3
Arts and Humanities		3B	3
	Total Credits		33

Junior

CIVE 300	Fluid Mechanics		3
CIVE 301	Fluid Mechanics Laboratory		1
CIVE 322	Basic Hydrology		3
CIVE 355	Introduction to Geotechnical Engineering		3
CIVE 356	Geotechnical Engineering Laboratory		1
CIVE 438	Environmental Engr Concepts for Civil Engrs		3
CIVE 442	Air Quality Engineering		3
MATH 340	Introduction to Ordinary Differential Equations		4
MIP 300	General Microbiology		3
Select one course from the following:			3
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	
ECON 202	Principles of Microeconomics (GT-SS1)	3C	
Diversity and Global Awareness		3E	3
Advanced Writing		2	3
	Total Credits		33

Senior

CIVE 401	Hydraulic Engineering		3
CIVE 402	Senior Design Principles	4A,4B	3
CIVE 403	Senior Project Design	4C	3
CIVE 439/CBE 439	Environmental Engineering Chemical Concepts		3
CIVE 441	Water Quality Analysis and Treatment		3

ERHS 446	Environmental Toxicology		3
Arts and Humanities		3B	3
Historical Perspectives		3D	3
Engineering Technical Electives			6
Technical Electives			3
	Total Credits		33
	Program Total Credits:		130

Engineering Technical Electives – Select a minimum of 6 credits

Code	Title	Credits
BIOM 533/CIVE 533	Biomolecular Tools for Engineers	3
CBE 540/CIVE 540	Advanced Biological Wastewater Processing	3
CIVE 305	Intermediate AutoCAD	3
CIVE 330	Ecological Engineering	3
CIVE 413	Environmental River Mechanics	3
CIVE 423	Groundwater Engineering	3
CIVE 424/GEOL 424	Modern Gas and Oil	3
CIVE 437	Wastewater Treatment Facility Design	3
CIVE 440	Nonpoint Source Pollution	3
CIVE 511	Coastal Engineering	3
CIVE 512	Irrigation Systems Design	3
CIVE 513	Morphodynamic Modeling	3
CIVE 514	Hydraulic Structures/Systems	3
CIVE 521	Hydrometry	3
CIVE 522	Engineering Hydrology	3
CIVE 524/WR 524	Modeling Watershed Hydrology	3
CIVE 525	Water Engineering: International Development	3
CIVE 531	Groundwater Hydrology	3
CIVE 532	Wells and Pumps	3
CIVE 538	Aqueous Chemistry	3
CIVE 541	Environmental Unit Operation-Treatment-Design	4
CIVE 542	Water Quality Modeling	3
CIVE 544	Water Resources Planning and Management	3
CIVE 558	Containment Systems for Waste Disposal	3
CIVE 572	Analysis of Urban Water Systems	3
CIVE 574	Civil Engineering Project Management	3
CIVE 575	Sustainable Water and Waste Management	3
CIVE 576	Engineering Applications of GIS and GPS	3
CIVE 577	GIS in Civil and Environmental Engineering	3
ENGR 501	Foundations of Systems Engineering	3
ENGR 502	Engineering Project and Program Management	3
ENGR 550/ MATH 550	Numerical Methods in Science and Engineering	3

Additional Technical Electives – Select a minimum of 3 credits

Code	Title	Credits
AREC 342	Water Law, Policy, and Institutions	3
ATS 555	Air Pollution	3
ATS 560	Air Pollution Measurement	2
BZ 471	Stream Biology and Ecology	3
BZ 472	Stream Biology and Ecology Laboratory	1
BZ 474/ESS 474	Limnology	3
GR 323/NR 323	Remote Sensing and Image Interpretation	3
LIFE 320	Ecology	3
MGT 305	Fundamentals of Management	3
MGT 310	Human Resource Management	3
MGT 320	Contemporary Management Principles/ Practices	3
NR 322	Introduction to Geographic Information Systems	4
SOCR 467	Soil and Environmental Chemistry	3

Major Completion Map

Distinctive Requirements for Degree Program:

TO DECLARE MAJOR: Engineering is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the Department for more information.

TO PREPARE FOR FIRST SEMESTER: The curriculum for this major assumes students enter college prepared to take calculus. To qualify for graduation, engineering science majors must achieve a minimum 2.000 grade point average at CSU in all courses in engineering, mathematics, computer science, statistics, physics, and chemistry as well as courses taken as technical electives.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
CIVE 102	Introduction to Civil and Environmental Engr	X			3
CO 150	College Composition (GT-CO2)			1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	X		3A	5
	Total Credits				15

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 111	General Chemistry I (GT-SC2)			3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)			3A	1
CIVE 103	Engineering Graphics and Computing	X			3
MATH 161	Calculus for Physical Scientists II (GT-MA1)	X		1B	4
Select one group from the following:					4
Group A:					
BZ 110	Principles of Animal Biology (GT-SC2)			3A	
BZ 111	Animal Biology Laboratory (GT-SC1)			3A	
Group B:					
BZ 120	Principles of Plant Biology (GT-SC1)			3A	
Group C:					
LIFE 102	Attributes of Living Systems (GT-SC1)			3A	
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II				3
CHEM 114	General Chemistry Lab II				1
CIVE 202	Numerical Modeling and Optimization	X			3
CIVE 260	Engineering Mechanics-Statics	X			3
MATH 261	Calculus for Physical Scientists III				4
Arts and Humanities				3B	3
	Total Credits				17
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 245	Fundamentals of Organic Chemistry				4
CIVE 203	Engineering Systems and Decision Analysis				3
CIVE 261	Engineering Mechanics-Dynamics	X			3
CIVE 360	Mechanics of Solids				3
MECH 237	Introduction to Thermal Sciences	X			3
	Total Credits				16

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
CIVE 300	Fluid Mechanics	X			3
CIVE 301	Fluid Mechanics Laboratory				1
CIVE 355	Introduction to Geotechnical Engineering				3
CIVE 356	Geotechnical Engineering Laboratory				1
MATH 340	Introduction to Ordinary Differential Equations	X			4
Select one course from the following:					3
AREC 202	Agricultural and Resource Economics (GT-SS1)			3C	
ECON 202	Principles of Microeconomics (GT-SS1)			3C	
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
CIVE 322	Basic Hydrology		X		3
CIVE 438	Environmental Engr Concepts for Civil Engrs		X		3
CIVE 442	Air Quality Engineering				3
MIP 300	General Microbiology				3
Advanced Writing		X		2	3
Diversity and Global Awareness				3E	3
BZ 110/BZ 111 or BZ 120 or LIFE 102 must be completed by the end of Semester 6.		X			
	Total Credits				18

Senior

Semester 7		Critical	Recommended	AUCC	Credits
CIVE 401	Hydraulic Engineering				3
CIVE 402	Senior Design Principles	X		4A,4B	3
CIVE 439/ CBE 439	Environmental Engineering Chemical Concepts	X			3
ERHS 446	Environmental Toxicology	X			3
Engineering Technical Elective (See List on Requirements tab)					3
Historical Perspectives		X		3D	3
	Total Credits				18

Semester 8		Critical	Recommended	AUCC	Credits
CIVE 403	Senior Project Design	X		4C	3
CIVE 441	Water Quality Analysis and Treatment	X			3
Technical Elective (See List on Requirements Tab)		X			3
Engineering Technical Elective (See List on Requirements tab)		X			3
Arts and Humanities		X		3B	3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				130

Master of Engineering, Plan C, Civil Engineering Specialization

The Master of Engineering, Plan C, Civil Engineering Specialization focuses on enhancing the expertise of working professionals. Engineers who want to further their careers with industrial firms and governmental agencies or those who want to pursue a career in private practice should consider this degree.

Requirements Effective Summer 2015

Code	Title	Credits
Courses		
Required Courses [1]		9
CIVE Courses		12-15
Electives		
Electives		6-9
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

[1] Select courses with approval of advisor and graduate committee.

Minor in Environmental Engineering

In order to permit undergraduate students in any engineering major to take advantage of CSU's environmental expertise, the Department of Civil and Environmental Engineering offers a minor in Environmental Engineering. The minor is designed to broaden the academic background of undergraduate engineering students seeking a career in environmental fields, and to provide fundamentals required to pursue a graduate degree in environmental engineering or related fields.

Requirements Effective Fall 2019

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

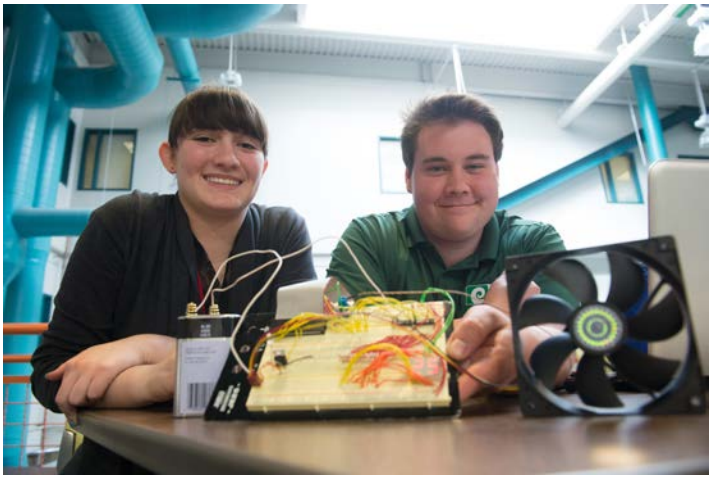
Code	Title	Credits
Required Courses		
Select 9 credits from the following:		9
CIVE 438	Environmental Engr Concepts for Civil Engrs [1]	
CIVE 439/CBE 439	Environmental Engineering Chemical Concepts	
CIVE 440	Nonpoint Source Pollution	
CIVE 442	Air Quality Engineering	
Elective Courses		
Select 12 credits from the following, of which at least 3 credits must be upper-division:		12
ATS 350	Introduction to Weather and Climate	
ATS 351	Introduction to Weather and Climate Lab	
BC 351	Principles of Biochemistry	
BZ 471	Stream Biology and Ecology	
BZ 472	Stream Biology and Ecology Laboratory	
CHEM 245	Fundamentals of Organic Chemistry	
CHEM 246	Fundamentals of Organic Chemistry Laboratory	
CHEM 341	Modern Organic Chemistry I	
CHEM 345	Organic Chemistry I	
CIVE 330	Ecological Engineering	
CIVE 413	Environmental River Mechanics	
CIVE 423	Groundwater Engineering	

CIVE 437	Wastewater Treatment Facility Design
CIVE 440	Nonpoint Source Pollution [2]
CIVE 442	Air Quality Engineering [2]
CIVE 455	Applications in Geotechnical Engineering
ERHS 446	Environmental Toxicology
LIFE 102	Attributes of Living Systems (GT-SC1)
LIFE 320	Ecology
MECH 463	Building Energy Systems
MIP 300	General Microbiology
MIP 432/ESS 432	Microbial Ecology
PHIL 345	Environmental Ethics
Program Total Credits:	21

[1] Students in the Civil Engineering major cannot use CIVE 438 for credit in the minor.

[2] May be allowed if not taken as a required course.

Department of Electrical and Computer Engineering



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Professor Anthony Maciejewski, Department Head
Courtney Johnsrud, Academic Advisor
Karen Ungerer, Academic Advisor
Katya Stewart-Sweeney, Graduate Advisor

Undergraduate

Majors

- Major in Computer Engineering
- Major in Electrical Engineering
  - Electrical Engineering Concentration
  - Lasers and Optical Engineering Concentration
- Major in Biomedical Engineering combined with Electrical Engineering, Electrical Engineering Concentration
- Major in Biomedical Engineering combined with Electrical Engineering, Lasers and Optical Engineering Concentration

Graduate

Graduate Programs in Electrical and Computer Engineering

Graduate programs leading to the Master of Science, Master of Engineering (Electrical Engineering and Computer Engineering specializations), and Doctor of Philosophy degrees are offered in several areas. Online Master of Engineering degrees in Electrical Engineering and Computer Engineering are also available. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Electrical and Computer Engineering (http://www.engr.colostate.edu/ece) Department (http://www.engr.colostate.edu/ece).

Certificates

- Computer Systems Engineering
- Embedded Systems
- Power and Energy

Master's Programs

- Master of Science in Computer Engineering, Plan A
- Master of Science in Computer Engineering, Plan B
- Master of Science in Electrical Engineering, Plan A
- Master of Science in Electrical Engineering, Plan B
- Master of Engineering, Plan C, Computer Engineering Specialization
- Master of Engineering, Plan C, Electrical Engineering Specialization

Ph.D.

- Ph.D in Computer Engineering
- Ph.D. in Electrical Engineering

Courses

Electrical and Computer Engineering (ECE)

ECE 102 Digital Circuit Logic Credits: 4 (3-2-0)
Course Description: Fundamentals of digital circuit logic, including Boolean algebra; Karnaugh maps; multiplexers, decoders, ROMS, PLAS, flip-flops, counters; sequential networks; and state tables.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ECE 103 DC Circuit Analysis Credits: 3 (2-2-0)
Course Description: Basic DC circuit analysis. Use of scientific-oriented software to solve problems and analyze small projects.
Prerequisite: MATH 160 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ECE 202 Circuit Theory Applications Credits: 4 (3-3-0)
Course Description: Basic circuit analysis techniques and applications to engineering design problems.
Prerequisite: ECE 103 with a minimum grade of C and MATH 161 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ECE 204 Introduction to Electrical Engineering Credits: 3 (3-0-0)
Course Description: Basic analog and digital circuits and systems; introduction to electromechanical devices.
Prerequisite: MATH 161 and PH 142.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 251 Introduction to Microprocessors Credits: 4 (3-3-0)
Course Description: Microprocessor organization, assembly language, I/O techniques, real-time interfaces, applications, hardware/software.
Prerequisite: ECE 102 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ECE 303 Introduction to Communications Principles Credits: 3 (3-0-0)
Also Offered As: STAT 303.
Course Description: Basic concepts in design and analysis of communication systems.
Prerequisite: MATH 340, may be taken concurrently and MATH 261 with a minimum grade of C.
Registration Information: Sections may be offered: Online. Credit not allowed for both ECE 303 and STAT 303.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 311 Linear System Analysis I Credits: 3 (3-0-0)
Course Description: Continuous and discrete time signals and systems representations in time and frequency domain; time convolution.
Prerequisite: (ECE 202 with a minimum grade of C and MATH 340 with a minimum grade of C and ECE 331, may be taken concurrently) and (ECE 341, may be taken concurrently or ECE 451, may be taken concurrently).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 312 Linear System Analysis II Credits: 3 (3-0-0)
Course Description: Laplace and Z transforms, applications to modulation, filtering and sampling, state space representation.
Prerequisite: ECE 311 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 325 Telecommunication Networks Credits: 3 (3-0-0)
Course Description: Principle technologies that support data and voice communications.
Prerequisite: MATH 141 or MATH 155 or MATH 160.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 331 Electronics Principles I Credits: 4 (3-3-0)
Course Description: Discrete component semiconductor devices, characteristics and applications. Rectifier circuits, single-stage and multi-stage amplifiers.
Prerequisite: (ECE 202 with a minimum grade of C and ECE 311, may be taken concurrently and PH 142 with a minimum grade of C and MATH 340 with a minimum grade of C) and (ECE 341, may be taken concurrently or ECE 451, may be taken concurrently).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ECE 332 Electronics Principles II Credits: 4 (3-3-0)
Course Description: Discrete and integrated-circuit amplifiers-frequency response, negative feedback; digital logic circuits.
Prerequisite: ECE 331 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ECE 341 Electromagnetic Fields and Devices I Credits: 3 (3-0-0)
Course Description: Basic concepts of electrostatic and magnetostatic fields.
Prerequisite: PH 142 with a minimum grade of C and MATH 340 with a minimum grade of C and ECE 202 with a minimum grade of C and ECE 311, may be taken concurrently and ECE 331, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 342 Electromagnetic Fields and Devices II Credits: 3 (3-0-0)
Course Description: Basic concepts of time varying electromagnetic fields and transmission lines.
Prerequisite: ECE 341 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 395A Independent Study Credits: Var[1-6] (0-0-0)
Course Description: Development and implementation of a project in an Electrical and Computer Engineering field of special interest under the supervision of a faculty member.
Prerequisite: None.
Registration Information: Contact department for registration. May be taken up to 6 times for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 395B Independent Study: Open Option Project Credits: Var[1-6] (0-0-0)
Course Description: Students will work on an array of different electrical and computer engineering projects independently or under the guidance of industry mentors. Projects will be initiated by students or outside sources and will consist of small-scale service/outreach projects or market-driven projects that simulate a business environment.
Prerequisite: None.
Registration Information: Contact department for registration. May be taken up to 6 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 395C Independent Study : Vertically Integrated Project Credits: Var[1-6] (0-0-0)
Course Description: Explore and develop comprehensive applications of electrical and computer engineering technologies as a member of a team, especially as they relate to active research areas of CSU faculty members.
Prerequisite: None.
Registration Information: Contact department for registration. May be taken up to 6 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 401 Senior Design Project I Credits: 3 (1-4-0)
Course Description: Advanced project, seminar series, formal written report, and oral presentation.
Prerequisite: (CS 320 with a minimum grade of C or ECE 332 with a minimum grade of C) and (ECE 312 with a minimum grade of C or PH 314 with a minimum grade of C and PH 353 with a minimum grade of C) and (ECE 342 with a minimum grade of C or ECE 452 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ECE 402 Senior Design Project II Credits: 3 (1-4-0)
Course Description: Advanced project, formal report, and oral presentation.
Prerequisite: ECE 401.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ECE 404 Experiments in Optical Electronics Credits: 2 (1-3-0)
Course Description: Experiments in optical electronics and lasers.
Prerequisite: None.
Registration Information: Must have concurrent registration in ECE 441. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 411 Control Systems Credits: 4 (3-3-0)
Course Description: Control system analysis and design for linear systems: stability and performance; time and frequency domain techniques.
Prerequisite: ECE 312 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 412 Digital Control and Digital Filters Credits: 3 (3-0-0)
Course Description: FIR and IIR digital filter design, analog and digital invariance and direct digital control algorithms, hybrid systems analysis.
Prerequisite: ECE 411.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 421 Telecommunications I Credits: 3 (3-0-0)
Course Description: Digital communication (source coding; modulation and detection; channel coding), analog communication (modulation).
Prerequisite: (ECE 303 with a minimum grade of C or STAT 303 with a minimum grade of C) and (ECE 312 with a minimum grade of C).
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 430 Fourier and Wavelet Analysis with Apps Credits: 3 (3-0-0)
Also Offered As: MATH 430.
Course Description: Fourier analysis and transforms, FFTs; sampling theorems, computational algorithms; wavelets; applications to communication, imaging, and compression.
Prerequisite: MATH 340 or MATH 345.
Registration Information: Credit not allowed for both MATH 430 and ECE 430.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 431 Biomedical Signal and Image Processing Credits: 3 (3-0-0)
Also Offered As: BIOM 431.
Course Description: Principles, features and mathematical processing of biomedical signals and images including interference and noise filtering and feature enhancement.
Prerequisite: (ECE 303 with a minimum grade of C or STAT 303 with a minimum grade of C) and (ECE 311 with a minimum grade of C and PH 142 with a minimum grade of C).
Registration Information: Credit not allowed for both BIOM 431 and ECE 431.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 441 Optical Electronics Credits: 3 (3-0-0)
Course Description: Concepts of modern physics, optical properties of atoms, light sources, lasers, optical detectors, optical cavities, and optical fiber transmission.
Prerequisite: ECE 342 with a minimum grade of C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 442 Numerical Algorithms for VLSI Modeling Credits: 4 (3-3-0)
Course Description: Provide the foundational knowledge of numerical algorithms for modeling and simulations of high speed VLSI circuits.
Prerequisite: ECE 312 with a minimum grade of C and ECE 332 with a minimum grade of C and ECE 342 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 444 Antennas and Radiation Credits: 3 (3-0-0)
Course Description: Retarded potential theory, antenna arrays, long wire antennas, dipoles, aperture antennas, receiving antennas.
Prerequisite: ECE 342 with a minimum grade of C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 450 Digital System Design Laboratory Credit: 1 (0-3-0)
Course Description: Small digital circuits are designed and simulated using very high speed hardware description language and synthesis tools.
Prerequisite: None.
Registration Information: Must have concurrent registration in ECE 451.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 451 Digital System Design Credits: 3 (3-0-0)
Course Description: State machines with PLAs as controllers and small computers; timing and race elimination considerations; state and microprogramming implementation.
Prerequisite: ECE 102 with a minimum grade of C and ECE 202 with a minimum grade of C.
Registration Information: Concurrent registration in ECE 450.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 452 Computer Organization and Architecture Credits: 3 (3-0-0)
Course Description: CPU design; microarchitecture; data path and control path; pipelining; memory system; I/O system; program optimization by system software/hardware.
Prerequisite: ECE 251 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 455 Introduction to Robot Programming/Simulation Credits: 3 (3-0-0)
Course Description: Fundamentals of simulating and programming of workcells that include robots and other articulated objects.
Prerequisite: CS 155 with a minimum grade of C and CS 156 with a minimum grade of C and CS 157 with a minimum grade of C or CS 163 with a minimum grade of C or CS 164 with a minimum grade of C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 456 Computer Networks Credits: 4 (3-3-0)
Course Description: Circuit/packet switching, protocols, LAN/MAN, TCP/IP, error correction, wireless LANS, mobile networks.
Prerequisite: (CS 163 with a minimum grade of C or CS 164 with a minimum grade of C or CS 157 with a minimum grade of C and CS 155 with a minimum grade of C and CS 156 with a minimum grade of C) and (ECE 251 with a minimum grade of C) and (ECE 303 with a minimum grade of C or STAT 303 with a minimum grade of C) and (ECE 311 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 457 Fourier Optics Credits: 3 (3-0-0)
Course Description: Introduction to optical systems for signal and information processing with emphasis on Fourier optics.
Prerequisite: ECE 311 with a minimum grade of C and ECE 342 with a minimum grade of C.
Registration Information: Credit not allowed for both ECE 457 and ECE 502.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 461 Power Systems Credits: 3 (3-0-0)
Course Description: Multi-phase power systems; power generation, transformer design, power distribution, power costs.
Prerequisite: ECE 332 with a minimum grade of C and ECE 462 with a minimum grade of C, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 462 Power Systems Laboratory Credit: 1 (0-3-0)
Course Description: Set of labs designed to enhance students' understanding of power systems.
Prerequisite: ECE 332 with a minimum grade of C and ECE 461 with a minimum grade of C, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 465 Electrical Energy Generation Technologies Credits: 3 (3-0-0)
Course Description: Various electrical energy generation alternatives. Comparisons based on cost, reliability, availability and environmental impact.
Prerequisite: ECE 202 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 466 Integrated Lighting Systems Credits: 3 (3-0-0)
Course Description: Technical underpinnings of light sources, their associated heat sink fixtures and power electronics drivers.
Prerequisite: ECE 331.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 471A Semiconductor Physics Credit: 1 (1-0-0)
Course Description: Fundamentals of semiconductor electron, hole states and motion: bandgap, effective mass, carrier density, Fermi level, doping, drift and diffusion.
Prerequisite: (MATH 340 or MATH 345) and (PH 142).
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 471B Semiconductor Junctions Credit: 1 (1-0-0)
Course Description: Quantitative analysis of field, carrier and current distributions in pn and metal-semiconductor junctions.
Prerequisite: ECE 331 with a minimum grade of C and ECE 471A, may be taken concurrently.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 495A Independent Study Credits: Var[1-6] (0-0-0)
Course Description: Development and implementation of a project in an electrical and computer engineering field of special interest under the supervision of a faculty member.
Prerequisite: None.
Registration Information: Junior standing. Contact department for registration. May be taken up to 6 times for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 495B Independent Study: Open Option Project Credits: Var[1-6] (0-0-0)
Course Description: Students will work on an array of different electrical and computer engineering projects independently or under the guidance of industry mentors. Projects will be initiated by students or outside sources and will consist of small-scale service/outreach projects or market-driven projects that simulate a business environment.
Prerequisite: None.
Registration Information: Junior standing. Contact department for registration. May be taken up to 6 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 495C Independent Study: Vertically Integrated Projects Credits: Var[1-6] (0-0-0)
Course Description: Explore and develop comprehensive applications of electrical and computer engineering technologies as a member of a team, especially as they relate to active research areas of CSU faculty members.
Prerequisite: None.
Registration Information: Junior standing. Contact department for registration. May be taken up to 6 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 502 Advanced Fourier Optics Credits: 4 (3-0-1)
Course Description: Introduction to optical systems for signal and information processing with emphasis on Fourier optics. Engineering design principles, models, and computational techniques for forward optical imaging and optical image reconstruction.
Prerequisite: ECE 311 with a minimum grade of C and ECE 342 with a minimum grade of C and MATH 340 with a minimum grade of C.
Registration Information: Junior standing. Must register for lecture and recitation. Credit not allowed for both ECE 457 and ECE 502.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 503 Ultrafast Optics Credits: 3 (3-0-0)
Course Description: Principles and theory behind ultrashort pulse generation, amplification, and manipulation.
Prerequisite: (ECE 341) and (ECE 342 or ECE 343).
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 504 Physical Optics Credits: 3 (3-0-0)
Course Description: Classical optics from first principles; basic electromagnetic theory to wave and geometric guides.
Prerequisite: ECE 342.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 505 Nanostructures: Fundamentals and Applications Credits: 3 (3-0-0)
Course Description: Fundamentals of quantum confinement; nanostructures optical properties; fabrication and characterization.
Prerequisite: ECE 342 and PH 353.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 506 Optical Interferometry and Laser Metrology Credits: 3 (3-0-0)
Course Description: High resolution metrology techniques utilizing and interferometric sensors using lasers and other light sources.
Prerequisite: ECE 342 and ECE 441.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 507 Plasma Physics and Applications Credits: 3 (3-0-0)
Course Description: Fundamental principles and industrial applications of plasmas.
Prerequisite: ECE 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 508 Introduction to Power System Markets Credits: 3 (3-0-0)
Also Offered As: ENGR 508.
Course Description: Deregulated electrical power systems, system security, investments in generation and transmission, ancillary services, and nodal pricing.
Prerequisite: ECE 461.
Registration Information: Credit not allowed for both ECE 508 and ENGR 508. Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 509 Signal Processing for Power Systems Credits: 3 (3-0-0)
Also Offered As: ENGR 509.
Course Description: Signal processing tools for analyzing power systems, voltage frequency, magnitude variations, unbalance, waveform distortion.
Prerequisite: ECE 312 and ECE 461.
Registration Information: Credit not allowed for both ECE 509 and ENGR 509. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 510 Wide-Area Monitoring for Power Systems Credits: 3 (3-0-0)
Course Description: WAMS for modern power grid including signal processing, communications and networking techniques in WAMS/WAMS applications.
Prerequisite: ECE 312 with a minimum grade of C and ECE 461 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 511 Global Navigation Satellite System Receivers Credits: 3 (3-0-0)
Course Description: Fundamentals of global navigation satellite systems (GNSS) receivers and software-based implementation of GNSS receiver functions.
Prerequisite: ECE 312 with a minimum grade of C and ECE 411, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 512 Digital Signal Processing Credits: 3 (3-0-0)
Course Description: Discrete time signals and systems, digital filter design and implementation, fast algorithms, quantization effects.
Prerequisite: ECE 312 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 513 Digital Image Processing Credits: 3 (3-0-0)
Course Description: Image acquisition and display systems, image enhancement, restoration and encoding, image analysis; real-life applications.
Prerequisite: (ECE 303 with a minimum grade of C or STAT 303 with a minimum grade of C) and (ECE 312 with a minimum grade of C).
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 514 Applications of Random Processes Credits: 3 (3-0-0)
Course Description: Bit-error rates, signal-to-noise power ration, signal detection, signal estimation, Wiener filter, application.
Prerequisite: (ECE 303 with a minimum grade of C or STAT 303 with a minimum grade of C) and (ECE 312 with a minimum grade of C).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 515 Satellite Navigation Systems Engineering Credits: 3 (3-0-0)
Course Description: Fundamentals of GPS, satellite orbits, ground monitoring and control, receiver systems, measurement errors and correction techniques, and position, velocity, and time calculations.
Prerequisite: (CS 163 with a minimum grade of C or CS 164 with a minimum grade of C) and (ECE 311 with a minimum grade of C and MATH 261 with a minimum grade of C and PH 142 with a minimum grade of C).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 516 Information Theory Credits: 3 (3-0-0)
Course Description: Information measures and their properties; lossless data compression; channel capacity; channel coding theorem; rate distortion theorem.
Prerequisite: (ECE 303 or STAT 303) and (ECE 421).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 517 Advanced Optical Imaging Credits: 3 (3-0-0)
Also Offered As: BIOM 517.
Course Description: Engineering design principles of advanced optical imaging techniques and image formation theory.
Prerequisite: ECE 342 or MATH 340 or MATH 345.
Registration Information: Credit allowed for only one of the following: BIOM 517, BIOM 581B7, ECE 517 or ECE 581B7.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 518 Biophotonics Credits: 3 (3-0-0)
Also Offered As: BIOM 518.
Course Description: Engineering design principles of optical instrumentation for medical diagnostics. Light propagation and imaging in biological tissues.
Prerequisite: ECE 342 or ECE 457 or MATH 340 or MATH 345.
Registration Information: Credit allowed for only one of the following: BIOM 518, BIOM 581A9, ECE 518 or ECE 581A9.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 520 Optimization Methods-Control & Communication Credits: 3 (3-0-0)
Course Description: Linear and nonlinear optimization theory and methods; applications in systems, control, and communication.
Prerequisite: (MATH 229 or MATH 369) and (MATH 317).
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 521 Satellite Communication Credits: 3 (3-0-0)
Course Description: Principles of satellite communication systems engineering.
Prerequisite: ECE 421.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 526 Biological Physics Credits: 3 (3-0-0)
Also Offered As: BIOM 526.
Course Description: Mathematical and physical modeling of biological systems. Mass transport in cellular environments. Electrical/mechanical properties of biomolecules.
Prerequisite: (MATH 340 or MATH 345) and (PH 122 or PH 142).
Registration Information: Credit not allowed for both BIOM 526 and ECE 526. Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 527A Biosensing: Cells as Circuits Credit: 1 (1-0-0)
Also Offered As: BIOM 527A.
Course Description: Treatment of biological cells as circuits and their electrical time-dependent function and frequency-dependent impedance. Topics include the Hodgkin–Huxley circuit model, diffusion equation, and modeling action potential propagation.
Prerequisite: (BIOM 101 or LIFE 102) and (CHEM 111) and (MATH 340 or MATH 345) and (PH 142).
Registration Information: Junior standing. This is a partial semester course. Credit allowed for only one of the following: BIOM 527A, BIOM 581B1, ECE 527A, or ECE 581B1.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 527B Biosensing: Signal and Noise in Biosensors Credit: 1 (1-0-0)
Also Offered As: BIOM 527B.
Course Description: Quantitative treatment of concepts of noise, interference and signal including noise types and spectra, filtering, and limitations imposed by noise. Example applications to Biosensors.
Prerequisite: (MATH 340, may be taken concurrently or MATH 345, may be taken concurrently) and (PH 142).
Registration Information: Junior standing. This is a partial semester course. Credit allowed for only one of the following: BIOM 527B, BIOM 581B2, ECE 527B, or ECE 581B2.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 527C Biosensing: Sensor Circuit Fundamentals Credit: 1 (1-0-0)
Also Offered As: BIOM 527C.
Course Description: Introduction to circuit concepts used in sensors, including review of basic circuit elements of resistors, capacitors, and MOS (Metal-Oxide-Semiconductor transistors) elements. Fundamentals of the application of MOS circuits for signal conditioning and amplification and how sensor's backend signal processing is carried out after the sensor signal transduction stage.
Prerequisite: (BIOM 101 or LIFE 102) and (MATH 340, may be taken concurrently or MATH 345, may be taken concurrently) and (PH 142).
Registration Information: Junior standing. This is a partial semester course. Credit allowed for only one of the following: BIOM 527C, BIOM 581B3, ECE 527C, or ECE 581B3.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 527D Biosensing: Electrochemical Sensors Credit: 1 (1-0-0)
Also Offered As: BIOM 527D.
Course Description: Introduction to the electrochemistry, and applications of electrochemical methods, used for detection of certain classes of chemicals and molecules.
Prerequisite: (BIOM 101 or LIFE 102) and (CHEM 111) and (MATH 255 or MATH 261) and (PH 142).
Registration Information: Junior standing. This is a partial semester course. Credit allowed for only one of the following: BIOM 527D, BIOM 581B5, ECE 527D, or ECE 581B5.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 527E Biosensing: Affinity Sensors Credit: 1 (1-0-0)
Also Offered As: BIOM 527E.
Course Description: Fundamentals of affinity sensor application and design, including optical and electrical approaches and technologies.
Prerequisite: (BIOM 101 or LIFE 102) and (CHEM 111) and (MATH 340, may be taken concurrently or MATH 345, may be taken concurrently) and (PH 142).
Registration Information: Junior standing. This is a partial semester course. Credit allowed for only one of the following: BIOM 527E, BIOM 581B4, ECE 527E, or ECE 581B4.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 527F Biosensing: Biophotonic Sensors Using Refractive Index Credit: 1 (1-0-0)
Also Offered As: BIOM 527F.
Course Description: Operating principles of optical biosensors based on changes in refractive index, such as thin films, ring-resonators, Mach-Zehnder interferometers, and other evanescent wave sensors. Basic supporting optical concepts, including thin-film interference, optical waveguides and evanescent waves.
Prerequisite: (BIOM 527E or ECE 527E) and (MATH 340, may be taken concurrently or MATH 345, may be taken concurrently) and (PH 142).
Registration Information: Junior standing. This is a partial semester course. Credit allowed for only one of the following: BIOM 527F, BIOM 581B6, ECE 527F, or ECE 581B6.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 532 Dynamics of Complex Engineering Systems Credits: 3 (3-0-0)
Also Offered As: ENGR 532.
Course Description: Higher-level behavior and issues that emerge from interaction between components in complex socio-technical systems.
Prerequisite: ENGR 501, may be taken concurrently or ECE 501, may be taken concurrently.
Registration Information: Credit not allowed for both ECE 532 and ENGR 532. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 534 Analog Integrated Circuit Design Credits: 3 (3-0-0)
Course Description: Design methods for state-of-the-art analog integrated circuits including CMOS op-amps, comparators, and phase-locked loops.
Prerequisite: ECE 332 with a minimum grade of C.
Registration Information: Must have concurrent registration in ECE 535. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 535 Analog Integrated Circuit Laboratory Credit: 1 (0-2-0)
Course Description: Analog integrated circuits are designed and simulated using modern software tools.
Prerequisite: None.
Registration Information: Must have concurrent registration in ECE 534. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 536 RF Integrated Circuit Design Credits: 3 (3-0-0)
Course Description: Design of state-of-the-art ICs for RF applications including CMOS low-noise amplifiers, voltage-controlled oscillators, mixers and power amplifiers.
Prerequisite: ECE 332.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 537 Biomedical Signal Processing Credits: 3 (3-0-0)
Also Offered As: BIOM 537.
Course Description: Measuring, manipulating, and interpreting biomedical signals.
Prerequisite: MATH 340 or ECE 311 or STAT 303.
Registration Information: Credit not allowed for both ECE 537 and BIOM 537.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 538 Design/Analysis of Analog Digital Interface Credits: 4 (3-3-0)
Course Description: Topics of interface circuit designs analog and digital interfaces. Basic concept of designing and analyzing analog and digital interface circuits.
Prerequisite: ECE 312 with a minimum grade of C and ECE 332 with a minimum grade of C and ECE 451 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 540 Computational Electromagnetics Credits: 3 (3-0-0)
Course Description: Computational techniques for practical applications in electromagnetic fields, devices, scattering, propagation, and radiation.
Prerequisite: ECE 342.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 541 Applied Electromagnetics Credits: 3 (3-0-0)
Course Description: High- and low-frequency electromagnetics, wave propagation, radiation, and scattering, wireless and guided-wave systems, bioelectromagnetics.
Prerequisite: ECE 342.
Registration Information: Credit not allowed for both ECE 541 and ECE 580B5.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 542 Parallel CAD Algorithms for IC Design Credits: 3 (3-0-0)
Course Description: Cutting edge CAD paradigms for fast simulation of massively coupled circuits in nanoscale integrated circuits.
Prerequisite: ECE 311 with a minimum grade of C and ECE 331 with a minimum grade of C.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 543 Accelerator Engineering Credits: 3 (3-0-0)
Course Description: Development and uses of accelerators and storage rings. Principles of electric and magnetic fields used to bend, focus and accelerate charged particles.
Prerequisite: ECE 342 with a minimum grade of C or PH 351 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 546 Laser Fundamentals and Devices Credits: 3 (3-0-0)
Course Description: Amplification of light, laser excitation mechanisms, laser devices, characteristics and design.
Prerequisite: ECE 441.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 548 Microwave Theory and Component Design Credits: 3 (3-0-0)
Course Description: Fundamentals of microwave engineering, components, devices, and measurements.
Prerequisite: ECE 342 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 549 Radar Systems and Design Credits: 3 (3-0-0)
Course Description: Fundamental ideas of radar operation and basic design of various radar types including current topics.
Prerequisite: ECE 444.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 551 Microwave and Beam Instrumentation Lab Credits: 3 (2-3-0)
Course Description: Particle beam instrumentation, microwave measurements and magnetic measurements used in the design and diagnoses of charged particle beam accelerators.
Prerequisite: ECE 342 with a minimum grade of C or PH 351 with a minimum grade of C.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 552 Pulsed Power and Intense Beams Credits: 3 (3-0-0)
Course Description: Engineering concepts of high-power pulsed electronics and RF systems; how to produce and utilize intense beams. The conversion of electrical power.
Prerequisite: ECE 341 with a minimum grade of C or ECE 342 with a minimum grade of C or PH 351 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 554 Computer Architecture Credits: 3 (3-0-0)
Course Description: Fundamentals of computer design, multiprocessors and thread-level parallelism, storage systems, and interconnection networks and clusters.
Prerequisite: ECE 452 or CS 470.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 555 Advanced Robotics–Redundancy & Optimization Credits: 3 (3-0-0)
Course Description: Advanced analysis, design, and control of kinematically redundant articulated objects, including both robotic and biological systems.
Prerequisite: ECE 455 and MATH 369.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 560 Foundations of Fine-Grain Parallelism Credits: 4 (3-2-0)
Also Offered As: CS 560.
Course Description: Programming novel architectures; performance tuning; automatic parallelization; program transformation; polyhedral model; equational programming.
Prerequisite: CS 475.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both ECE 560 and CS 560.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 561 Hardware/Software Design of Embedded Systems Credits: 4 (3-3-0)
Also Offered As: CS 561.
Course Description: Embedded systems design including system level modeling, design space exploration, hardware-software partitioning, high level synthesis.
Prerequisite: CS 270 or CS 470 or ECE 251 or ECE 452.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CS 561 and ECE 561. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 562 Power Electronics I Credits: 3 (3-0-0)
Course Description: Switch mode and resonant converters, control using switch averaged dynamic models, modeling of all circuit components including sources, loads, and switches.
Prerequisite: ECE 332 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 565 Electrical Power Engineering Credits: 3 (3-0-0)
Also Offered As: ENGR 565.
Course Description: Analysis of power systems in terms of current, voltage, and active/reactive power; introduction of computer-aided tools for power systems.
Prerequisite: ECE 332 and ECE 342.
Registration Information: Credit not allowed for both ECE 565 and ENGR 565. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 566 Grid Integration of Wind Energy Systems Credits: 3 (3-0-0)
Course Description: Aspects of integration of wind energy conversion systems (WECS) to electric power transmission grids.
Prerequisite: ECE 461 and ECE 462 or ECE 565.
Registration Information: Credit not allowed for both ECE 566 and ENGR 566. Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 569 Micro-Electro-Mechanical Devices Credits: 3 (3-0-0)
Also Offered As: MECH 569.
Course Description: Micro-electro-mechanical processes and applications in sensors, optics, and structures.
Prerequisite: ECE 331 with a minimum grade of C or MECH 344 with a minimum grade of C.
Registration Information: Credit not allowed for both ECE 569 and MECH 569. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 571 VLSI System Design Credits: 3 (3-0-0)
Course Description: Design of integrated circuits at the system level including cell design, digital systems, parallel architecture, systolic arrays.
Prerequisite: ECE 451.
Registration Information: Must have concurrent registration in ECE 575.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 572 Semiconductor Transistors Credit: 1 (1-0-0)
Course Description: Quantitative analysis of electric field, carrier and current distributions in MOSFETs and bipolar junction transistors; scaling, non-idealities.
Prerequisite: ECE 331 with a minimum grade of C and ECE 471B, may be taken concurrently.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 573 Semiconductor Optoelectronics Laboratory Credits: 3 (1-4-0)
Course Description: Experimental characterization techniques for semiconductor optoelectronic devices and design and testing of related electronic circuits.
Prerequisite: ECE 471B.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 574 Optical Properties in Solids Credits: 3 (3-0-0)
Course Description: Light propagation and interaction with materials; linear and non-linear optical properties.
Prerequisite: ECE 441 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 575 Experiments in VLSI System Design I Credit: 1 (0-3-0)
Course Description: Set of labs designed to enhance students' understanding of the materials in ECE 571.
Prerequisite: ECE 451.
Registration Information: Must have concurrent registration in ECE 571.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 587 Internship Credits: Var[1-6] (0-0-0)
Course Description: Internship experience in Electrical or Computer Engineering.
Prerequisite: ECE 312 or ECE 456.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ECE 604 Nonlinear Optics Credits: 3 (3-0-0)
Course Description: Principles of nonlinear optics, symmetry properties, multiple order nonlinear phenomenon, and nonlinear spectroscopy.
Prerequisite: ECE 504 and PH 451.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 611 Nonlinear Control Systems Credits: 3 (3-0-0)
Course Description: Controller analysis and design for nonlinear systems.
Prerequisite: ECE 412.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 612 Robust Control Systems Credits: 3 (3-0-0)
Course Description: Introduction to modern robust control theory techniques for analysis and design of large-scale uncertain multivariable systems.
Prerequisite: ECE 411.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 614 Principles of Digital Communications Credits: 3 (3-0-0)
Course Description: Information theory, optimal receiver design, waveform coding, error correcting coding.
Prerequisite: ECE 514.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 622 Energy Networks and Power Distribution Grids Credits: 3 (3-0-0)
Also Offered As: ENGR 622.
Course Description: Energy networks: generation, storage, consumers. Systems approach to analysis of distribution networks and transition to intelligent grid systems.
Prerequisite: ECE 461 or ECE 508 or ENGR 508 or ECE 565 or ENGR 565.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECE 622 and ENGR 622. Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 623 Electric Power Quality Credits: 3 (3-0-0)
Also Offered As: ENGR 623.
Course Description: Interconnecting power electronic devices and renewable energy sources to power systems.
Prerequisite: ECE 461 or ECE 562.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online. Credit not allowed for both ECE 623 and ENGR 623.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 641 Electromagnetics Credits: 3 (3-0-0)
Course Description: Electrostatics, magnetostatics, boundary value problems, EM induction, quasi-statics, Maxwell's equations.
Prerequisite: ECE 342.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 642 Time Harmonic Electromagnetics Credits: 3 (3-0-0)
Course Description: Maxwell's equations, radiation, boundary value problem, dyadic Green's functions, scattering theory.
Prerequisite: ECE 641.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 643 Advanced Accelerator Engineering Credits: 3 (3-0-0)
Course Description: Advanced concepts in particle beam accelerator technology and engineering, linear accelerators and principles of intense pulsed electron ion beams.
Prerequisite: ECE 543 with a minimum grade of C.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 647 Synchrotron Rad, FELs and Hard X-Ray Optics Credits: 3 (3-0-0)
Course Description: Advanced concepts in particle beam accelerator technology and engineering, linear accelerators and principles of intense pulsed electron ion beams.
Prerequisite: ECE 341 with a minimum grade of C or ECE 342 with a minimum grade of C or PH 351 with a minimum grade of C.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 650 Extreme Ultraviolet and Soft X-Ray Radiation Credits: 3 (3-0-0)
Course Description: Fundamental principles of short wavelength electromagnetic radiation.
Prerequisite: ECE 342.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 652 Estimation and Filtering Theory Credits: 3 (3-0-0)
Course Description: Linear and Nonlinear parameter and state estimation methods; Optimal Kalman state estimation and applications.
Prerequisite: ECE 514 or STAT 525.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 653 Detection Theory Credits: 3 (3-0-0)
Course Description: Neyman-Pearson and Bayes detectors and properties, matched filter and matched subspace detectors, distributed detection, and applications.
Prerequisite: ECE 652.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECE 651 and ECE 653.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 656 Machine Learning and Adaptive Systems Credits: 3 (3-0-0)
Course Description: Adaptive system theory, statistical pattern recognition, supervised and unsupervised learning, support vector machines, manifold learning, applications.
Prerequisite: ECE 512.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 658 Internet Engineering Credits: 4 (3-3-0)
Also Offered As: CS 658.
Course Description: Link technologies, multiple access, hardware and software for internetworks routing, switching flow control, multicast, performance, and applications.
Prerequisite: ECE 456 or CS 457.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online. Credit not allowed for both ECE 658 and CS 658.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 661 Advanced Topics in Embedded Systems Credits: 4 (3-3-0)
Course Description: Embedded systems design: networks on chip, novel memory architectures, synthesis algorithms, optimization for low power, fault tolerance, security.
Prerequisite: (ECE 452) and (ECE 561 or CS 561).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 666 Topics in Robotics Credits: 3 (3-0-0)
Course Description: Recent advances in robotics, automation, and intelligent systems.
Prerequisite: ECE 455.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 670B Topics in Architecture/Systems: Performance Evaluation and Modeling Credits: Var[1-4] (0-0-0)
Also Offered As: CS 670B.
Course Description:
Prerequisite: ECE 554 or CS 570.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both CS 670B and ECE 670B.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 670C Topics in Architecture/Systems: Distributed Systems Credits: Var[1-4] (0-0-0)
Also Offered As: CS 670C.
Course Description:
Prerequisite: ECE 554 or CS 570.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both CS 670C and ECE 670C.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 670D Topics in Architecture/Systems: Architecture of Advanced Systems Credits: Var[1-4] (0-0-0)
Also Offered As: CS 670D.
Course Description:
Prerequisite: ECE 554 or CS 570.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both CS 670D and ECE 670D.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 673 Thin Film Growth Credits: 3 (3-0-0)
Course Description: Microstructures of physically vapor-deposited films; thin-film morphological development; atomistic processes of condensation, nucleation, and growth.
Prerequisite: CHEM 474 or CHEM 476 or MECH 337 or PH 361 or PH 531.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 697 Group Study Credits: Var[1-6] (0-0-0)
Also Offered As: ENGR 697.
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECE 697 and ENGR 697.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 742 Topics in Electromagnetics Credits: 3 (3-0-0)
Course Description: Applications of wave propagation and scattering to microwave radar, Doppler radar, meteorological radar applications.
Prerequisite: ECE 641.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 752 Topics in Signal Processing Credits: 3 (3-0-0)
Course Description: Adaptive filtering, spectral estimation, sonar/radar signal processing, and detection/classification schemes.
Prerequisite: (ECE 512) and (ECE 514 or STAT 525).
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 777 X-Ray Lasers Credits: 3 (3-0-0)
Course Description: Fundamentals, design, and implementation of soft X-ray lasers and X-ray optics.
Prerequisite: ECE 546.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Computer Engineering

Imagine a world without smart phones, video games, or 3D printing. Such advancements would not be possible without computer engineers. Computer Engineering students are prepared for success in today's high-tech world through stimulating coursework and unique hands-on design projects. They will learn a new way of thinking that teaches the importance of creativity and innovation in solving complex societal problems.

The Computer Engineering degree combines many aspects of electrical engineering and computer science, arming students with the knowledge to continually push the capabilities and applicability of next generation electronics and computing.

Computer Engineering students will experience the benefits of a smaller department with top-tier faculty, while enjoying the perks of a large university. Electrical and Computer Engineering (ECE) courses and research areas span a range of disciplines that include:

- Biomedical Engineering
- Communications and Signal Processing
- Computer Engineering
- Controls and Robotics
- Electric Power and Energy Systems
- Electromagnetics and Remote Sensing
- Lasers, Optics, and Applications

Career Opportunities

A field of endless possibilities, career paths for computer engineers are largely dependent on personal interests. Computer Engineering alumni hold positions ranging from designer at a start-up company to program manager for NASA. In addition to being one of the most lucrative college majors, Computer Engineering currently ranks among the top 10 majors in demand for bachelor's, master's, and doctoral degrees according to the National Association of Colleges and Employers. Almost every industry recruits Computer Engineering graduates, including the aerospace, biomedical, energy, robotics, manufacturing, and automotive industries.

Program Objectives and Outcomes

The Computer Engineering program educational objectives are designed and implemented around the following three principal attributes: mastery, innovation, and leadership.

Graduates of the Computer Engineering program will be able to:

1. Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. Communicate effectively with a range of audiences
4. Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. Acquire and apply new knowledge as needed, using appropriate learning strategies

Requirements Effective Fall 2019

In order to maintain professional standards required of practicing engineers, the Department of Electrical and Computer Engineering requires a cumulative grade point average of at least 2.000 in Electrical Engineering courses as a graduation requirement. It is the responsibility of any student who fails to maintain a 2.000 average to work with their advisor to correct grade point deficiencies. In addition, it is required that students retake any Electrical Engineering course at the 300-level or below in which they receive a grade below C.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
ECE 102	Digital Circuit Logic		4
ECE 103	DC Circuit Analysis		3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
Select one course from the following:			4
CS 163	CS1--No Prior Programming Experience		
CS 164	CS1--Prior Programming Experience		
Arts and Humanities		3B	3
Historical Perspectives		3D	3
Career Development Seminar[1]			
	Total Credits		33

Sophomore

CS 165	CS2--Data Structures		4
CS 220	Discrete Structures and their Applications		4
ECE 202	Circuit Theory Applications		4
ECE 251	Introduction to Microprocessors		4

ECE 303/STAT 303	Introduction to Communications Principles		3
MATH 261	Calculus for Physical Scientists III		4
MATH 340	Introduction to Ordinary Differential Equations		4
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	5
Career Development Seminar[1]			
	Total Credits		32

Junior

CS 253	Software Development with C++		4
CS 370	Operating Systems		3
ECE 311	Linear System Analysis I		3
ECE 312	Linear System Analysis II		3
ECE 331	Electronics Principles I		4
ECE 450	Digital System Design Laboratory		1
ECE 451	Digital System Design		3
ECE 452	Computer Organization and Architecture		3
Select one course from the following:			3-4
CS 320[2]	Algorithms--Theory and Practice		
ECE 332[3]	Electronics Principles II		
Arts and Humanities		3B	3
Career Development Seminar[1]			
	Total Credits		30-31

Senior

ECE 401	Senior Design Project I	4A,4B	3
ECE 402	Senior Design Project II	4C	3
ECE 456	Computer Networks		4
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
Select one course from the following:			3
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
Diversity and Global Awareness		3E	3
Technical Electives (See list below)			12
Elective[4]			2-3
Career Development Seminar[1]			
	Total Credits		33-34
	Program Total Credits:		129

Technical Electives

Code	Title	Credits
CS 314	Software Engineering	3
CS 320	Algorithms--Theory and Practice [5]	3
CS 356	Systems Security	3
CS 4XX Any CS course at the 400-level, excluding CS 457 and CS 470 [6]		
CS 5XX Any CS course at the 500-level		
Select any course from the following: [7]		1-3
ECE 495A	Independent Study	
ECE 495B	Independent Study: Open Option Project	
ECE 495C	Independent Study: Vertically Integrated Projects	
ECE 4XX Any ECE course at the 400-level		
ECE 5XX Any CS course at the 500-level, excluding ECE 532/ ENGR 532		
MATH 360	Mathematics of Information Security	3
MATH 450	Introduction to Numerical Analysis I	3
MATH 451	Introduction to Numerical Analysis II	3
MATH 460	Information and Coding Theory	3
MECH 564	Fundamentals of Robot Mechanics and Controls	3
STAT 421	Introduction to Stochastic Processes	3

1 Students are required to complete three Career Development Seminars: 1) Resume Writing; 2) Mock Interview or Behavior Based Interviewing; and 3) Using LinkedIn™. Completion of the required workshops may be spread over the student's four-year program.

2 CS 320 (followed by CS 453 in the senior year) is recommended for students interested in specializing in computer system design.

[3] ECE 332 is recommended for students interested in specializing in VLSI.

[4] Free elective credits can be satisfied by completing courses 100 level or above. Students use up to 3 credits of free electives to reach the required total of 129 program credits.

[5] CS 320 may count as a Technical Elective ONLY when ECE 332 is also taken. ECE 332 will be applied toward junior year requirement. The course cannot count as credit toward both requirements.

[6] CS 453 is recommended as one of the electives for students interested in specializing in computer system design.

[7] A total 3 credits of Independent Study may apply toward total degree requirements. This includes credit awarded for ECE 395A, ECE 395B, ECE 395C and ECE 495A, ECE 495B, ECE 495C combined.

Major Completion Map

Distinctive Requirements for Degree Program:

TO PREPARE FOR FIRST SEMESTER: The curriculum for this major assumes students enter college prepared to take calculus.

The ECE curriculum has been modified as part of the Revolutionizing Engineering Departments initiative (RED). Three threads run through the new curriculum: Foundations, Creativity and Professional Formation of Engineers. This new curriculum incorporates skills that engineers need beyond technical expertise, in areas like communication, ethics, social impact and interaction in large, diverse groups. The ECE department requires that students also complete the following three Career Development Seminars: 1) Resume Writing; 2) Mock Interviewing or Behavior Based Interviewing; and 3) Using LinkedIn™.

In order to maintain professional standards required of practicing engineers, the Department of Electrical and Computer Engineering requires a cumulative grade point average of at least 2.000 in Electrical Engineering courses as a graduation requirement. It is the responsibility of any student who fails to maintain a 2.000 average to work with their advisor to correct grade point deficiencies. In addition, it is required that students retake any Electrical Engineering course at the 300-level or below in which they receive a grade below C.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
ECE 102	Digital Circuit Logic	X			4
MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	4
Arts and Humanities				3B	3
Historical Perspectives			X	3D	3
Career Development Seminar(s)			X		
	Total Credits				17
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
ECE 103	DC Circuit Analysis	X			3
Select one course from the following:					4
CS 163	CS1---No Prior Programming Experience	X			
CS 164	CS1--Prior Programming Experience	X			
MATH 161	Calculus for Physical Scientists II (GT-MA1)	X		1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	X		3A	5
Career Development Seminar(s)			X		
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 165	CS2--Data Structures	X			4
ECE 251	Introduction to Microprocessors	X			4
MATH 261	Calculus for Physical Scientists III	X			4
PH 142	Physics for Scientists and Engineers II (GT-SC1)	X		3A	5
Career Development Seminar(s)			X		
	Total Credits				17
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 220	Discrete Structures and their Applications				4
ECE 202	Circuit Theory Applications	X			4
ECE 303/ STAT 303	Introduction to Communications Principles	X			3
MATH 340	Introduction to Ordinary Differential Equations	X			4

Career Development Seminar(s)			X		
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 253	Software Development with C++	X			4
ECE 311	Linear System Analysis I	X			3
ECE 331	Electronics Principles I	X			4
ECE 450	Digital System Design Laboratory	X			1
ECE 451	Digital System Design	X			3
Career Development Seminar(s)			X		
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3-4
CS 320	Algorithms--Theory and Practice	X			
ECE 332	Electronics Principles II	X			
CS 370	Operating Systems	X			3
ECE 312	Linear System Analysis II	X			3
ECE 452	Computer Organization and Architecture	X			3
Arts and Humanities			X	3B	3
Career Development Seminar(s)			X		
	Total Credits				15-16
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
ECE 401	Senior Design Project I	X		4A,4B	3
Select one course from the following:					3
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)		X	2	
JTC 300	Professional and Technical Communication (GT-CO3)		X	2	
Technical Electives (See List on Requirements Tab)		X			6
Diversity and Global Awareness				3E	3
Elective					2-3
Career Development Seminar(s)			X		
	Total Credits				17-18
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
ECE 402	Senior Design Project II	X		4C	3
ECE 456	Computer Networks	X			4
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
Technical Electives (See List on Requirements Tab)		X			6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				16
	Program Total Credits:				129

Major in Electrical Engineering

From Global Positioning Systems to electric power generation, for more than a century electrical engineers have contributed to the development of a wide array of new technologies. Electrical engineers design, develop, test, and supervise the deployment of electrical systems and electronic devices for a range of industries.

Students choose between two concentrations. The Electrical Engineering concentration covers a broad range of electrical engineering subdiscplines and allows a student to focus on their particular area of interest using technical electives. The Lasers and Optical Engineering concentration focuses on optics and waves, optical electronics, optical information processing, and communications.

Concentrations

- Electrical Engineering Concentration
- Lasers and Optical Engineering Concentration

Major in Electrical Engineering, Electrical Engineering Concentration

Imagine a world without smart phones, video games, or 3D printing. Such advancements would not be possible without electrical engineers. Electrical Engineering students are prepared for success in today's high-tech world through stimulating coursework and unique hands-on design projects. They will learn a new way of thinking that teaches the importance of creativity and innovation in solving complex societal problems.

Electrical engineers are the people who make the magic happen inside modern technologies. From self-driving cars to Fitbits to Global Positioning Systems, Electrical Engineering graduates turn ideas into reality.

Electrical Engineering students will experience the benefits of a smaller department with top-tier faculty, while enjoying the perks of a large university. Electrical and Computer Engineering (ECE) courses and research areas span a range of disciplines that include:

- Biomedical Engineering
- Communications and Signal Processing
- Computer Engineering
- Controls and Robotics
- Electric Power and Energy Systems
- Electromagnetics and Remote Sensing
- Lasers, Optics, and Applications

Career Opportunities

A field of endless possibilities, electrical engineering career paths are largely dependent on personal interests. Electrical Engineering alumni hold positions ranging from designer at a start-up company to program manager for NASA. In addition to being one of the most lucrative college majors, for the past decade Electrical Engineering ranks among the top 10 majors in demand for bachelor's, master's, and doctoral degrees, according to the National Association of Colleges and Employers. Almost every industry recruits Electrical Engineering graduates, including the aerospace, biomedical, energy, robotics, manufacturing, and automotive industries.

Program Objectives and Outcomes

The Electrical Engineering program educational objectives are designed and implemented around the following three principal attributes: mastery, innovation, and leadership.

Graduates of the Electrical Engineering program will be able to:

1. Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. Communicate effectively with a range of audiences
4. Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. Acquire and apply new knowledge as needed, using appropriate learning strategies

Requirements Effective Fall 2019

In order to maintain professional standards required of practicing engineers, the Department of Electrical and Computer Engineering requires a cumulative grade point average of at least 2.000 in ECE courses as a graduation requirement. It is the responsibility of any student who fails to maintain a 2.000 average to work with their advisor to correct grade point deficiencies. In addition, it is required that students retake any Electrical Engineering course at the 300-level or below in which they receive a grade below a C.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
ECE 102	Digital Circuit Logic		4
ECE 103	DC Circuit Analysis		3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
Select one group from the following:[1]			3-4
Group A:			
CS 155	Introduction to Unix		
CS 156	Introduction to C Programming I		
CS 157	Introduction to C Programming II		
Group B:			
CS 163 or 164	CS1---No Prior Programming Experience CS1--Prior Programming Experience		
Historical Perspectives		3D	3

Electives[2]			3-4
Career Development Seminar[3]			
	Total Credits		33
Sophomore			
CHEM 111	General Chemistry I (GT-SC2)	3A	4
ECE 202	Circuit Theory Applications		4
ECE 251	Introduction to Microprocessors		4
ECE 303/STAT 303	Introduction to Communications Principles		3
MATH 261	Calculus for Physical Scientists III		4
MATH 340	Introduction to Ordinary Differential Equations		4
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	5
Science/Math/Engineering Electives (See list below)			3
Career Development Seminar[3]			
	Total Credits		31
Junior			
ECE 311	Linear System Analysis I		3
ECE 312	Linear System Analysis II		3
ECE 331	Electronics Principles I		4
ECE 332	Electronics Principles II	4A	4
ECE 341	Electromagnetic Fields and Devices I		3
ECE 342	Electromagnetic Fields and Devices II		3
Select one course from the following:			3
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
Diversity and Global Awareness		3E	3
Science/Math/Engineering Electives (See list below)			6
Career Development Seminar[3]			
	Total Credits		32
Senior			
ECE 401	Senior Design Project I	4A,4B	3
ECE 402	Senior Design Project II	4C	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
Arts and Humanities		3B	6
Technical Electives (See list below)			18
Career Development Seminar[3]			
	Total Credits		33
	Program Total Credits:		129

Technical Electives

Code	Title	Credits
CS 314	Software Engineering	3
CS 320	Algorithms--Theory and Practice	3
CS 356	Systems Security	3
CS 370	Operating Systems	3
CS 410	Introduction to Computer Graphics	4
CS 414	Object-Oriented Design	4
CS 420	Introduction to Analysis of Algorithms	4
CS 430	Database Systems	4
CS 440	Introduction to Artificial Intelligence	4
CS 445	Introduction to Machine Learning	4
CS 453	Introduction to Compiler Construction	4
CS 455	Introduction to Distributed Systems	4
CS 475	Parallel Programming	4
CS 510	Image Computation	4
CS 520	Analysis of Algorithms	4
CS 530	Fault-Tolerant Computing	4
CS 540	Artificial Intelligence	4
CS 545	Machine Learning	4
CS 553	Algorithmic Language Compilers	4
CS 555	Distributed Systems	4

CS 556	Computer Security	4
CS 557	Advanced Networking	4
CS 575	Parallel Processing	4
ECE 4** Any ECE Course at the 400-level		
Select any course from the following:		Var.
ECE 495A	Independent Study [4]	
ECE 495B	Independent Study: Open Option Project [4]	
ECE 495C	Independent Study: Vertically Integrated Projects [4]	
ECE 5** Any ECE Course at the 500-level		
MATH 417	Advanced Calculus I	3
MATH 418	Advanced Calculus II	3
MATH 419	Introduction to Complex Variables	3
MATH 450	Introduction to Numerical Analysis I	3
MATH 451	Introduction to Numerical Analysis II	3
MATH 460	Information and Coding Theory	3
MATH 466	Abstract Algebra I	3
MATH 469	Linear Algebra II	3
MATH 470	Euclidean and Non-Euclidean Geometry	3
MATH 474	Introduction to Differential Geometry	3
MECH 564	Fundamentals of Robot Mechanics and Controls	3
PH 315	Modern Physics Laboratory	2
PH 425	Advanced Physics Laboratory	2
PH 451	Introductory Quantum Mechanics I	3
PH 452	Introductory Quantum Mechanics II	3
PH 462	Statistical Physics	3
STAT 421	Introduction to Stochastic Processes	3

Science/Math/Engineering Electives

Code	Title	Credits
BC 351	Principles of Biochemistry	4
BIOM 100	Overview of Biomedical Engineering	1
BIOM 101	Introduction to Biomedical Engineering	3
BIOM 200	Fundamentals of Biomedical Engineering	2
BMS 300	Principles of Human Physiology	4
BMS 301	Human Gross Anatomy	5
BMS 325	Cellular Neurobiology	3
BMS 345	Functional Neuroanatomy	4
BZ 310	Cell Biology	4
CBE 101	Introduction to Chemical and Biological Engr	3
CHEM 112	General Chemistry Lab I (GT-SC1)	1
CHEM 245	Fundamentals of Organic Chemistry	4
CHEM 246	Fundamentals of Organic Chemistry Laboratory	1
CIVE 102	Introduction to Civil and Environmental Engr	3
CIVE 260	Engineering Mechanics-Statics	3
CS 152	Introduction to Programming (CS0)-Python	2
CS 155	Introduction to Unix [1]	1
CS 156	Introduction to C Programming I [1]	1
CS 157	Introduction to C Programming II [1]	1
CS 165	CS2--Data Structures	4
CS 220	Discrete Structures and their Applications	4
CS 253	Software Development with C++	4
Select any course from the following:		Var.
ECE 395A	Independent Study [4]	
ECE 395B	Independent Study: Open Option Project [4]	
ECE 395C	Independent Study : Vertically Integrated Project [4]	
ENGR 300	3D Printing Lab for Engineers	1
HES 307	Biomechanical Principles of Human Movement	4
LIFE 103	Biology of Organisms-Animals and Plants	4
MATH 151	Mathematical Algorithms in Matlab I	1
MATH 229	Matrices and Linear Equations	2
MATH 235	Introduction to Mathematical Reasoning	2
MATH 317	Advanced Calculus of One Variable	3
MATH 332	Partial Differential Equations	3
MATH 360	Mathematics of Information Security	3
MATH 366	Introduction to Abstract Algebra	3
MATH 369	Linear Algebra I	3
MECH 103	Introduction to Mechanical Engineering	3
MECH 200	Introduction to Manufacturing Processes	3
MECH 237	Introduction to Thermal Sciences	3-4
or MECH 337	Thermodynamics	
MECH 303	Energy Engineering	3
MIP 300	General Microbiology	3
PH 314	Introduction to Modern Physics	4
PH 341	Mechanics	4
PH 353	Optics and Waves	4

1 CS 155,CS 156, andCS 157 count as Science/Math/Engineering electives ONLY when CS 163 or CS 164 is also taken. CS 163 or CS 164 will be applied toward the freshman year requirement.

2 Free elective credits can be satisfied by completing courses 100-level or above. Students use up to 4 credits of free electives to reach the required total of 129 program credits.

3 Students are required to complete three Career Development Seminars: 1) Resume Writing; 2) Mock Interview or Behavior Based Interviewing; and 3) Using LinkedIn™. Completion of the required workshops may be spread over the student's four-year program.

4 A total of 6 credits of Independent Study may apply toward degree requirements. This includes credit for ECE 395A, ECE 395B, ECE 395C and ECE 495A, ECE 495B, and ECE 495C combined.

Major Completion Map

Distinctive Requirements for Degree Program:

TO PREPARE FOR FIRST SEMESTER: The curriculum for this major assumes students enter college prepared to take calculus.

The ECE curriculum has been modified as part of the Revolutionizing Engineering Departments initiative (RED). Three threads run through the new curriculum: Foundations, Creativity and Professional Formation of Engineers. This new curriculum incorporates skills that engineers need beyond technical expertise, in areas like communication, ethics, social impact and interaction in large, diverse groups. The ECE department

requires that students also complete the following three Career Development Seminars: 1) Resume Writing; 2) Mock Interviewing or Behavior Based Interviewing; and 3) Using LinkedIn™.

In order to maintain professional standards required of practicing engineers, the Department of Electrical and Computer Engineering requires a cumulative grade point average of at least 2.000 in electrical engineering courses as a graduation requirement. It is the responsibility of any student who fails to maintain a 2.000 average to work with their advisor to correct grade point deficiencies. In addition, it is required that students retake any electrical engineering course at the 300-level or below in which they receive a grade below C.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
ECE 102	Digital Circuit Logic	X			4
MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	4
Historical Perspectives			X	3D	3
Career Development Seminar(s)			X		
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
ECE 103	DC Circuit Analysis	X			3
MATH 161	Calculus for Physical Scientists II (GT-MA1)	X		1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	X		3A	5
Select one group from the following:					3-4
Group A:					
CS 155	Introduction to Unix		X		
CS 156	Introduction to C Programming I		X		
CS 157	Introduction to C Programming II		X		
Group B:					
CS 163 or 164	CS1---No Prior Programming Experience CS1--Prior Programming Experience		X		
Elective					3-4
Career Development Seminar(s)			X		
	Total Credits				19

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ECE 251	Introduction to Microprocessors	X			4
MATH 261	Calculus for Physical Scientists III	X			4
PH 142	Physics for Scientists and Engineers II (GT-SC1)	X		3A	5
Science/Math/Engineering Electives (See List on Concentration Requirements Tab)			X		3
Career Development Seminar(s)			X		
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 111	General Chemistry I (GT-SC2)		X	3A	4
ECE 202	Circuit Theory Applications	X			4
ECE 303/ STAT 303	Introduction to Communications Principles	X			3
MATH 340	Introduction to Ordinary Differential Equations	X			4
Career Development Seminar(s)			X		
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
ECE 311	Linear System Analysis I	X			3
ECE 331	Electronics Principles I	X			4
ECE 341	Electromagnetic Fields and Devices I	X			3
Select one course from the following:					3

CO 301B	Writing in the Disciplines: Sciences (GT-CO3)		X	2	
JTC 300	Professional and Technical Communication (GT-CO3)		X	2	
Science/Math/Engineering Electives (See List on Concentration Requirements Tab)			X		3
Career Development Seminar(s)			X		
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
ECE 312	Linear System Analysis II	X			3
ECE 332	Electronics Principles II	X		4A	4
ECE 342	Electromagnetic Fields and Devices II	X			3
Diversity and Global Awareness				3E	3
Science/Math/Engineering Electives (See List on Concentration Requirements Tab)			X		3
Career Development Seminar(s)			X		
	Total Credits				16
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
ECE 401	Senior Design Project I	X		4A,4B	3
Arts and Humanities			X	3B	3
Technical Electives (See List on Concentration Requirements Tab)		X			9
Career Development Seminar(s)			X		
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
ECE 402	Senior Design Project II	X		4C	3
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
Arts and Humanities		X		3B	3
Technical Electives (See List on Concentration Requirements Tab)		X			9
Career Development Seminar(s)			X		
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				18
	Program Total Credits:				129

Major in Electrical Engineering, Lasers and Optical Engineering Concentration

From cancer detection to faster computing, lasers and optics improve today's world every day. Electrical engineering students are prepared for success in today's high-tech world through stimulating coursework and unique hands-on projects. They will learn a new way of thinking that teaches the importance of creativity and innovation in solving complex societal problems.

Lasers and Optics students will experience the benefits of a smaller department with top-tier faculty, while enjoying the perks of a large university. Electrical and computer engineering (ECE) courses and research span a range of disciplines that include:

- Biomedical Engineering
- Communications and Signal Processing
- Computer Engineering
- Controls and Robotics
- Electric Power and Energy Systems
- Electromagnetics and Remote Sensing
- Lasers, Optics, and Applications

Career Opportunities

A field of endless possibilities, electrical engineering career paths are largely dependent on personal interests. Electrical engineering alumni hold positions ranging from a designer at a start-up company to a research scientist for the U.S. Naval Research Laboratory. In addition to being one of the most lucrative college majors, for the past decade electrical engineering has ranked among the top 10 majors in demand for bachelor's, master's, and doctoral degrees, according to the National Association of Colleges and Employers. Almost every industry recruits electrical engineering graduates, such as aerospace, biomedical, energy, robotics, manufacturing, and automotive.

Program Objectives and Outcomes

The ECE program educational objectives are designed and implemented around the following three principal attributes: mastery, innovation, and leadership.

Graduates of the ECE program will be able to:

1. Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics

2. Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. Communicate effectively with a range of audiences
4. Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. Acquire and apply new knowledge as needed, using appropriate learning strategies

Requirements Effective Fall 2019

In order to maintain professional standards required of practicing engineers, the Department of Electrical and Computer Engineering requires a cumulative grade point average of at least 2.000 in Electrical Engineering courses as a graduation requirement. It is the responsibility of any student who fails to maintain a 2.000 average to work with their advisor to correct grade point deficiencies. In addition, it is required that students retake any Electrical Engineering course at the 300 level or below in which they receive a grade below a C.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
ECE 102	Digital Circuit Logic		4
ECE 103	DC Circuit Analysis		3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
Select one group from the following:[1]			3-4
Group A:			
CS 155	Introduction to Unix		
CS 156	Introduction to C Programming I		
CS 157	Introduction to C Programming II		
Group B:			
CS 163 or 164	CS1--No Prior Programming Experience CS1--Prior Programming Experience		
Historical Perspectives		3D	3
Career Development Seminar[2]			
	Total Credits		29-30

Sophomore

CHEM 111	General Chemistry I (GT-SC2)	3A	4
ECE 202	Circuit Theory Applications		4
ECE 303/STAT 303	Introduction to Communications Principles		3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
MATH 261	Calculus for Physical Scientists III		4
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	5
PH 314	Introduction to Modern Physics		4
MATH 340	Introduction to Ordinary Differential Equations		4
Career Development Seminar[2]			
	Total Credits		31

Junior

ECE 311	Linear System Analysis I		3
ECE 331	Electronics Principles I		4
ECE 332	Electronics Principles II	4A	4
ECE 341	Electromagnetic Fields and Devices I		3
ECE 342	Electromagnetic Fields and Devices II		3

PH 353	Optics and Waves		4
Select one course from the following:			3
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Science/Engineering Elective (see list below)			3
Career Development Seminar[2]			
	Total Credits		33

Senior

ECE 401[3]	Senior Design Project I	4A,4B	3
ECE 402	Senior Design Project II	4C	3
ECE 404	Experiments in Optical Electronics		2
ECE 441	Optical Electronics		3
ECE 457	Fourier Optics		3
PH 451	Introductory Quantum Mechanics I		3
Arts and Humanities		3B	3
Technical Electives (see list below)			12
Career Development Seminar[2]			
	Total Credits		32
	Program Total Credits:		125-126

Science/Math/Engineering Electives

Code	Title	Credits
BC 351	Principles of Biochemistry	4
BIOM 100	Overview of Biomedical Engineering	1
BIOM 101	Introduction to Biomedical Engineering	3
BIOM 200	Fundamentals of Biomedical Engineering	2
BMS 300	Principles of Human Physiology	4
BMS 301	Human Gross Anatomy	5
BMS 325	Cellular Neurobiology	3
BMS 345	Functional Neuroanatomy	4
BZ 310	Cell Biology	4
CBE 101	Introduction to Chemical and Biological Engr	3
CHEM 112	General Chemistry Lab I (GT-SC1)	1
CHEM 245	Fundamentals of Organic Chemistry	4
CHEM 246	Fundamentals of Organic Chemistry Laboratory	1
CIVE 102	Introduction to Civil and Environmental Engr	3
CIVE 260	Engineering Mechanics-Statics	3
CS 152	Introduction to Programming (CS0)-Python	2
CS 155	Introduction to Unix [1]	1
CS 156	Introduction to C Programming I [1]	1
CS 157	Introduction to C Programming II [1]	1
CS 165	CS2--Data Structures	4
CS 220	Discrete Structures and their Applications	4
CS 253	Software Development with C++	4
May select any course from the following:		Var.
ECE 395A	Independent Study [4]	
ECE 395B	Independent Study: Open Option Project [4]	
ECE 395C	Independent Study : Vertically Integrated Project [4]	
ENGR 300	3D Printing Lab for Engineers	1
HES 307	Biomechanical Principles of Human Movement	4
LIFE 103	Biology of Organisms-Animals and Plants	4
MATH 151	Mathematical Algorithms in Matlab I	1
MATH 229	Matrices and Linear Equations	2
MATH 235	Introduction to Mathematical Reasoning	2
MATH 317	Advanced Calculus of One Variable	3
MATH 332	Partial Differential Equations	3
MATH 360	Mathematics of Information Security	3
MATH 366	Introduction to Abstract Algebra	3
MATH 369	Linear Algebra I	3
MECH 103	Introduction to Mechanical Engineering	3
MECH 200	Introduction to Manufacturing Processes	3
MECH 237	Introduction to Thermal Sciences	3-4
or MECH 337	Thermodynamics	
MECH 303	Energy Engineering	3
MIP 300	General Microbiology	3
PH 341	Mechanics	4

Technical Electives

Code	Title	Credits
ECE 312	Linear System Analysis II	3
ECE 430/MATH 430	Fourier and Wavelet Analysis with Apps	3
ECE 471A	Semiconductor Physics	1
ECE 471B	Semiconductor Junctions	1

May select any course from the following:		Var.
ECE 495A	Independent Study [4]	
ECE 495B	Independent Study: Open Option Project [4]	
ECE 495C	Independent Study: Vertically Integrated Projects [4]	
ECE 503	Ultrafast Optics	3
ECE 504	Physical Optics	3
ECE 505	Nanostructures: Fundamentals and Applications	3
ECE 506	Optical Interferometry and Laser Metrology	3
ECE 507	Plasma Physics and Applications	3
ECE 517/BIOM 517	Advanced Optical Imaging	3
ECE 518/BIOM 518	Biophotonics	3
ECE 526/BIOM 526	Biological Physics	3
ECE 546	Laser Fundamentals and Devices	3
ECE 572	Semiconductor Transistors	1
ECE 573	Semiconductor Optoelectronics Laboratory	3
ECE 574	Optical Properties in Solids	3
MATH 419	Introduction to Complex Variables	3
PH 315	Modern Physics Laboratory	2
PH 425	Advanced Physics Laboratory	2
PH 452	Introductory Quantum Mechanics II	3
PH 462	Statistical Physics	3

1 CS 155, CS 156, and CS 157 count as Science/Math/Engineering electives ONLY when CS 163 or CS 164 is also taken. CS 163 or CS 164 will be applied to the freshman year selection requirement.

2 Students are required to complete three Career Development Seminars: 1) Resume Writing; 2) Mock Interview or Behavior Based Interviewing; and 3) Using LinkedIn™. Completion of the required workshops may be spread over the student's four-year program.

3 Project must be a laser and optical engineering topic.

4 A total 3 credits of Independent Study may apply toward the total degree requirements. This includes credit awarded for ECE 395A, ECE 395B, ECE 395C and ECE 495A, ECE 495B, ECE 495C combine

Major Completion Map

TO PREPARE FOR FIRST SEMESTER: The curriculum for this major assumes students enter college prepared to take calculus.

The ECE curriculum has been modified as part of the Revolutionizing Engineering Departments initiative (RED). Three threads run through the new curriculum: Foundations, Creativity and Professional Formation of Engineers. This new curriculum incorporates skills that engineers need beyond technical expertise, in areas like communication, ethics, social impact and interaction in large, diverse groups. The ECE department requires that students also complete the following three Career Development Seminars: 1) Resume Writing; 2) Mock Interviewing or Behavior Based Interviewing; and 3) Using LinkedIn™.

In order to maintain professional standards required of practicing engineers, the Department of Electrical and Computer Engineering requires a cumulative grade point average of at least 2.000 in electrical engineering courses as a graduation requirement. It is the responsibility of any student who fails to maintain a 2.000 average to work with their advisor to correct grade point deficiencies. In addition, it is required that students retake any electrical engineering course at the 300-level or below in which they receive a grade below C.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
ECE 102	Digital Circuit Logic	X			4
MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	4
Historical Perspectives			X	3D	3
Career Development Seminar(s)			X		
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
ECE 103	DC Circuit Analysis	X			3
MATH 161	Calculus for Physical Scientists II (GT-MA1)	X		1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	X		3A	5
Select one group from the following:			X		3-4
Group A:					
CS 155	Introduction to Unix				
CS 156	Introduction to C Programming I				
CS 157	Introduction to C Programming II				
Group B:					
CS 163 or 164	CS1---No Prior Programming Experience CS1--Prior Programming Experience				
Career Development Seminar(s)			X		
	Total Credits				15-16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 111	General Chemistry I (GT-SC2)		X	3A	4
ECON 202	Principles of Microeconomics (GT-SS1)		X	3C	3
PH 142	Physics for Scientists and Engineers II (GT-SC1)	X		3A	5
MATH 261	Calculus for Physical Scientists III	X			4
Career Development Seminar(s)			X		
	Total Credits				16

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ECE 202	Circuit Theory Applications	X			4
ECE 303/ STAT 303	Introduction to Communications Principles	X			3
PH 314	Introduction to Modern Physics	X			4
MATH 340	Introduction to Ordinary Differential Equations	X			4
Career Development Seminar(s)			X		
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
ECE 311	Linear System Analysis I	X			3
ECE 331	Electronics Principles I	X			4
ECE 341	Electromagnetic Fields and Devices I	X			3
PH 353	Optics and Waves	X			4
Diversity and Global Awareness				3E	3
Career Development Seminar(s)			X		
	Total Credits				17

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
ECE 332	Electronics Principles II	X		4A	4
ECE 342	Electromagnetic Fields and Devices II	X			3
Select one course from the following:					3
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)		X	2	
JTC 300	Professional and Technical Communication (GT-CO3)		X	2	
Science/Math/Engineering Electives (See List on Concentration Requirements Tab)			X		3
Arts and Humanities			X	3B	3
Career Development Seminar(s)			X		
	Total Credits				16

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
ECE 401	Senior Design Project I	X		4A,4B	3
ECE 404	Experiments in Optical Electronics	X			2
ECE 441	Optical Electronics	X			3
PH 451	Introductory Quantum Mechanics I	X			3
Technical Electives (See List on Concentration Requirements Tab)			X		6
Career Development Seminar(s)			X		
	Total Credits				17

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
ECE 402	Senior Design Project II	X		4C	3
ECE 457	Fourier Optics	X			3
Arts and Humanities		X		3B	3
Technical Electives (See List on Concentration Requirements Tab)		X			6
Career Development Seminar(s)			X		

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X	
Total Credits		15
Program Total Credits:		125-126

Graduate Certificate in Computer Systems Engineering

The Computer Systems Engineering graduate certificate is designed for students and professionals seeking knowledge and skills in state-of-the-art parallel hardware architectures, parallel software programming, algorithms, and networking technologies. Students stay current on rapidly advancing technology and learn to problem-solve for future challenges.

Effective Fall 2016

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Select three courses from the following: [1]		11-12
CS 530	Fault-Tolerant Computing	
CS 545	Machine Learning	
CS 556	Computer Security	
CS 575	Parallel Processing	
ECE 554	Computer Architecture	
ECE 561/CS 561	Hardware/Software Design of Embedded Systems	
ECE 658/CS 658	Internet Engineering	
ECE 661	Advanced Topics in Embedded Systems	
Program Total Credits:		11-12

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

[1] At least one ECE course is required.

Graduate Certificate in Embedded Systems

The Embedded Systems graduate certificate provides an introduction to embedded systems, including hardware design and software engineering principles. Students learn to apply electrical engineering, computer engineering, and computer science principles in real-world embedded platforms.

Effective Fall 2016

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Select three courses from the following: [1]		11-12
CS 545	Machine Learning	
CS 560/ECE 560	Foundations of Fine-Grain Parallelism	
CS 575	Parallel Processing	
ECE 554	Computer Architecture	
ECE 561/CS 561	Hardware/Software Design of Embedded Systems	
ECE 661	Advanced Topics in Embedded Systems	
Program Total Credits:		11-12

***This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.**

[1] At least one ECE course is required.

Graduate Certificate in Power and Energy

Students pursuing the Graduate Certificate in Power and Energy gain skills to create modern solutions for the world's mounting energy needs. With the rise of electric vehicles, more ubiquitous personal technologies, and demand for renewable energy sources, the electric grid as it stands is not equipped to meet 21st century requirements. Much of the power and energy workforce will be retiring in the coming years; as such, the time is ripe to update your knowledge to be more competitive among the next generation of professionals, and help usher in a modern, secure, energy-smart grid.

Effective Fall 2016

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Select three of the following courses:		9
ECE 508/ ENGR 508	Introduction to Power System Markets	
ECE 509/ ENGR 509	Signal Processing for Power Systems	
ECE 565/ ENGR 565	Electrical Power Engineering	
ECE 566	Grid Integration of Wind Energy Systems	
ECE 623/ ENGR 623	Electric Power Quality	
Program Total Credits:		9

***This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.**

Master of Science in Computer Engineering, Plan A

The Master of Science in Computer Engineering will produce professionals capable of applying in-depth knowledge, creativity, and research experience to analyze, design, develop, and improve computer systems in technically demanding careers. Students pursuing the Plan A degree will complete a research-orientated plan of study involving a thesis and coursework. Students interested in graduate

work should refer to CSU's Graduate and Professional Bulletin and the website for the Electrical and Computer Engineering Department (http://www.engr.colostate.edu/ece).

Requirements Effective Spring 2017

Code	Title	Credits
Regular Courses [1, 2]		21
ECE 699	Thesis	9
Program Total Credits:		30

1. Select courses with approval of advisor and graduate committee. Courses not accepted as regular include all courses ending in the range -82 through -99.
2. A maximum of 6 credits of 400-level undergraduate courses can be used toward the degree. Up to 8 credits at the 400-level are permitted when at least one course is a 4 credit course. Remaining credits must be in 500-level or higher courses.

Master of Science in Computer Engineering, Plan B

The Master of Science in Computer Engineering will produce professionals capable of applying in-depth knowledge and creativity to analyze, design, develop, and improve computer systems in technically demanding careers. Students interested in graduate work should refer to CSU's Graduate and Professional Bulletin and the website for the Electrical and Computer Engineering Department. (http://www.engr.colostate.edu/ece)

Requirements Effective Spring 2017

Code	Title	Credits
Select one group from the following:		
Group A		
Regular Courses [1, 2]		32
Group B		
Regular Courses [1, 2]		27
ECE 695	Independent Study	3
Program Total Credits		30-32

1. Select courses with approval of advisor and graduate committee. Courses not accepted as regular include all courses ending in the range -82 through -99.
2. A maximum of 6 credits of 400-level undergraduate courses can be used toward the degree. Up to 8 credits at the 400-level are permitted when at least one course is a 4 credit course. Remaining credits must be in 500-level or higher courses.

Master of Science in Electrical Engineering, Plan A

Arthur C. Clark said, "Any sufficiently advanced technology is indistinguishable from magic." The Master of Science in Electrical Engineering produces leaders who make the magic happen in our modern world. From electric cars to smartphones to Global Positioning Systems, our graduates turn ideas into reality.

This program creates professionals with depth and breadth of knowledge, as well as the skills and mindset to continue to evolve and grow in a constantly changing high-tech environment. Offering a highly customizable curriculum, this program specializes in the following focus areas: biomedical engineering, communications and signal processing, computer engineering, controls and robotics, electric power and energy systems, electromagnetics and remote sensing, and lasers, optics, and applications.

Students pursuing the M.S. in Electrical Engineering, Plan A will complete a research-oriented plan of study involving a thesis and coursework. Interested applicants should refer to CSU's Graduate and Professional Bulletin (http://catalog.colostate.edu/general-catalog/graduate-bulletin) and the Electrical and Computer Engineering website (http://www.engr.colostate.edu/ece).

Requirements Effective Summer 2015

Code	Title	Credits
Courses		
Regular Courses [1, 2]		21
Thesis		
ECE 699	Thesis	9
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

1. Courses not accepted as regular include all courses ending in -82 to -99. Only 6 credits allowed at the 400-level.
2. Select courses with approval of advisor and graduate committee.

Master of Science in Electrical Engineering, Plan B

The Master of Science in Electrical Engineering creates capable professionals with depth and breadth of knowledge, as well as the skills and mindset to continue to evolve and grow in a constantly changing high-tech environment. Offering a highly customizable curriculum, this program specializes in the following focus areas: biomedical engineering, communications and signal processing, computer engineering, controls and robotics, electric power and energy systems, electromagnetics and remote sensing, and lasers, optics, and applications.

Interested applicants should refer to CSU's Graduate and Professional Bulletin (http://catalog.colostate.edu/general-catalog/graduate-bulletin) and the Electrical and Computer Engineering website (http://www.engr.colostate.edu/ece).

Requirements Effective Spring 2019

Code	Title	Credits
Select one group from the following:		
Group A		
Regular Courses [1, 2, 3]		32
Group B		

ECE 695	Independent Study	3
Regular Courses [1,2]		27
Program Total Credits		30-32

A minimum of 30 credits are required to complete this program.

1 Select courses with approval of advisor and graduate committee. Courses not accepted as regular include all courses ending in the range -82 through -99.

2 A maximum of 6 credits of 400-level undergraduate courses can be used toward the degree. Up to 8 credits at the 400-level are permitted when at least one course is a 4 credit course. Remaining credits must be in 500-level or higher courses.

3 The final examination taken includes relevant questions from each course taken by the student for the degree.

Master of Engineering, Plan C, Computer Engineering Specialization

The Master of Engineering, Plan C, Computer Engineering Specialization will produce professionals with broad engineering backgrounds who are capable of applying in-depth knowledge and creativity to analyze, design, develop, and improve computer systems in technically demanding careers. Students will have flexibility to develop a plan of study in their area of interest. Students interested in graduate work should refer to CSU's Graduate and Professional Bulletin (http://catalog.colostate.edu/general-catalog/graduate-bulletin) and the website for the Electrical and Computer Engineering Department (http://www.engr.colostate.edu/ece).

Requirements Effective Fall 2016

Code	Title	Credits
Regular Courses [1, 2]		30
Program Total Credits:		30

1 Courses not accepted as regular include all courses ending in the range -82 through -99. Select courses with approval of advisor.

2 A maximum of 6 credit hours of 400-level undergraduate courses can be used towards the degree. Up to 8 credit hours at the 400-level are permitted when at least one course is a 4 credit course. Remaining credits must be in 500-level or higher courses.

Master of Engineering, Plan C, Electrical Engineering Specialization

The Master of Engineering, Plan C, Electrical Engineering Specialization focuses on enhancing the expertise of working electrical engineering professionals. Engineers who want to further their careers with engineering related firms and governmental agencies should consider this degree. Students will have flexibility to develop a plan of study in their area of interest. Students interested in graduate work should refer to CSU's Graduate and Professional Bulletin (http://catalog.colostate.edu/general-catalog/graduate-bulletin) and the website for the Electrical and Computer Engineering Department (http://www.engr.colostate.edu/ece).

Requirements Effective Fall 2016

Code	Title	Credits
Regular Courses [1, 2]		30
Program Total Credits:		30

1 Courses not accepted as regular include all courses ending in the range -82 through -99. Select courses with approval of advisor.

2 A maximum of 6 credit hours of 400-level undergraduate courses can be used toward the degree. Up to 8 credit hours at the 400-level are permitted when at least one course is a 4 credit course. Remaining credits must be in 500-level or higher courses.

Ph.D. in Computer Engineering

The Ph.D. in Computer Engineering creates future leaders in the thriving field of computer engineering. Under the tutelage of renowned computer engineering faculty, graduates of this program will produce significant contributions and original research to advance next generation electronics and computing.

Offering a highly customizable curriculum, this program focuses on the following areas: biomedical engineering, communications and signal processing, computer engineering, controls and robotics, electric power and energy systems, electromagnetics and remote sensing, and lasers, optics, and applications.

Students pursuing a Ph.D. in Computer Engineering will complete a research-oriented plan of study involving a dissertation and coursework. Interested applicants should refer to CSU's Graduate and Professional Bulletin and the website for the Electrical and Computer Engineering Department (http://www.engr.colostate.edu/ece).

Requirements Effective Spring 2017

Code	Title	Credits
M.S. EARNED		
M.S. Degree		30
Regular Courses [1]		18
ECE 799	Dissertation	24
Program Total Credits:		72

1 Courses not accepted as regular include all courses ending in the range -82 through -99. Students who have two or more papers accepted for publication in peer-reviewed journals or peer review conference proceedings may petition their Graduate Committee to approve an “Independent Study” (ECE 795) course to replace three of the required 18 credits of formal course work.

Code	Title	Credits
NO M.S. EARNED		
Regular Courses [1, 2]		39
ECE 799	Dissertation [3]	33
Program Total Credits:		72

1 Courses not accepted as regular include all courses ending in the range -82 through -99. Students who have two or more papers accepted for publication in peer-reviewed journals or peer review conference proceedings may petition their Graduate Committee to approve an "Independent Study" (ECE 795) course to replace three of the required 18 credits of formal course work.

2 A maximum of 6 credits of 400-level undergraduate courses can be used toward the degree. Up to 8 credits at the 400-level are permitted when at least one course is a 4 credit course. Remaining credits must be in 500-level or higher courses.

3 Students may take a combination of ECE 699/ECE 799.

Ph.D. in Electrical Engineering

The Ph.D. in Electrical Engineering creates the next generation of leaders in the thriving field of electrical engineering. Offering a highly customizable curriculum, the program focuses on the following areas: biomedical engineering, communications and signal processing, computer engineering, controls and robotics, electric power and energy systems, electromagnetics and remote sensing, and lasers, optics, and applications.

Students pursuing a Ph.D. in Electrical Engineering will complete a research-oriented plan of study including a dissertation and coursework. Students interested in graduate work should refer to CSU's Graduate and Professional Bulletin and the website for the Electrical and Computer Engineering Department (http://www.engr.colostate.edu/ece).

Requirements
Effective Fall 2018

Code	Title	Credits
M.S. EARNED		
M.S. Degree		30
Regular Courses [1,2]		18
ECE 799	Dissertation	24
Program Total Credits:		72

1 Courses not accepted as regular include all courses ending in the range -82 through -99. Students who have two or more papers accepted for publication in peer-reviewed journals or peer review conference proceedings may petition their Graduate Committee to approve an "Independent Study" (ECE 795) course to replace three of the required 18 credits of formal course work.

2 All credits must be 500 level or higher. No 400 level credits are permitted.

Code	Title	Credits
NO M.S. EARNED		
Regular Courses [1,2]		39
ECE 799	Dissertation [3]	33
Program Total Credits:		72

1 Courses not accepted as regular include all courses ending in the range -82 through -99. Students who have two or more papers accepted for publication in peer-reviewed journals or peer review conference proceedings may petition their Graduate Committee to approve an "Independent Study" (ECE 795) course to replace three of the required 18 credits of formal course work.

2 A maximum of 6 credits of 400-level undergraduate courses can be used toward the degree. Up to 8 credits at the 400-level are permitted when at least one course is a 4 credit course. Remaining credits must be in 500-level or higher courses.

3 Students may take a combination of ECE 699/ECE 799.

Department of Mechanical Engineering

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(970) 491-6558; (970) 491-0924
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Dr. Christian Puttlitz, Department Head

Toni-Lee Viney, Manager of Undergraduate Programs
Angelica Hernandez, Undergraduate Advisor
Star Sullivan, Undergraduate Advisor

Jessica Watkinson, Graduate Advisor

Undergraduate

Majors

- Major in Mechanical Engineering
- Major in Biomedical Engineering combined with Mechanical Engineering

Graduate
Graduate Programs in Mechanical Engineering

Programs are offered leading to the Master of Science, Master of Engineering (Mechanical Engineering specialization), and Doctor of Philosophy. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Mechanical Engineering (http://www.engr.colostate.edu/me).

Master's Programs

- Master of Science in Mechanical Engineering, Plan A
- Master of Science in Mechanical Engineering, Plan B
- Master of Engineering, Plan C, Mechanical Engineering Specialization

Ph.D.

- Ph.D. in Mechanical Engineering

Courses
Mechanical Engineering (MECH)

MECH 103 Introduction to Mechanical Engineering Credits: 3 (3-0-0)
Course Description: The discipline of Mechanical Engineering as described in problems and problem solving methods-energy, materials, motion, fluids.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 105 Mechanical Engineering Problem Solving Credits: 3 (3-0-0)
Course Description: Programming and engineering problem solving techniques, algorithms and processes from physics and calculus first principles.
Prerequisite: MECH 103 and MATH 160 and PH 141, may be taken concurrently.
Registration Information: Credit not allowed for both MECH 105 and MECH 102.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 200 Introduction to Manufacturing Processes Credits: 3 (2-2-0)
Course Description: Engineering drawings, materials, manufacturing, and safety. Hand tools, cutting, drilling, the lathe, mill and numerical control.
Prerequisite: MECH 105.
Registration Information: Mechanical engineering and engineering science majors only. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 201 Engineering Design I Credits: 2 (1-2-0)
Course Description: Engineering design methods used to portray three-dimensional objects and visually communicate design information with an emphasis on computer-aided design using parametric solid modeling and geometric dimensioning and tolerancing.
Prerequisite: MECH 105.
Registration Information: Must register for lecture and laboratory. Offered as Mixed Face-to-Face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 202 Engineering Design II Credits: 3 (2-2-0)
Course Description: Engineering design process with emphasis on teamwork, ideation, decision-making, project planning applied to a group design project.
Prerequisite: MECH 201 and MECH 200, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 231 Engineering Experimentation Credits: 3 (2-2-0)
Course Description: Measurement systems; experimental design; data acquisition and analysis techniques.
Prerequisite: (MECH 102 or MECH 105) and (PH 142).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 237 Introduction to Thermal Sciences Credits: 3 (3-0-0)
Course Description: First and second laws of thermodynamics, properties of materials, energy conversion, statistical aspects, heat transfer.
Prerequisite: PH 141 and MATH 160.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 262 Engineering Mechanics Credits: 4 (4-0-0)
Course Description: Forces, static equilibrium, mass center, moments of inertia, kinematics and kinetics of particles and rigid bodies.
Prerequisite: (MATH 161) and (PH 141).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 301A Engineering Design III: Finite Element Analysis Credit: 1 (0-2-0)
Course Description: Application of computer-aided finite element analysis (FEA) tools for the simulation and prediction of robustness and performance of mechanical components and assemblies.
Prerequisite: CIVE 360 and MECH 202, may be taken concurrently and MECH 342.
Registration Information: This is a partial semester course. Offered as Mixed Face-to-Face. Credit not allowed for both (MECH 301 and MECH 301A) or (MECH 301A and MECH 302).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 301B Engineering Design III: Computational Fluid Dynamics Credit: 1 (0-2-0)
Course Description: Application of computer-aided computational fluid dynamics (CFD) tools for the simulation and prediction of robustness and performance of mechanical components and assemblies.
Prerequisite: CIVE 360 and MECH 202, may be taken concurrently and MECH 301A, may be taken concurrently and MECH 342.
Registration Information: This is a partial semester course. Offered as Mixed Face-to-Face. Credit not allowed for (MECH 301 and MECH 301B) or (MECH 301B and MECH 302).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 303 Energy Engineering Credits: 3 (3-0-0)
Course Description: Energy generation (coal, oil, natural gas, solar, wind, geothermal, hydropower, tidal, biofuel, nuclear...), conversion, distribution, storage, efficiency.
Prerequisite: CBE 310 or ECE 341 or MECH 237 or MECH 337 or PH 361.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 307 Mechatronics and Measurement Systems Credits: 4 (3-3-0)
Course Description: Mechatronic and measurement system analysis and design; applied electronics; data acquisition; microcontroller interfacing and programming.
Prerequisite: CIVE 261 and ECE 204 and MATH 340 and MECH 231.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 324 Dynamics of Machines Credits: 4 (3-2-0)
Course Description: Analysis and synthesis of moving machinery.
Prerequisite: CIVE 261 and MATH 340, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 325 Machine Design Credits: 3 (3-0-0)
Course Description: Design of mechanical components to avoid failure during operation. Stress analysis, failure theories, and specific mechanical components in design context.
Prerequisite: CIVE 360.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 331 Introduction to Engineering Materials Credits: 4 (3-2-0)
Course Description: Characteristics of metallic, plastic, and ceramic material; basic principles which relate properties of materials to their atomic and microstructure.
Prerequisite: CHEM 111 and CHEM 112 and MECH 231.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 337 Thermodynamics Credits: 4 (3-0-1)
Course Description: First and second laws, property relationships, characteristic functions, thermodynamics solver, various thermodynamics applications.
Prerequisite: MATH 261 and PH 141.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 338 Thermal/Fluid Sciences Laboratory Credit: 1 (0-3-0)
Course Description: Experimental methods in heat transfer, fluid flow, and thermodynamics.
Prerequisite: MECH 337 and MECH 342 and MECH 344, may be taken concurrently.
Registration Information: Biomedical Engineering with ME and Mechanical Engineering majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 342 Mechanics and Thermodynamics of Flow Processes Credits: 3 (3-0-0)
Course Description: Engineering details of viscous flow with losses, measurements, compressibility, turbomachinery, convective heat transfer.
Prerequisite: MATH 340 and PH 141 and MECH 337, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 344 Heat and Mass Transfer Credits: 3 (3-0-0)
Course Description: Transport and rate processes, conduction, convection, and radiation.
Prerequisite: MECH 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 392 Graduate Education and Research Seminar Credit: 1 (0-0-1)
Course Description: Research in graduate school and industry as a career option for mechanical engineers.
Prerequisite: MECH 231 and MECH 237.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 402 Mechanical Engineering Experimental Analysis Credits: 3 (2-2-0)
Course Description: Analysis of large data sets associated with mechanical engineering experimentation; optimization; variability; design of experiments.
Prerequisite: MECH 307 and MECH 324 and MECH 331.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 407 Laser Applications in Mechanical Engineering Credits: 3 (3-0-0)
Course Description: Review of electromagnetic waves; applications of lasers and optics in engineering, e.g., position sensing, flowfield measurement, cutting and welding.
Prerequisite: PH 142.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 408 Applied Engineering Economy Credits: 3 (3-0-0)
Course Description: The basic principles and calculations of engineering economy with application to real problems, including energy and the environment.
Prerequisite: MATH 161.
Registration Information: Credit not allowed for both MECH 408 and MECH 410. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 411 Manufacturing Engineering Credits: 3 (3-0-0)
Course Description: Casting, forming, machining, and welding processes used in manufacturing operations.
Prerequisite: CIVE 360 and MECH 331.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 417 Control Systems Credits: 3 (2-2-0)
Course Description: Feedback and forward loop control design and simulation; discrete time and frequency domain methods with implementation considerations.
Prerequisite: MATH 340 and MECH 307.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 424 Advanced Dynamics Credits: 3 (3-0-0)
Course Description: Kinematics and dynamics of rigid bodies. Hamilton's principle and Lagrange's equations for lumped parameter extended bodies and distributed systems.
Prerequisite: MECH 324.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 425 Mechanical Engineering Vibrations Credits: 4 (3-2-0)
Course Description: Vibrations applied to rotating machinery and structures. SDOF and MDOF systems, mode shapes, vibration measurements and control. Hands-on lab.
Prerequisite: MECH 324.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 431 Metals and Alloys Credits: 3 (3-0-0)
Course Description: Engineering metals and alloys, modification of properties by alloying, plastic deformation, and heat treatment. Fundamentals of physical metallurgy.
Prerequisite: MECH 331.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 432 Engineering of Nanomaterials Credits: 3 (3-0-0)
Course Description: Structure, properties, and processing of extremely small (10 to the minus 9 m) synthetic and natural materials.
Prerequisite: MECH 331.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 437 Internal Combustion Engines Credits: 3 (2-0-1)
Course Description: Application of thermodynamics, heat transfer, and fluid mechanics to internal combustion engines.
Prerequisite: MECH 344.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 460 Aeronautics Credits: 3 (3-0-0)
Course Description: Thermodynamics and fluid mechanics principles applied to the mechanics, aerodynamics, performance, stability, and control of airplanes.
Prerequisite: MECH 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 463 Building Energy Systems Credits: 3 (3-0-0)
Course Description: Comfort, psychrometrics, loads, solar radiation, heating and cooling system design, transport, solar system design, economics.
Prerequisite: MECH 344.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 468 Space Propulsion and Power Engineering Credits: 3 (3-0-0)
Course Description: Orbital mechanics and space missions; chemical, nuclear, and electric rockets; nuclear heat sources; thermoelectric and photovoltaic devices.
Prerequisite: ECE 204 and MECH 337 and MECH 342.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 470 Biomedical Engineering Credits: 3 (3-0-0)
Also Offered As: BIOM 470.
Course Description: Engineering application in human/animal physiology, diagnosis of disease, treatment, rehabilitation, human genome manipulation.
Prerequisite: (MATH 155 or MATH 160) and (PH 141).
Registration Information: Credit not allowed for both MECH 470 and BIOM 470.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 486A Engineering Design Practicum: I Credits: 4 (1-6-0)
Course Description: Capstone engineering design project; transition experience to the mechanical engineering profession in industry and graduate education.
Prerequisite: (MECH 301 or MECH 301B, may be taken concurrently and MECH 301A) and (MECH 307 and MECH 331 and MECH 344) and (MECH 324, may be taken concurrently or MECH 325, may be taken concurrently).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 486B Engineering Design Practicum: II Credits: 4 (1-6-0)
Course Description: Capstone engineering design project; transition experience to the mechanical engineering profession in industry and graduate education.
Prerequisite: MECH 324 and MECH 325 and MECH 338 and MECH 486A.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 498A Engineering Research Practicum: I Credits: 4 (1-6-0)
Course Description: Capstone engineering research project; transition experience to graduate research and education.
Prerequisite: (MECH 301 or MECH 301A and MECH 301B, may be taken concurrently) and (MECH 307 and MECH 331 and MECH 344) and (MECH 324, may be taken concurrently or MECH 325, may be taken concurrently).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 498B Engineering Research Practicum: II Credits: 4 (1-6-0)
Course Description: Capstone engineering research project; transition experience to graduate research and education.
Prerequisite: MECH 324 and MECH 325 and MECH 338 and MECH 498A.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 502 Advanced/Additive Manufacturing Engineering Credits: 3 (3-0-0)
Course Description: Materials, controls, and mechanics applied to additive manufacturing; rapid prototyping; direct digital manufacturing.
Prerequisite: MECH 202 and MECH 331.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 505 Steam Power Plants Credits: 3 (3-0-0)
Course Description: Technology review and application of engineering sciences and economics to the analysis and design of vapor power generation systems. Vapor power cycles, steam generation, and auxiliary systems associated with power plants. Overall design of power plants as well as component design. Fossil fuel and nuclear energy systems are considered.
Prerequisite: MECH 337.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online. Required field trips. Credit not allowed for both MECH 505 and MECH 581A3.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 507 Laser Diagnostics for Thermosciences Credits: 3 (3-0-0)
Course Description: Basics of optics, spectroscopy, and lasers. Physics and applications of laser diagnostic techniques used in thermosciences.
Prerequisite: PH 142.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 509 Design and Analysis in Engineering Research Credits: 3 (3-0-0)
Course Description: Design, model building, analysis and reporting in engineering and manufacturing research and experimentation.
Prerequisite: MATH 340 and STAT 315.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 513 Simulation Modeling and Experimentation Credits: 3 (3-0-0)
Course Description: Logic/analytic modeling in simulations. Event and transient entity-based simulation languages. Simulation design, experimentation and analysis.
Prerequisite: STAT 315.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 515 Advanced Topics in Mechanical Vibrations Credits: 3 (2-2-0)
Course Description: Structural modal analysis, rotordynamics, and torsional vibrations. Lectures are supported with practical application labs.
Prerequisite: MECH 324.
Registration Information: Junior standing. Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 520 Finite Element Analysis in Mechanical Engr Credits: 3 (3-0-0)
Course Description: Application of FEA as a tool to analyze mechanical engineering problems.
Prerequisite: (CIVE 360) and (MATH 340 or MATH 530).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 524 Principles of Dynamics Credits: 3 (3-0-0)
Course Description: Kinematics and dynamics of rigid body motion; Lagrangian and Hamiltonian formulations of mechanics; applications to engineering problems.
Prerequisite: MECH 324.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 525 Cell and Tissue Engineering Credits: 3 (3-0-0)
Also Offered As: BIOM 525.
Course Description: Cell and tissue engineering concepts and techniques with emphasis on cellular response, cell adhesion kinetics, and tissue engineering design.
Prerequisite: BC 351 or BMS 300 or BMS 500 or BZ 310 or NB 501.
Registration Information: Credit only allowed for one of the following: MECH 525, BIOM 525, and CBE 525. Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 527 Hybrid Electric Vehicle Powertrains Credits: 3 (3-0-0)
Course Description: Hybrid powertrains and modeling including vehicle dynamics, internal combustion engine, electric motor, energy storage, and control.
Prerequisite: MECH 307.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 529 Advanced Mechanical Systems Credits: 3 (3-0-0)
Course Description: Modeling, analysis, and synthesis of practical mechanical devices in which dynamic response is dominant consideration.
Prerequisite: MECH 307.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 530 Advanced Composite Materials Credits: 3 (3-0-0)
Course Description: Materials aspects of advanced composite constituents and how their combination yields synergistic results.
Prerequisite: CIVE 360 and MECH 331.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 531 Materials Engineering Credits: 3 (3-0-0)
Also Offered As: BIOM 531.
Course Description: Selection of structural engineering materials by properties, processing, and economics; materials for biomedical and biotechnology applications.
Prerequisite: MECH 331 or MECH 431.
Registration Information: Credit not allowed for both MECH 531 and BIOM 531. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 532 Materials Issues in Mechanical Design Credits: 3 (3-0-0)
Also Offered As: BIOM 532.
Course Description: Failure mechanisms from materials viewpoint with emphasis on use in design. Fracture, creep, fatigue, and corrosion.
Prerequisite: MECH 331.
Registration Information: Credit not allowed for both MECH 532 and BIOM 532. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 533 Composites Product Development Credits: 3 (2-2-0)
Course Description: Practical application of advanced fiber reinforced materials in mechanical design, including composite constituent materials selection, performance, analysis, and manufacturing.
Prerequisite: MECH 331 and CIVE 360.
Registration Information: Graduate standing. Must register for lecture and laboratory. Credit not allowed for both MECH 533 and MECH 580A6.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 534 Energy & Env. Impacts of Transportation Credits: 3 (3-0-0)
Course Description: Energy use and environmental impacts of the transportation sector. Topics include vehicle design, dynamics and efficiency; combustion and emission formation; internal combustion engines, fuel cells, batteries, and powertrains; conventional and alternative fuels; travel demand and modes; and life cycle analysis and criteria pollutant emissions.
Prerequisite: MECH 337.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online. Credit not allowed for both MECH 534 and MECH 580A8.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 538 Mechanical Engineering Thermodynamics Credits: 3 (3-0-0)
Course Description: First and second laws of thermodynamics applied to engineering devices and systems. Introduction to exergy, equilibrium, chemical reactions, thermodynamic relations, and special topics.
Prerequisite: MECH 337.
Restriction: Must be a: Graduate.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 539 Advanced Fluid Mechanics Credits: 3 (3-0-0)
Course Description: Kinematics, Navier-Stokes equations, vorticity, viscous flows, scaling analysis, boundary layers, secondary flows, entropy generation and transport, stability and transition, turbulence.
Prerequisite: CIVE 300 or MECH 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 543 Biofluid Mechanics Credits: 3 (3-0-0)
Course Description: Fluid dynamic concepts for understanding fluid motion in living organs/organisms; advanced research applications.
Prerequisite: (BIOM 421 or CBE 331 or CIVE 300 or MECH 342) and (BMS 300 and PH 121 or PH 141 and BMS 300 or BMS 420).
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 544 Advanced Heat Transfer Credits: 3 (3-0-0)
Course Description: Fundamentals and engineering applications of heat transfer including conduction, convection, and radiation.
Prerequisite: MECH 344.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 551 Physical Gas Dynamics I Credits: 3 (3-0-0)
Course Description: Characteristics of real gases in reacting and nonequilibrium systems; equilibrium air; statistical mechanics, chemical thermodynamics.
Prerequisite: MECH 342.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 552 Applied Computational Fluid Dynamics Credits: 3 (3-0-0)
Course Description: Introductory theory of CFD, formulation of engineering problems for CFD analyses, mesh generation, solver settings, and postprocessing.
Prerequisite: CIVE 300 or CBE 331 or MECH 342.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 557 Turbomachinery Credits: 3 (3-0-0)
Course Description: Application of fundamental principles of thermodynamics and fluid mechanics to turbomachinery.
Prerequisite: MECH 337 and MECH 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 558 Combustion Credits: 3 (3-0-0)
Course Description: Combustion processes: explosions, detonations, flame propagation, ignition, generation of pollutants in moving and stationary energy conversion systems.
Prerequisite: MECH 342.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 564 Fundamentals of Robot Mechanics and Controls Credits: 3 (3-0-0)
Course Description: Kinematics of robots, controls for robots.
Prerequisite: MECH 417.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 567 Broad-Beam Ion Sources Credits: 3 (3-0-0)
Course Description: Physical processes in broad-beam electron-bombardment ion sources for space propulsion and ion machining applications.
Prerequisite: MATH 340.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 568 Computational Methods for Mechanical Eng. Credits: 3 (3-0-0)
Course Description: Fundamental principles which provide the foundation for the software and algorithms used in Mechanical Engineering.
Prerequisite: MATH 450 or MATH 451.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 569 Micro-Electro-Mechanical Devices Credits: 3 (3-0-0)
Also Offered As: ECE 569.
Course Description: Micro-electro-mechanical processes and applications in sensors, optics, and structures.
Prerequisite: MECH 344 with a minimum grade of C or ECE 331 with a minimum grade of C.
Registration Information: Credit not allowed for both ECE 569 and MECH 569. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 570 Bioengineering Credits: 3 (3-0-0)
Also Offered As: BIOM 570.
Course Description: Physiological and medical systems analysis using engineering methods including mechanics, fluid dynamics, control, electronics, and signal processing.
Prerequisite: MECH 307 and MECH 324.
Registration Information: Credit not allowed for both MECH 570 and BIOM 570. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 573 Structure and Function of Biomaterials Credits: 3 (3-0-0)
Also Offered As: BIOM 573.
Course Description: Structure-function relationships of natural biomaterials; application to analysis of biomimetic materials and biomaterials used in medical devices.
Prerequisite: MECH 331.
Registration Information: Credit not allowed for both MECH 573 and BIOM 573. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 574 Bio-Inspired Surfaces Credits: 3 (3-0-0)
Also Offered As: BIOM 574.
Course Description: Analysis of surface functionalities of various biological species; identification of design principles.
Prerequisite: MECH 342 and CHEM 111.
Registration Information: Sections may be offered: Online. Credit not allowed for both BIOM 574 and MECH 574.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 575 Solar and Alternative Energies Credits: 3 (3-0-0)
Course Description: Solar radiation, flat-plate collectors, energy storage, space heating and cooling, power generation, applications, simulation.
Prerequisite: MECH 337 and MECH 342 and MECH 344.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 576 Quantitative Systems Physiology Credits: 4 (4-0-0)
Also Offered As: BIOM 576.
Course Description: Quantitative, model-oriented approach to cellular and systems physiology with design examples from biomedical engineering.
Prerequisite: BMS 300 and CHEM 113 and MATH 340 and PH 142.
Registration Information: Credit not allowed for both BIOM 576 and MECH 576. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 577 Aerosol Physics and Technology Credits: 3 (3-0-0)
Course Description: Aerosols and their applications in science and engineering, air pollution control, atmospheric science, and public health. Topics cover the physical and chemical principles underlying the behavior of particles suspended in air, including particle size, aerodynamics, motion of particles in a force field, particle size statistics, and optical and electrical properties.
Prerequisite: PH 141.
Registration Information: Senior standing. Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 578 Musculoskeletal Biosolid Mechanics Credits: 3 (3-0-0)
Also Offered As: BIOM 578.
Course Description: Application of engineering concepts to quantify the mechanical behavior of load-bearing biological tissues and orthopaedic implant performance.
Prerequisite: CIVE 360.
Registration Information: Graduate standing. Credit not allowed for both BIOM 578 and MECH 578.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 579 Cardiovascular Biomechanics Credits: 3 (3-0-0)
Also Offered As: BIOM 579.
Course Description: Bio-mechanical principles and approaches applied in cardiovascular research.
Prerequisite: MATH 340 and PH 142.
Restriction: Must be a: Graduate.
Registration Information: Graduate students only. Sections may be offered: Online. Credit allowed for only one of the following: BIOM 579, BIOM 581A8, MECH 579, or MECH 581A8.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 628 Applied Fracture Mechanics Credits: 3 (3-0-0)
Course Description: Stress distribution near cracks; energy criteria for fracture; design criteria; fracture toughness testing.
Prerequisite: CIVE 560.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 631 Defects in Crystals Credits: 3 (3-0-0)
Also Offered As: MSE 631.
Course Description: Mechanics, thermodynamics and kinetics of defects in crystalline solids including point defects, dislocations, and grain boundaries.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online. Credit allowed for only one of the following: MECH 631, MSE 631, or MECH 681A2.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 657 Advanced Computational Gas Dynamics Credits: 4 (3-2-0)
Course Description: Advanced computational algorithms for gas dynamics.
Prerequisite: MECH 568.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 658 Advanced Combustion Theory and Modeling Credits: 3 (3-0-0)
Course Description: Asymptotic structure of flames, limit phenomena and multi-phase combustion.
Prerequisite: MECH 558.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 661 Theory/Control of Internal Combustion Engines Credits: 3 (3-0-0)
Course Description: Theory and applications of internal combustion engines. Alternative fuels, engine control, and pollution prevention.
Prerequisite: MECH 437.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 671 Orthopedic Tissue Biomechanics Credits: 3 (3-0-0)
Also Offered As: BIOM 671.
Course Description: Linear elastic, finite deformation, and viscoelastic theories applied to the mechanical behavior of orthopedic tissues (bone, tendon, cartilage).
Prerequisite: CIVE 560.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both BIOM 671 and MECH 671.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 692 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695A Independent Study: Bioengineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695B Independent Study: Energy Conversion Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695C Independent Study: Environmental Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695D Independent Study: Heat and Mass Transfer Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695E Independent Study: Industrial and Systems Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695F Independent Study: Mechanics and Design Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695G Independent Study: Computer-Assisted Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695H Independent Study: Robotics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695I Independent Study: Solar Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695J Independent Study: Computational Fluids Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695K Independent Study: Materials Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695L Independent Study: Plasma Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695M Independent Study: Motorsport Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 699A Thesis: Bioengineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699B Thesis: Energy Conversion Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699C Thesis: Environmental Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699D Thesis: Heat and Mass Transfer Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699E Thesis: Industrial and Systems Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699F Thesis: Mechanics and Design Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699G Thesis: Computer-Assisted Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699H Thesis: Robotics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699I Thesis: Solar Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699J Thesis: Computational Fluids Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699K Thesis: Materials Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699L Thesis: Plasma Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 699M Thesis: Motorsport Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 778 Advanced Computational Modeling of Fluids Credits: 3 (3-0-0)
Course Description: Advanced topics in computational fluid dynamics, finite element methods, and linear/nonlinear engineering optimization techniques.
Prerequisite: MECH 568.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799A Dissertation: Bioengineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799B Dissertation: Energy Conversion Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799C Dissertation: Environmental Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799D Dissertation: Heat and Mass Transfer Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799E Dissertation: Industrial and Systems Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799F Dissertation: Mechanics and Design Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799G Dissertation: Computer-Assisted Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799H Dissertation: Robotics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799I Dissertation: Solar Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799J Dissertation: Computational Fluids Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799K Dissertation: Materials Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799L Dissertation: Plasma Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 799M Dissertation: Motorsport Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Mechanical Engineering

Is making a difference important to you? Would you enjoy the challenge of inventing sustainable energy devices, leading computer-aided product design, or biomedical research? Does creating new designs for the hybrid electric vehicle industry, or new airplanes in the fields of aeronautics and aerospace sound interesting? Would designing or doing research and development in a wide range of industrial and governmental enterprises appeal to you? Does studying thermal sciences and the integration of electronic and mechanical devices interest you? Do you like putting ideas and designs to work? Are you interested in collaborating and working in teams with others? If your answer to any of these questions is "yes," then a major in Mechanical Engineering may be for you.

Mechanical engineers are creative problem solvers who design, develop, and manufacture the machines and instrumentation that run energy, building, environmental, and transportation systems. Examples include biomedical devices, ground/air/space vehicles, robots, environmental control equipment, and power plants.

In Mechanical Engineering, students take basic science and mathematics courses while beginning their engineering studies in design and computing. A broad spectrum of classes is designed to sharpen problem-solving skills. The senior year focuses on a year-long capstone design course to help students in the transition from college to an engineering career. Students also choose technical electives from the energy, automotive, material science, manufacturing, dynamic systems, robotics and controls, simulation and modeling, and biomedical engineering areas. Participation in labs provides an active learning environment and further develops design, modeling, and analytical skills.

Mechanical Engineering at CSU is dedicated to graduating ethical mechanical engineers who:

- Make an impact on society's global, grand engineering challenges
- Act as innovative and creative engineering designers who identify, analyze, and solve complex problems
- Function as accomplished thinkers with hands-on practical skills
- Serve as local, regional, and global collaborators and communicators
- Commit to life-long learning
- Uphold the CSU Principles of Community which encompass inclusion, integrity, respect, service, and social justice

Student Outcomes

Graduates of the undergraduate Mechanical Engineering program will be prepared to:

- Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- Communicate effectively with a range of audiences
- Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- Acquire and apply new knowledge as needed, using appropriate learning strategies

Potential Occupations

Graduates from the Department of Mechanical Engineering are expected to have the fundamental knowledge required for the successful practice of mechanical engineering. CSU engineering graduates are well prepared for a professional career. The Department boasts a 100% pass rate on the Fundamentals of Engineering professional examination. Participating in internships, co-curricular and volunteer activities, and cooperative education opportunities is highly recommended to enhance practical training and development. Students who continue on to pursue a graduate education can attain more responsible positions with the possibility of rising to top professional levels.

Requirements
Effective Fall 2019

Freshman

		AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
MECH 103	Introduction to Mechanical Engineering		3
MECH 105	Mechanical Engineering Problem Solving		3
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
Arts and Humanities		3B	6
	Total Credits		33

Sophomore

CIVE 260	Engineering Mechanics-Statics		3
CIVE 261	Engineering Mechanics-Dynamics		3
ECE 204	Introduction to Electrical Engineering		3
MATH 261	Calculus for Physical Scientists III		4
MATH 340	Introduction to Ordinary Differential Equations		4
MECH 200	Introduction to Manufacturing Processes		3
MECH 201	Engineering Design I		2
MECH 202	Engineering Design II		3
MECH 231	Engineering Experimentation		3
MECH 337	Thermodynamics		4
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	5
	Total Credits		37

Junior

CIVE 360	Mechanics of Solids		3
MECH 301A	Engineering Design III: Finite Element Analysis		1
MECH 301B	Engineering Design III: Computational Fluid Dynamics		1
MECH 307	Mechatronics and Measurement Systems		4
MECH 324	Dynamics of Machines		4

MECH 325	Machine Design		3
MECH 331	Introduction to Engineering Materials		4
MECH 338	Thermal/Fluid Sciences Laboratory		1
MECH 342	Mechanics and Thermodynamics of Flow Processes		3
MECH 344	Heat and Mass Transfer	4B	3
Advanced Writing		2	3
	Total Credits		30

Senior

Select one group from the following:			8
Group A:			
MECH 486A	Engineering Design Practicum: I	4A,4C	
MECH 486B	Engineering Design Practicum: II	4C	
Group B:			
MECH 498A	Engineering Research Practicum: I	4A,4C	
MECH 498B	Engineering Research Practicum: II	4C	
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
Technical Electives (See List below)			12
	Total Credits		29
	Program Total Credits:		129

Mechanical Engineering Technical Electives

Select 12 credits from the following, or select 9 credits and an additional 3 credits from the **Alternate Technical Electives** list.

Code	Title	Credits
MECH 303	Energy Engineering	3
MECH 407	Laser Applications in Mechanical Engineering	3
MECH 408	Applied Engineering Economy	3
MECH 411	Manufacturing Engineering	3
MECH 417	Control Systems	3
MECH 424	Advanced Dynamics	3
MECH 425	Mechanical Engineering Vibrations	4
MECH 431	Metals and Alloys	3
MECH 432	Engineering of Nanomaterials	3
MECH 437	Internal Combustion Engines	3
MECH 460	Aeronautics	3
MECH 463	Building Energy Systems	3
MECH 468	Space Propulsion and Power Engineering	3
MECH 470/BIOM 470	Biomedical Engineering	3
MECH 502	Advanced/Additive Manufacturing Engineering	3
MECH 505	Steam Power Plants	3
MECH 507	Laser Diagnostics for Thermosciences	3
MECH 509	Design and Analysis in Engineering Research	3
MECH 513	Simulation Modeling and Experimentation	3
MECH 515	Advanced Topics in Mechanical Vibrations	3
MECH 520	Finite Element Analysis in Mechanical Engr	3
MECH 524	Principles of Dynamics	3
MECH 525/BIOM 525	Cell and Tissue Engineering	3
MECH 527	Hybrid Electric Vehicle Powertrains	3
MECH 529	Advanced Mechanical Systems	3
MECH 530	Advanced Composite Materials	3
MECH 531/BIOM 531	Materials Engineering	3
MECH 532/BIOM 532	Materials Issues in Mechanical Design	3
MECH 533	Composites Product Development	3
MECH 538	Mechanical Engineering Thermodynamics	3
MECH 539	Advanced Fluid Mechanics	3
MECH 543	Biofluid Mechanics	3
MECH 544	Advanced Heat Transfer	3
MECH 551	Physical Gas Dynamics I	3
MECH 552	Applied Computational Fluid Dynamics	3
MECH 557	Turbomachinery	3
MECH 558	Combustion	3
MECH 564	Fundamentals of Robot Mechanics and Controls	3
MECH 567	Broad-Beam Ion Sources	3
MECH 568	Computational Methods for Mechanical Eng.	3
MECH 569/ECE 569	Micro-Electro-Mechanical Devices	3
MECH 570/BIOM 570	Bioengineering	3
MECH 573/BIOM 573	Structure and Function of Biomaterials	3
MECH 574/BIOM 574	Bio-Inspired Surfaces	3
MECH 575	Solar and Alternative Energies	3
MECH 576/BIOM 576	Quantitative Systems Physiology	4
MECH 577	Aerosol Physics and Technology	3

MECH 578/BIOM 578	Musculoskeletal Biosolid Mechanics	3
MECH 579/BIOM 579	Cardiovascular Biomechanics	3

Alternate Technical Electives

Code	Title	Credits
BMS 300	Principles of Human Physiology	4
CIVE 367	Structural Analysis	3
CIVE 438	Environmental Engr Concepts for Civil Engrs	3
CIVE 504	Wind Engineering	3
CIVE 560	Advanced Mechanics of Materials	3
CIVE 562	Fundamentals of Vibrations	3
CS 150	Culture and Coding (GT-AH3)	3
CS 155	Introduction to Unix	1
CS 156	Introduction to C Programming I	1
CS 157	Introduction to C Programming II	1
CS 163	CS1---No Prior Programming Experience	4
CS 164	CS1--Prior Programming Experience	4
ECE 411	Control Systems	4
ECE 465	Electrical Energy Generation Technologies	3
ENGR 422	Technology Entrepreneurship	3
ENGR 501	Foundations of Systems Engineering	3
HES 207	Anatomical Kinesiology	3
MATH 331	Introduction to Mathematical Modeling	3
MATH 332	Partial Differential Equations	3
MATH 369	Linear Algebra I	3
MGT 305	Fundamentals of Management	3
MGT 340	Fundamentals of Entrepreneurship	3
MKT 305	Fundamentals of Marketing	3
PH 314	Introduction to Modern Physics	4
PH 341	Mechanics	4
PH 353	Optics and Waves	4
PH 451	Introductory Quantum Mechanics I	3
STAT 315	Statistics for Engineers and Scientists	3

Major Completion Map

Distinctive Requirements for Degree Program:

TO DECLARE MAJOR: Competitive entry controls required and capped enrollment in place. Incoming students please see the Office of Admissions to declare. Current CSU students please see your assigned advisor for information about the waitlist.

TO PREPARE FOR FIRST SEMESTER: The curriculum for this major assumes students enter college prepared to take calculus.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
CO 150	College Composition (GT-CO2)		X	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	4
MECH 103	Introduction to Mechanical Engineering	X			3
	Total Credits				15

Semester 2		Critical	Recommended	AUCC	Credits
MATH 161	Calculus for Physical Scientists II (GT-MA1)	X		1B	4
MECH 105	Mechanical Engineering Problem Solving	X			3
PH 141	Physics for Scientists and Engineers I (GT-SC1)	X		3A	5
Arts and Humanities			X	3B	6
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				18

Sophomore

Semester 3		Critical	Recommended	AUCC	Credits
CIVE 260	Engineering Mechanics-Statics	X			3
MATH 261	Calculus for Physical Scientists III	X			4
MECH 200	Introduction to Manufacturing Processes	X			3
MECH 201	Engineering Design I	X			2
PH 142	Physics for Scientists and Engineers II (GT-SC1)	X		3A	5
	Total Credits				17

Semester 4		Critical	Recommended	AUCC	Credits
CIVE 261	Engineering Mechanics-Dynamics	X			3
ECE 204	Introduction to Electrical Engineering	X			3
MATH 340	Introduction to Ordinary Differential Equations	X			4
MECH 202	Engineering Design II	X			3
MECH 231	Engineering Experimentation	X			3

MECH 337	Thermodynamics		X		4
	Total Credits				20
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
CIVE 360	Mechanics of Solids	X			3
MECH 307	Mechatronics and Measurement Systems	X			4
MECH 324	Dynamics of Machines	X			4
MECH 342	Mechanics and Thermodynamics of Flow Processes	X			3
	Total Credits				14
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
MECH 301A	Engineering Design III: Finite Element Analysis				1
MECH 301B	Engineering Design III: Computational Fluid Dynamics				1
MECH 325	Machine Design	X			3
MECH 331	Introduction to Engineering Materials	X			4
MECH 338	Thermal/Fluid Sciences Laboratory	X			1
MECH 344	Heat and Mass Transfer	X		4B	3
Advanced Writing			X	2	3
	Total Credits				16
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					4
MECH 486A	Engineering Design Practicum: I	X		4A,4C	
MECH 498A	Engineering Research Practicum: I	X		4A,4C	
Diversity and Global Awareness			X	3E	3
Social and Behavioral Sciences			X	3C	3
Technical Elective (See List on Requirements Tab)					6
	Total Credits				16
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					4
MECH 486B	Engineering Design Practicum: II	X		4C	
MECH 498B	Engineering Research Practicum: II	X		4C	
Historical Perspectives		X		3D	3
Technical Electives (See List on Requirements Tab)		X			6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				13
	Program Total Credits:				129

Master of Engineering, Plan C, Mechanical Engineering Specialization

The Master of Engineering, Plan C, Mechanical Engineering Specialization is an online or on-campus degree program focused on enhancing the expertise of working professionals or continuing students who are looking to keep up with the pace of innovation within their industry and advance in their careers. Engineers who want to further their careers with industrial firms and governmental agencies or those who want to pursue a career in private practice should consider this degree. This is a coursework-only degree program with no thesis requirement.

Requirements Effective Spring 2015

Code	Title	Credits
MECH *** Electives		15
Electives [1]		15
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

[1] Select courses with approval of advisor.

Of the 30 minimum credits required for this program, at least 24 credits must be at the 500-level or above and earned at CSU.

Master of Science in Mechanical Engineering, Plan A

The Master of Science in Mechanical Engineering, Plan A is ideal for students who are interested in advancing their career in industry or research. The program combines valuable classroom instruction with research experiences. Students conduct research under the supervision of a faculty advisor, often the Principal Investigator (P.I.), for a government or industry sponsored project. The student's research, in conjunction with thesis credits and coursework, will culminate in an article for submission to a peer-reviewed journal and a final thesis.

Requirements Effective Spring 2015

Code	Title	Credits
Select 2 courses from the following:		6-7
CIVE 560	Advanced Mechanics of Materials	
MATH 530	Mathematics for Scientists and Engineers	
MECH 529	Advanced Mechanical Systems	
MECH 532/ BIOM 532	Materials Issues in Mechanical Design	
MECH 538	Mechanical Engineering Thermodynamics	
MECH 539	Advanced Fluid Mechanics	
MECH 544	Advanced Heat Transfer	
Electives [1]		11-18
Select one from the following:		6-12
MECH 699A	Thesis: Bioengineering	
MECH 699B	Thesis: Energy Conversion	
MECH 699C	Thesis: Environmental Engineering	
MECH 699D	Thesis: Heat and Mass Transfer	
MECH 699E	Thesis: Industrial and Systems Engineering	
MECH 699F	Thesis: Mechanics and Design	
MECH 699G	Thesis: Computer-Assisted Engineering	
MECH 699H	Thesis: Robotics	
MECH 699I	Thesis: Solar Engineering	
MECH 699J	Thesis: Computational Fluids	
MECH 699K	Thesis: Materials	
MECH 699L	Thesis: Plasma Engineering	
MECH 699M	Thesis: Motorsport Engineering	
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

[1] Select courses with approval of advisor and graduate committee.

Of the 30 minimum credits required for this program, at least 24 credits must be at the 500-level or above and earned at CSU.

Master of Science in Mechanical Engineering, Plan B

The Master of Science in Mechanical Engineering, Plan B is ideal for students who are interested in advancing their career in industry or research. The program combines valuable classroom instruction with research experiences. Students conduct research under the supervision of a faculty advisor, often the Principal Investigator (P.I.), for a government or industry sponsored project.

Requirements Effective Spring 2015

Code	Title	Credits
Select 2 courses from the following:		6-7
CIVE 560	Advanced Mechanics of Materials	
MATH 530	Mathematics for Scientists and Engineers	
MECH 529	Advanced Mechanical Systems	
MECH 532/ BIOM 532	Materials Issues in Mechanical Design	
MECH 538	Mechanical Engineering Thermodynamics	
MECH 539	Advanced Fluid Mechanics	
MECH 544	Advanced Heat Transfer	
Electives [1]		23-24
Scholarly Paper		0
Program Total Credits:		30

A minimum of 30 credits are required to complete this program. Of the 30 minimum credits required for this program, at least 24 credits must be at the 500-level or above and earned at CSU.

[1] Select courses with approval of advisor and graduate committee.

Ph.D. in Mechanical Engineering

The Ph.D. in Mechanical Engineering is ideal for students looking to pursue advanced-level careers in industry, research, or academia. Students pursuing a Ph.D. in Mechanical Engineering will undertake advanced research under the mentorship of a faculty advisor (Principal Investigator), most often on a government or industry funded project as a paid research assistant. The degree plan will involve consideration of a challenging problem utilizing analytical, experimental, and/or design techniques. This research – in addition to coursework, exams, journal articles, and dissertation credits – will culminate in a final dissertation. The dissertation will contain new analytical knowledge, experimental knowledge, design knowledge, or a combination thereof. The dissertation must make an original contribution to the field.

Requirements Effective Fall 2018

Code	Title	Credits
Select one course from the following:		3-4
MATH 530	Mathematics for Scientists and Engineers	
MECH 568	Computational Methods for Mechanical Eng.	
Select 2 courses from the following:		6
CIVE 560	Advanced Mechanics of Materials	
MECH 529	Advanced Mechanical Systems	
MECH 532/ BIOM 532	Materials Issues in Mechanical Design	
MECH 538	Mechanical Engineering Thermodynamics	
MECH 539	Advanced Fluid Mechanics	
MECH 544	Advanced Heat Transfer	

Electives		
Electives [1]		2-32
Master Degree Credit		
Master Degree Credit [2]		30
Dissertation		30
MECH 799A	Dissertation: Bioengineering	
MECH 799B	Dissertation: Energy Conversion	
MECH 799C	Dissertation: Environmental Engineering	
MECH 799D	Dissertation: Heat and Mass Transfer	
MECH 799E	Dissertation: Industrial and Systems Engineering	
MECH 799F	Dissertation: Mechanics and Design	
MECH 799G	Dissertation: Computer-Assisted Engineering	
MECH 799H	Dissertation: Robotics	
MECH 799I	Dissertation: Solar Engineering	
MECH 799J	Dissertation: Computational Fluids	
MECH 799K	Dissertation: Materials	
MECH 799L	Dissertation: Plasma	
MECH 799M	Dissertation: Motorsport Engineering	
Program Total Credits:		72

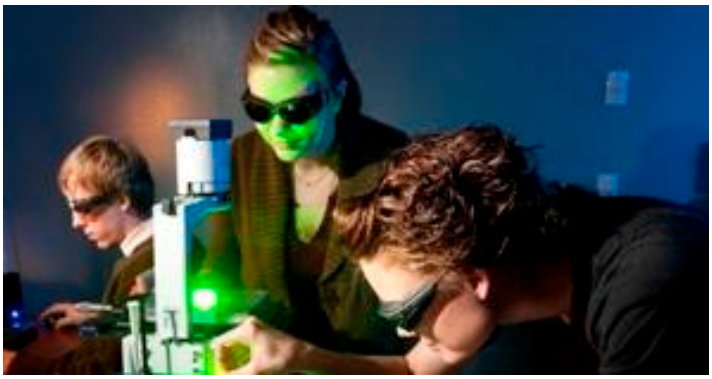
A minimum of 72 credits are required to complete this program.

1 Select courses with approval of advisor and graduate committee.

2 A maximum of 30 credits may be accepted from an engineering master's degree.

Of the 72 minimum credits required for this program, at least 21 credits must be at the 500-level or above and earned at CSU. Minimum of 15 credits with the MECH subject code. Minimum 12 credits in regular courses numbered 500 and above (not including dissertation, independent study, or supervised teaching).

School of Biomedical Engineering



Scott Bioengineering Building, Suite 225
engr.colostate.edu/sbme (http://www.engr.colostate.edu/sbme)
(970) 491-7157

Professor Stuart Tobet, Director
Professor Kevin Lear, Associate Director; and Director, Undergraduate Programs

The School of Biomedical Engineering (SBME) stands on a foundation of strong faculty and research programs from four CSU colleges: the Walter Scott, Jr. College of Engineering, and the Colleges of Health and Human Sciences, Natural Sciences, and Veterinary Medicine & Biomedical Sciences. The unique structure of the School involves over 70 faculty members representing 14 departments to provide an interdisciplinary focus on improving health, fighting disease, and aiding persons with disabilities. Academic excellence across diverse fields converges into three primary areas of research: (1) regenerative and rehabilitative medicine, (2) imaging and diagnostics, and (3) medical devices and therapeutics.

At the graduate level, SBME offers a Master of Science and a Doctor of Philosophy in Bioengineering, and a Master of Engineering (online and on campus) with a specialization in Biomedical Engineering. See the Graduate and Professional Bulletin for graduate program listings. The Walter Scott, Jr. College of Engineering offers a Bachelor of Science in Biomedical Engineering with a unique five-year program where graduates receive two B.S. degrees: one in Biomedical Engineering and the other in one of three traditional engineering areas - Chemical & Biological Engineering, Electrical Engineering, or Mechanical Engineering. An undergraduate Biomedical Engineering Interdisciplinary Minor is also offered.

Biomedical engineering lies at the interface of engineering, biology, and medicine. With over 40 state-of-the-art biomedical and engineering research labs, including the world-renowned Veterinary Teaching Hospital and Animal Cancer Center, we offer hands-on experience for undergraduate and graduate students to work alongside leading researchers. CSU provides a rich environment for interdisciplinary research and day-to-day collaborations and is positioned to offer unique bioengineering degree programs due to our faculty expertise, the interdisciplinary nature of the SBME, and the highly-ranked veterinary program. Our Biomedical Engineering programs integrate biological, chemical, physical, and mathematical sciences with engineering principles and clinical studies, and our graduates are well prepared for careers in research, education, veterinary or human medicine, and industry.

Biomedical engineers are involved in a wide variety of activities on a daily basis. Practical applications of biomedical engineering include development, design, production, research, and/or teaching in areas such as:

- Designing biomedical materials and/or medical devices and equipment (e.g., pacemakers, assistive devices, exercise equipment for astronauts, creating/improving materials to help joint replacements last longer)
- Developing or improving therapies for fighting cancer, tuberculosis, or other illnesses and diseases (e.g., nanoscaffolding for localized chemotherapy delivery, telemetric sensors to determine healing rates in bone fractures or to detect key chemicals in live tissue with high temporal and spatial resolution)
- Finding better ways to image and/or diagnose illnesses (e.g., using laser-based imaging to detect viruses, developing ways to increase electrical signals to detect threats to food safety and security, designing biosensors to diagnose cancer cells, developing software to determine toxic pesticide levels in people)

Potential Occupations

Biomedical engineering applies engineering principles to medicine and improving quality of life for humans and animals. Biomedical engineers

work in a variety of settings. Some biomedical engineers spend their days in the lab, researching new devices and systems that solve medical and health care-related problems. Others might work in clinical settings, run biomedical-focused enterprises, design/manufacture new therapies or diagnostics, assist medical facilities with engineering systems, or engage in regulatory affairs or patent law. Our graduates are well prepared for careers in research, education, or industry.

Undergraduate

Undergraduate Bachelor of Science Programs in Biomedical Engineering

The Bachelor of Science program in Biomedical Engineering has four pathways, each of which provide depth in a traditional area of engineering and breadth in biomedical engineering knowledge and applications. The coursework in these four pathways is designed not only to support biomedical engineering, but also to satisfy the curricular requirements of one of four traditional engineering degrees as administered by partner engineering departments.

The four curricular pathways for the BME B.S. degree are:

- B.S. degree in Biomedical Engineering combined with a B.S. degree in Chemical and Biological Engineering
- B.S. degree in Biomedical Engineering combined with a B.S. degree in Electrical Engineering, Electrical Engineering Concentration
- B.S. degree in Biomedical Engineering combined with a B.S. degree in Electrical Engineering, Laser and Optical Concentration
- B.S. degree in Biomedical Engineering combined with a B.S. degree in Mechanical Engineering

The BME program requires 157-158 credit hours of coursework, depending on the selected pathway, nominally distributed over five years.

In the first two years, students take introductory biomedical engineering courses as well as foundational math, science, and engineering courses. The third year and fourth years solidify expertise in the traditional engineering major while building strength in biomedical engineering, life and physical sciences courses. The following years allow students to build a more thorough understanding of biomedical engineering, and their studies culminate in a Senior Design project in the fifth year that provides hands-on experience with an interdisciplinary team of peers. This combination of practical application and traditional academic rigor support the breadth and depth of this fairly unique program, and provides excellent preparation and market value for graduates' next steps in industry, academia, or research.

The Bachelor of Science in Biomedical Engineering at Colorado State University is accredited by the Accreditation Board for Engineering and Technology (ABET). It was first accredited in 2016, and this accreditation is retroactive for all prior graduates of the B.S. in biomedical engineering program. The partner majors include electrical engineering (EE), chemical and biological engineering (CBE), and mechanical engineering (MECH) and these three degree programs are accredited by the Engineering Accreditation Commission of ABET.

The educational objectives of the biomedical engineering program are to prepare our students to:

- demonstrate high professional, social, and ethical standards while examining and addressing the global impact of technology to improve quality of life in society and environment
- apply broad and deep knowledge, practical experiences, and creativity to solving problems at the interface of engineering and the life sciences as individuals and team members
- use their multidisciplinary background to foster communication and collaboration across professional and disciplinary boundaries
- recognize and expand the scope of their knowledge, continue self-directed learning, and identify and create professional opportunities for themselves and others

Graduates in Biomedical Engineering will have:

- an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- an ability to communicate effectively with a range of audiences
- an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- an ability to function effectively on a multidisciplinary team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- an ability to acquire and apply new knowledge as needed, using appropriate learning strategies
- an ability to apply principles of engineering, biology, human physiology, chemistry, calculus-based physics, mathematics (through differential equations), and statistics;
- an ability to solve bio/biomedical engineering problems, including those associated with the interaction between living and non-living systems;
- an ability to analyze, model, design, and realize bio/biomedical engineering devices, systems, components, or processes; and
- an ability to make measurements on and interpret data from living systems

For more information on accreditation requirements, see https://www.abet.org/accreditation/accreditation-criteria/criteria-for-accrediting-engineering-programs-2019-2020.

BME Bachelor of Science Programs

- Biomedical Engineering, B.S. combined with Chemical and Biological Engineering, B.S.
- Biomedical Engineering, B.S. combined with Electrical Engineering, B.S., Electrical Engineering Concentration
- Biomedical Engineering, B.S. combined with Electrical Engineering, B.S., Lasers and Optical Engineering Concentration
- Biomedical Engineering,B.S. combined with Mechanical Engineering, B.S.

Graduate
Graduate Program in Biomedical Engineering

Students interested in graduate work should refer to the Graduate and Professional Bulletin (http://catalog.colostate.edu/general-catalog/graduate-bulletin) or the (http://www.engr.colostate.edu/ce/degreeinfo.shtml)School of Biomedical Engineering.

Master's Programs

- Master of Engineering, Plan C, Biomedical Engineering Specialization
- Master of Science in Bioengineering

Ph.D.

- Ph.D. in Bioengineering

Courses
Biomedical Engineering (BIOM)

BIOM 100 Overview of Biomedical Engineering Credit: 1 (1-0-0)
Course Description: Overview of the field of biomedical engineering with an emphasis on the roles of mechanical, electrical, and chemical/biological engineering principles.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Credit not allowed for both BIOM 100 and BIOM 101.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 101 Introduction to Biomedical Engineering Credits: 3 (3-0-0)
Course Description: Basic principles, fundamentals in biomedical engineering including molecular, cellular and physiological principles, major areas such as biomechanics.
Prerequisite: None.
Registration Information: Credit not allowed for both BIOM 100 and BIOM 101. Credit not allowed for both BIOM 101 and BIOM 200.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 200 Fundamentals of Biomedical Engineering Credits: 2 (2-0-0)
Course Description: Application of engineering analysis to physiology and biomedical engineering topics.
Prerequisite: BIOM 100, may be taken concurrently and LIFE 102 and MATH 160.
Restriction: Must be a: Undergraduate.
Registration Information: Credit not allowed for both BIOM 101 and BIOM 200.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 300 Problem-Based Learning Biomedical Engr Lab Credits: 4 (1-4-1)
Course Description: Group problem-based learning approach to problems spanning all core areas of biomedical engineering.
Prerequisite: (BIOM 101 or BIOM 200 or BIOM 100 and CBE 205 and MECH 262) and (MATH 340 or MATH 345).
Registration Information: Junior standing. Must register for lecture, lab, and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BIOM 306 Bioprocess Engineering Credits: 4 (3-2-0)
Also Offered As: BTEC 306.
Course Description: Material, energy balances; fluid flow, heat exchange, mass transfer; application to operations in food, fermentation, other bioprocess industries.
Prerequisite: (CHEM 107 or CHEM 111) and (PH 121 or PH 141).
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BIOM 306 and BTEC 306.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 382A Study Abroad: Prosthetics in Ecuador Credits: Var[1-2] (0-0-0)
Course Description: Design and fabricate prosthetics for under-served populations in Ecuador. Course experience will occur in Quito, Ecuador in partnership with Range of Motion Project (ROMP), a non-profit healthcare organization.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 421 Transport Phenomena in Biomedical Engineering Credits: 3 (3-0-0)
Course Description: Engineering models of active and passive mechanisms of momentum. Heat and mass transport in mammalian cells, tissues, and organ systems.
Prerequisite: (BMS 300) and (CBE 332 or MECH 344).
Registration Information: Credit not allowed for both BIOM 330 and BIOM 421.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 422 Kinetics of Biomolecular and Cellular Systems Credits: 3 (3-0-0)
Course Description: In-depth analysis of the systems approach to biology and biological engineering at the molecular and the cellular scales.
Prerequisite: BIOM 421 or CBE 320.
Registration Information: Credit not allowed for both BIOM 422 and BIOM 400.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 431 Biomedical Signal and Image Processing Credits: 3 (3-0-0)
Also Offered As: ECE 431.
Course Description: Principles, features and mathematical processing of biomedical signals and images including interference and noise filtering and feature enhancement.
Prerequisite: ECE 303 with a minimum grade of C and ECE 311 with a minimum grade of C and PH 142 with a minimum grade of C.
Registration Information: Credit not allowed for both BIOM 431 and ECE 431.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 441 Biomechanics and Biomaterials Credits: 3 (3-0-0)
Course Description: Principles of biomechanics, biofluids, and biomaterials.
Prerequisite: BMS 300, may be taken concurrently and CIVE 360 and MECH 324, may be taken concurrently and MECH 331, may be taken concurrently and MECH 342.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 470 Biomedical Engineering Credits: 3 (3-0-0)
Also Offered As: MECH 470.
Course Description: Engineering application in human/animal physiology, diagnosis of disease, treatment, rehabilitation, human genome manipulation.
Prerequisite: (PH 141) and (MATH 155 or MATH 160).
Registration Information: Credit not allowed for both BIOM 470 and MECH 470.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 476A Biomedical Clinical Practicum I Credits: 2 (0-0-2)
Course Description: Biomedical lab work or exposure to the hospital/clinical environment.
Prerequisite: (BMS 300) and (BIOM 470 or MECH 470).
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BIOM 476B Biomedical Clinical Practicum II Credits: 4 (0-0-4)
Course Description: Biomedical lab work or exposure to the hospital/clinical environment.
Prerequisite: (BMS 300) and (BIOM 470 or MECH 470).
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BIOM 486A Biomedical Design Practicum: Capstone Design I Credits: 4 (0-0-10)
Course Description:
Prerequisite: (BIOM 300) and (BIOM 421 and CBE 320 and CBE 442 or ECE 342 and BIOM 431 and ECE 311 and ECE 332 or BIOM 441 and MECH 301 or MECH 301A and MECH 301B, may be taken concurrently) and (MECH 307).
Registration Information: Senior standing. Enrollment in biomedical engineering major.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 486B Biomedical Design Practicum: Capstone Design II Credits: 4 (0-0-10)
Course Description:
Prerequisite: (BIOM 486A) and (CBE 451 or ECE 312 or MECH 325 and MECH 344 and MECH 402 or PH 353).
Registration Information: Senior standing. Enrollment in biomedical engineering major.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 495 Independent Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BIOM 504 Fundamentals of Biochemical Engineering Credits: 3 (3-0-0)
Also Offered As: CBE 504.
Course Description: Application of chemical engineering principles to enzyme kinetics, fermentation and cell culture, product purification, and bioprocess design.
Prerequisite: (MIP 300) and (MATH 255 or MATH 340) and (BIOM 306, may be taken concurrently or BTEC 306, may be taken concurrently or CBE 320, may be taken concurrently).
Registration Information: Credit not allowed for both BIOM 504 and CBE 504.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

BIOM 517 Advanced Optical Imaging Credits: 3 (3-0-0)
Also Offered As: ECE 517.
Course Description: Engineering design principles of advanced optical imaging techniques and image formation theory.
Prerequisite: ECE 342 or MATH 340 or MATH 345.
Registration Information: Credit allowed for only one of the following: BIOM 517, BIOM 581B7, ECE 517 or ECE 581B7.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 518 Biophotonics Credits: 3 (3-0-0)
Also Offered As: ECE 518.
Course Description: Engineering design principles of optical instrumentation for medical diagnostics. Light propagation and imaging in biological tissues.
Prerequisite: ECE 342 or ECE 457 or MATH 340 or MATH 345.
Registration Information: Credit allowed for only one of the following: BIOM 518, BIOM 581A9, ECE 518 or ECE 581A9.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 522 Bioseparation Processes Credits: 3 (2-2-0)
Also Offered As: CBE 522.
Course Description: Analysis of processes to recover and purify fermentation products.
Prerequisite: CBE 331.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BIOM 522 and CBE 522.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 525 Cell and Tissue Engineering Credits: 3 (3-0-0)
Also Offered As: MECH 525.
Course Description: Cell and tissue engineering concepts and techniques with emphasis on cellular response, cell adhesion kinetics, and tissue engineering design.
Prerequisite: BC 351 or BMS 300 or BMS 500 or BZ 310 or NB 501.
Registration Information: Credit allowed for only one of the following: BIOM 525, CBE 525, MECH 525. Sections may be offered: Online.
Term Offered: Spring. (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 526 Biological Physics Credits: 3 (3-0-0)
Also Offered As: ECE 526.
Course Description: Mathematical and physical modeling of biological systems. Mass transport in cellular environments. Electrical/mechanical properties of biomolecules.
Prerequisite: (MATH 340 or MATH 345) and (PH 122 or PH 142).
Registration Information: Credit not allowed for both BIOM 526 and ECE 526. Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 527A Biosensing: Cells as Circuits Credit: 1 (1-0-0)
Also Offered As: ECE 527A.
Course Description: Treatment of biological cells as circuits and their electrical time-dependent function and frequency-dependent impedance. Topics include the Hodgkin–Huxley circuit model, diffusion equation, and modeling action potential propagation.
Prerequisite: (BIOM 101 or LIFE 102) and (CHEM 111) and (MATH 340 or MATH 345) and (PH 142).
Registration Information: Junior standing. This is a partial semester course. Credit allowed for only one of the following: BIOM 527A, BIOM 581B1, ECE 527A, or ECE 581B1.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 527B Biosensing: Signal and Noise in Biosensors Credit: 1 (1-0-0)
Also Offered As: ECE 527B.
Course Description: Quantitative treatment of concepts of noise, interference and signal including noise types and spectra, filtering, and limitations imposed by noise. Example applications to Biosensors.
Prerequisite: (MATH 340, may be taken concurrently or MATH 345, may be taken concurrently) and (PH 142).
Registration Information: Junior standing. This is a partial semester course. Credit allowed for only one of the following: BIOM 527B, BIOM 581B2, ECE 527B, or ECE 581B2.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 527C Biosensing: Sensor Circuit Fundamentals Credit: 1 (1-0-0)
Also Offered As: ECE 527C.
Course Description: Introduction to circuit concepts used in sensors, including review of basic circuit elements of resistors, capacitors, and MOS (Metal-Oxide-Semiconductor transistors) elements. Fundamentals of the application of MOS circuits for signal conditioning and amplification and how sensor's backend signal processing is carried out after the sensor signal transduction stage.
Prerequisite: (BIOM 101 or LIFE 102) and (MATH 340, may be taken concurrently or MATH 345, may be taken concurrently) and (PH 142).
Registration Information: Junior standing. This is a partial semester course. Credit allowed for only one of the following: BIOM 527C, BIOM 581B3, ECE 527C, or ECE 581B3.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 527D Biosensing: Electrochemical Sensors Credit: 1 (1-0-0)
Also Offered As: ECE 527D.
Course Description: Introduction to the electrochemistry, and applications of electrochemical methods, used for detection of certain classes of chemicals and molecules.
Prerequisite: (BIOM 101 or LIFE 102) and (CHEM 111) and (MATH 255 or MATH 261) and (PH 142).
Registration Information: Junior standing. This is a partial semester course. Credit allowed for only one of the following: BIOM 527D, BIOM 581B5, ECE 527D, or ECE 581B5.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 527E Biosensing: Affinity Sensors Credit: 1 (1-0-0)
Also Offered As: ECE 527E.
Course Description: Fundamentals of affinity sensor application and design, including optical and electrical approaches and technologies.
Prerequisite: (BIOM 101 or LIFE 102) and (CHEM 111) and (MATH 340, may be taken concurrently or MATH 345, may be taken concurrently) and (PH 142).
Registration Information: Junior standing. This is a partial semester course. Credit allowed for only one of the following: BIOM 527E, BIOM 581B4, ECE 527E, or ECE 581B4.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 527F Biosensing: Biophotonic Sensors Using Refractive Index Credit: 1 (1-0-0)
Also Offered As: ECE 527F.
Course Description: Operating principles of optical biosensors based on changes in refractive index, such as thin films, ring-resonators, Mach-Zehnder interferometers, and other evanescent wave sensors. Basic supporting optical concepts, including thin-film interference, optical waveguides and evanescent waves.
Prerequisite: (BIOM 527F or ECE 527F) and (MATH 340, may be taken concurrently or MATH 345, may be taken concurrently) and (PH 142).
Registration Information: Junior standing. This is a partial semester course. Credit allowed for only one of the following: BIOM 527F, BIOM 581B6, ECE 527F, or ECE 581B6.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 531 Materials Engineering Credits: 3 (3-0-0)
Also Offered As: MECH 531.
Course Description: Selection of structural engineering materials by properties, processing, and economics; materials for biomedical and biotechnology applications.
Prerequisite: MECH 331 or MECH 431.
Registration Information: Credit not allowed for both BIOM 531 and MECH 531. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 532 Material Issues in Mechanical Design Credits: 3 (3-0-0)
Also Offered As: MECH 532.
Course Description: Failure mechanisms from materials viewpoint with emphasis on use in design. Fracture, creep, fatigue and corrosion.
Prerequisite: MECH 331.
Registration Information: Credit not allowed for both BIOM 532 and MECH 532. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 533 Biomolecular Tools for Engineers Credits: 3 (2-3-0)
Also Offered As: CIVE 533.
Course Description: Theoretical and practical aspects of biomolecular laboratory tools–PCR, cloning, sequencing, single-molecule optical techniques and live-cell imaging.
Prerequisite: BMS 300 or MIP 300.
Registration Information: Must register for lecture and laboratory. Credit not allowed for BIOM 533, CIVE 533 and ECE 533.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

BIOM 537 Biomedical Signal Processing Credits: 3 (3-0-0)
Also Offered As: ECE 537.
Course Description: Measuring, manipulating, and interpreting biomedical signals.
Prerequisite: MATH 340 or ECE 311 or STAT 303.
Registration Information: Credit not allowed for both BIOM 537 and ECE 537.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 543 Membranes for Biotechnology and Biomedicine Credits: 3 (3-0-0)
Also Offered As: CBE 543.
Course Description: Polymeric membrane formation, modification, module design and applications to bioseparation and biomedical separations and tissue engineering.
Prerequisite: CHEM 343 and CBE 310.
Registration Information: Credit not allowed for both BIOM 543 and CBE 543. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 570 Bioengineering Credits: 3 (3-0-0)
Also Offered As: MECH 570.
Course Description: Physiological and medical systems analysis using engineering methods including mechanics, fluid dynamics, control electronics, and signal processing.
Prerequisite: MECH 307 and MECH 324.
Registration Information: Credit not allowed for both BIOM 570 and MECH 570. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 573 Structure and Function of Biomaterials Credits: 3 (3-0-0)
Also Offered As: MECH 573.
Course Description: Structure-function relationships of natural biomaterials; application to analysis of biomimetic materials and biomaterials used in medical devices.
Prerequisite: MECH 331.
Registration Information: Credit not allowed for both BIOM 573 and MECH 573. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 574 Bio-Inspired Surfaces Credits: 3 (3-0-0)
Also Offered As: MECH 574.
Course Description: Analysis of surface functionalities of various biological species; identification of design principles.
Prerequisite: MECH 342 and CHEM 111.
Registration Information: Sections may be offered: Online. Credit not allowed for both BIOM 574 and MECH 574.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 576 Quantitative Systems Physiology Credits: 4 (4-0-0)
Also Offered As: MECH 576.
Course Description: Quantitative, model-oriented approach to cellular and systems physiology with design examples from biomedical engineering.
Prerequisite: BMS 300 and CHEM 113 and MATH 340 and PH 142.
Registration Information: Credit not allowed for both BIOM 576 and MECH 576. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 578 Musculoskeletal Biosolid Mechanics Credits: 3 (3-0-0)
Also Offered As: MECH 578.
Course Description: Application of engineering concepts to quantify the mechanical behavior of load-bearing biological tissues and orthopaedic implant performance.
Prerequisite: CIVE 360.
Registration Information: Graduate standing. Credit not allowed for both BIOM 578 and MECH 578.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 579 Cardiovascular Biomechanics Credits: 3 (3-0-0)
Also Offered As: MECH 579.
Course Description: Bio-mechanical principles and approaches applied in cardiovascular research.
Prerequisite: MATH 340 and PH 142.
Restriction: Must be a: Graduate.
Registration Information: Graduate students only. Sections may be offered: Online. Credit allowed for only one of the following: BIOM 579, BIOM 581A8, MECH 579, or MECH 581A8.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 586A Biomedical Clinical Practicum Credits: 2 (1-3-0)
Course Description: Graduate-level activity, such as biomedical research or design of a new medical device, for exposure to the hospital/clinical environment.
Prerequisite: (BMS 300 or BMS 500) and (BIOM 570 or MECH 570).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BIOM 586B Biomedical Clinical Practicum Credits: 4 (1-6-0)
Course Description: Graduate-level activity, such as biomedical research or design of a new medical device, for exposure to the hospital/clinical environment.
Prerequisite: (BMS 300 or BMS 500) and (BIOM 570 or MECH 570).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BIOM 592 Seminar Credits: Var[1-3] (0-0-0)
Course Description: Student and research faculty presentations, guest and invited extramural speakers.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BIOM 671 Orthopedic Tissue Biomechanics Credits: 3 (3-0-0)
Also Offered As: MECH 671.
Course Description: Linear elastic, finite deformation, and viscoelastic theories applied to the mechanical behavior of orthopedic tissues (bone, tendon, cartilage).
Prerequisite: CIVE 560.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both BIOM 671 and MECH 671.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 6 credits allowed in course; may not be used to satisfy degree requirements requiring bioengineering courses.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BIOM 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BIOM 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BIOM 750 Grant Proposal Writing and Reviewing Credit: 1 (1-0-0)
Course Description: Preparation and review of applications for fellowships and grants.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 784 Supervised College Teaching Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BIOM 786 Practicum-Laboratory Rotations Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BIOM 795 Independent Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall. Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BIOM 798 Research-Laboratory Rotations Credits: Var[1-6] (0-0-0)
Course Description: Doctoral laboratory rotation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BIOM 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Dual Degree Program: Biomedical Engineering combined with Chemical and Biological Engineering

Requirements
Effective Fall 2019

Freshman

		AUCC	Credits
BIOM 100	Overview of Biomedical Engineering		1
CBE 101	Introduction to Chemical and Biological Engr		3
CBE 160	MATLAB for Chemical and Biological Eng		1
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
	Total Credits		30

Sophomore

CBE 201	Material and Energy Balances		3
CBE 205	Fundamentals of Biological Engineering		3
CBE 210	Thermodynamic Process Analysis		3
CHEM 114	General Chemistry Lab II		1
CHEM 341	Modern Organic Chemistry I		3
CHEM 343	Modern Organic Chemistry II		3
CHEM 344	Modern Organic Chemistry Laboratory		2
CO 150	College Composition (GT-CO2)	1A	3
MATH 261	Calculus for Physical Scientists III		4
MATH 340	Introduction to Ordinary Differential Equations		4
MECH 262	Engineering Mechanics		4
	Total Credits		33

Junior

BC 351	Principles of Biochemistry		4
BIOM 300	Problem-Based Learning Biomedical Engr Lab		4
BMS 300	Principles of Human Physiology		4
CBE 310	Molecular Concepts and Applications		3
CBE 320	Chemical and Biological Reactor Design		3
CBE 330	Process Simulation		3
CBE 331	Momentum Transfer and Mechanical Separations		3
CBE 332	Heat and Mass Transfer Fundamentals		3
CBE 493	Professional Development Seminar		1
LIFE 210	Introductory Eukaryotic Cell Biology		3
Advanced Writing		2	3
	Total Credits		34

Senior

BIOM 421	Transport Phenomena in Biomedical Engineering		3
BIOM 422	Kinetics of Biomolecular and Cellular Systems		3
CBE 333	Chemical and Biological Engineering Lab I		2
CBE 442	Separation Processes		4
CBE 443	Chemical and Biological Engineering Lab II		2
CBE 451	Chemical and Biological Engineering Design I		3
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	5
STAT 315	Statistics for Engineers and Scientists		3
Arts and Humanities		3B	3
Historical Perspectives		3D	3
	Total Credits		31

Fifth Year

BIOM 486A	Biomedical Design Practicum: Capstone Design I	4A,4B,4C	4
BIOM 486B	Biomedical Design Practicum: Capstone Design II	4A,4B,4C	4
CBE 430	Process Control and Instrumentation		3
BME Technical Elective[1]			5
CBE Technical Elective[2]			5
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Social and Behavioral Sciences		3C	3
	Total Credits		30
	Program Total Credits:		158

Approved BME Technical Electives for BME-CBE BS Program

Code	Title	Credits
Select 5 credits from the following:		
BC 401	Comprehensive Biochemistry I	3
BC 403	Comprehensive Biochemistry II	3
BC 404	Comprehensive Biochemistry Laboratory	2
BC 411	Physical Biochemistry	4
BC 463	Molecular Genetics	3
BC 465	Molecular Regulation of Cell Function	3
BC 565	Molecular Regulation of Cell Function	4
BIOM 431/ECE 431	Biomedical Signal and Image Processing	3
BIOM 441	Biomechanics and Biomaterials	3
BIOM 470/MECH 470	Biomedical Engineering	3
A maximum of 3 credits from the following may be used to satisfy this requirement		
BIOM 476A	Biomedical Clinical Practicum I	
BIOM 476B	Biomedical Clinical Practicum II	
BIOM 495	Independent Study	
BIOM 504/CBE 504	Fundamentals of Biochemical Engineering	3
BIOM 518/ECE 518	Biophotonics	3
BIOM 522/CBE 522	Bioseparation Processes	3
BIOM 525/MECH 525	Cell and Tissue Engineering	3
BIOM 526/ECE 526	Biological Physics	3
BIOM 531/MECH 531	Materials Engineering	3
BIOM 533/CIVE 533	Biomolecular Tools for Engineers	3
BIOM 537/ECE 537	Biomedical Signal Processing	3
BIOM 543/CBE 543	Membranes for Biotechnology and Biomedicine	3
BIOM 570/MECH 570	Bioengineering	3
BIOM 573/MECH 573	Structure and Function of Biomaterials	3
BIOM 574/MECH 574	Bio-Inspired Surfaces	3
BIOM 576/MECH 576	Quantitative Systems Physiology	4
BIOM 578/MECH 578	Musculoskeletal Biosolid Mechanics	3
BMS 301	Human Gross Anatomy	5
BMS 302	Laboratory in Principles of Physiology	2
BMS 310	Anatomy for the Health Professions	4
BMS 325	Cellular Neurobiology	3
BMS 345	Functional Neuroanatomy	4
BMS 405	Nerve and Muscle-Toxins, Trauma and Disease	3
BMS 409	Human and Animal Reproductive Biology	3
BMS 420	Cardiopulmonary Physiology	3
BMS 430	Endocrinology	3
BMS 450	Pharmacology	3
BMS 500	Mammalian Physiology I	4
BMS 501	Mammalian Physiology II	4
BMS 503/NB 503	Developmental Neurobiology	3
BMS 505/NB 505	Neuronal Circuits, Systems and Behavior	3
BZ 311	Developmental Biology	4
BZ 350	Molecular and General Genetics	4
BZ 476/BZ 576	Genetics of Model Organisms	3
CHEM 334	Quantitative Analysis Laboratory	1
CHEM 335	Introduction to Analytical Chemistry	3

CHEM 433	Clinical Chemistry	3
CHEM 539A	Principles of NMR and MRI: Basic NMR Principles	1
CHEM 539B	Principles of NMR and MRI: NMR Diffusion Measurements-2D NMR and MRI	1
CHEM 539C	Principles of NMR and MRI: Advanced NMR and MRI Techniques	1
CM 501	Advanced Cell Biology	4
CM 502/NB 502	Techniques in Molecular & Cellular Biology	2
ECE 569/MECH 569	Micro-Electro-Mechanical Devices	3
ERHS 450	Introduction to Radiation Biology	3
ERHS 502	Fundamentals of Toxicology	3
ERHS 510/VS 510	Cancer Biology	3
ERHS 540	Principles of Ergonomics	3
FSHN 470	Integrative Nutrition and Metabolism	3
HES 307	Biomechanical Principles of Human Movement	4
HES 319	Neuromuscular Aspects of Human Movement	4
HES 403	Physiology of Exercise	4
HES 476	Exercise and Chronic Disease	3
MATH 455	Mathematics in Biology and Medicine	3
MECH 432	Engineering of Nanomaterials	3
MECH 543	Biofluid Mechanics	3
MIP 300	General Microbiology	3
MIP 302	General Microbiology Laboratory	2
MIP 342	Immunology	4
MIP 343	Immunology Laboratory	2
MIP 351	Medical Bacteriology	3
MIP 352	Medical Bacteriology Laboratory	3
MIP 420	Medical and Molecular Virology	4
MIP 436	Industrial Microbiology	4
MIP 443	Microbial Physiology	4
MIP 450	Microbial Genetics	3
MIP 576/BSPM 576	Bioinformatics	3
NB 500	Readings in Cellular Neurobiology	1
NB 501	Cellular and Molecular Neurophysiology	2

Approved CBE Technical Electives for BME-CBE BS Program

Code	Title	Credits
Select 5 credits from the following:		
ATS 555	Air Pollution	3
ATS 560	Air Pollution Measurement	2
BC 401	Comprehensive Biochemistry I	3
BC 403	Comprehensive Biochemistry II	3
BC 404	Comprehensive Biochemistry Laboratory	2
BC 411	Physical Biochemistry	4
BC 441	3D Molecular Models for Biochemistry	1
BC 463	Molecular Genetics	3
BC 464	Molecular Genetics Recitation	1
BC 465	Molecular Regulation of Cell Function	3
BC 466	Molecular Regulation of Cell Function-Honors	1
BC 467	Biochemistry of Disease	3
BC 511	Structural Biology I	4
BC 512	Principles of Macromolecular Structure	1
BC 513	Enzymology	1
BC 517	Metabolism	2
BC 521/CHEM 521	Principles of Chemical Biology	3
BC 563	Molecular Genetics	4
BC 565	Molecular Regulation of Cell Function	4
BC 571	Quantitative Biochemistry	1
BIOM 517/ECE 517	Advanced Optical Imaging	3
BIOM 525/MECH 525	Cell and Tissue Engineering	3
BIOM 526/ECE 526	Biological Physics	3
BIOM 531/MECH 531	Materials Engineering	3
BIOM 532/MECH 532	Material Issues in Mechanical Design	3
BIOM 533/CIVE 533	Biomolecular Tools for Engineers	3
BIOM 537/ECE 537	Biomedical Signal Processing	3
BIOM 543/CBE 543	Membranes for Biotechnology and Biomedicine	3
BIOM 570/MECH 570	Bioengineering	3
BIOM 573/MECH 573	Structure and Function of Biomaterials	3
BIOM 574/MECH 574	Bio-Inspired Surfaces	3
BIOM 576/MECH 576	Quantitative Systems Physiology	4
BIOM 579/MECH 579	Cardiovascular Biomechanics	3
BMS 301	Human Gross Anatomy	5
BMS 302	Laboratory in Principles of Physiology	2
BMS 305	Domestic Animal Gross Anatomy	4
BMS 325	Cellular Neurobiology	3
BMS 330	Microscopic Anatomy	4
BMS 345	Functional Neuroanatomy	4
BMS 360	Fundamentals of Physiology	4
BMS 405	Nerve and Muscle-Toxins, Trauma and Disease	3
BMS 409	Human and Animal Reproductive Biology	3
BMS 420	Cardiopulmonary Physiology	3
BMS 425	Introduction to Systems Neurobiology	3
BMS 430	Endocrinology	3
BMS 450	Pharmacology	3
BMS 460	Essentials of Pathophysiology	3
BMS 500	Mammalian Physiology I	4
BMS 501	Mammalian Physiology II	4
BMS 503/NB 503	Developmental Neurobiology	3
BMS 505/NB 505	Neuronal Circuits, Systems and Behavior	3
BMS 521	Comparative Reproductive Physiology	3
BMS 545	Neuroanatomy	5
BMS 575	Human Anatomy Dissection	4
BSPM 302	Applied and General Entomology	2
BSPM 303A	Entomology Laboratory: General	2
BSPM 361	Elements of Plant Pathology	3
BSPM 450	Molecular Plant-Microbe Interaction	3
BSPM 570	Chemical Ecology	3
BZ 310	Cell Biology	4
BZ 311	Developmental Biology	4

BZ 332	Introductory Phycology	4
BZ 346	Population and Evolutionary Genetics	3
BZ 348/MATH 348	Theory of Population and Evolutionary Ecology	4
BZ 350	Molecular and General Genetics	4
BZ 353/NR 353	Global Change Ecology, Impacts and Mitigation	3
BZ 360	Bioinformatics and Genomics	3
BZ 418	Ecology of Infectious Diseases	4
BZ 420	Evolutionary Medicine	3
BZ 425	Molecular Ecology	3
BZ 433	Behavioral Genetics	4
BZ 440	Plant Physiology	3
BZ 441	Plant Physiology Laboratory	2
BZ 450	Plant Ecology	4
BZ 460	Genome Evolution	4
BZ 462/BSPM 462/ MIP 462	Parasitology and Vector Biology	5
BZ 476/BZ 576	Genetics of Model Organisms	3
BZ 505	Cognitive Ecology	3
BZ 520/BSPM 520	Advanced Systematics	3
BZ 525	Advanced Conservation & Evolutionary Genomics	4
BZ 572	Phytoremediation	3
CBE 406	Introduction to Transport Phenomena	3
CBE 439/CIVE 439	Environmental Engineering Chemical Concepts	3
CBE 501	Chemical Engineering Thermodynamics	3
CBE 502	Advanced Reactor Design	3
CBE 503	Transport Phenomena Fundamentals	3
CBE 504/BIOM 504	Fundamentals of Biochemical Engineering	3
CBE 505	Biochemical Engineering Laboratory	1
CBE 514	Polymer Science and Engineering	3
CBE 521	Mathematical Modeling for Chemical Engineers	3
CBE 522/BIOM 522	Bioseparation Processes	3
CBE 524	Bioremediation	1
CBE 540/CIVE 540	Advanced Biological Wastewater Processing	3
CBE 570	Biomolecular Engineering/Synthetic Biology	3
CHEM 261	Fundamentals of Inorganic Chemistry	3
CHEM 311	Introduction to Nanoscale Science	3
CHEM 334	Quantitative Analysis Laboratory	1
CHEM 335	Introduction to Analytical Chemistry	3
CHEM 338	Environmental Chemistry	3
CHEM 431	Instrumental Analysis	4
CHEM 433	Clinical Chemistry	3
CHEM 440	Advanced Organic Chemistry Laboratory	2
CHEM 461	Inorganic Chemistry	3
CHEM 462	Inorganic Chemistry Laboratory	2
CHEM 475	Physical Chemistry Laboratory I	1
CHEM 476	Physical Chemistry II	3
CHEM 477	Physical Chemistry Laboratory II	1
CHEM 495	Independent Study	1-3
CHEM 511	Solid State Chemistry	3
CHEM 515	Polymer Chemistry	3
CHEM 517	Chemistry of Electronic Materials	3
CHEM 522	Methods of Chemical Biology	2
CHEM 530A	Advanced Topics in Chemical Analysis: Environmental Chemical Analysis	1
CHEM 530B	Advanced Topics in Chemical Analysis: Absorption and Emission Spectroscopy	1
CHEM 530C	Advanced Topics in Chemical Analysis: Bioanalytical Chemistry	1
CHEM 530D	Advanced Topics in Chemical Analysis: Statistical Analysis in Analytical Chemistry	1
CHEM 530E	Advanced Topics in Chemical Analysis: Mass Spectrometry	1
CHEM 530F	Advanced Topics in Chemical Analysis: Analysis of Materials	1
CHEM 532	Advanced Chemical Analysis II	3
CHEM 537	Electrochemical Methods	3
CHEM 539A	Principles of NMR and MRI: Basic NMR Principles	1
CHEM 539B	Principles of NMR and MRI: NMR Diffusion Measurements-2D NMR and MRI	1
CHEM 539C	Principles of NMR and MRI: Advanced NMR and MRI Techniques	1
CHEM 541	Organic Molecular Structure Determination	2
CHEM 543	Structure/Mechanisms in Organic Chemistry	2
CHEM 545	Synthetic Organic Chemistry I	3
CHEM 547	Physical Organic Chemistry	3
CHEM 551	Catalytic Chemistry	3
CHEM 555	Chemistry of Sustainability	3
CHEM 565	Inorganic Mechanisms	3
CHEM 569	Chemical Crystallography	3
CHEM 570	Chemical Bonding	3
CHEM 575	Fundamentals of Chemical Thermodynamics	1
CHEM 576	Statistical Mechanics	2
CHEM 577	Surface Chemistry	3
CHEM 579	Chemical Kinetics	3
CIVE 260	Engineering Mechanics-Statics	3
CIVE 261	Engineering Mechanics-Dynamics	3
CIVE 322	Basic Hydrology	3
CIVE 330	Ecological Engineering	3
CIVE 360	Mechanics of Solids	3
CIVE 401	Hydraulic Engineering	3
CIVE 413	Environmental River Mechanics	3
CIVE 423	Groundwater Engineering	3
CIVE 425	Soil and Water Engineering	3
CIVE 438	Environmental Engr Concepts for Civil Engrs	3
CIVE 440	Nonpoint Source Pollution	3
CIVE 504	Wind Engineering	3

CIVE 520	Physical Hydrology	3
CIVE 531	Groundwater Hydrology	3
CIVE 538	Aqueous Chemistry	3
CIVE 560	Advanced Mechanics of Materials	3
CM 501	Advanced Cell Biology	4
CM 502/NB 502	Techniques in Molecular & Cellular Biology	2
CS 163	CS1---No Prior Programming Experience	4
or CS 164	CS1--Prior Programming Experience	
CS 220	Discrete Structures and their Applications	4
CS 270	Computer Organization	4
CS 420	Introduction to Analysis of Algorithms	4
ECE 204	Introduction to Electrical Engineering	3
ENGR 422	Technology Entrepreneurship	3
ENGR 423	Intellectual Property and Invention Systems	3
ENGR 510/VS 510	Engineering Optimization: Method/ Application	3
ERHS 430	Human Disease and the Environment	3
ERHS 446	Environmental Toxicology	3
ERHS 448	Environmental Contaminants: Exposure and Fate	3
ERHS 502	Fundamentals of Toxicology	3
ERHS 510/VS 510	Cancer Biology	3
ERHS 547	Equipment and Instrumentation	3
F 311	Forest Ecology	3
FIN 305	Fundamentals of Finance	3
FTEC 447/ANEQ 447	Food Chemistry	2
FTEC 572	Food Biotechnology	2
GEOL 150	Physical Geology for Scientists and Engineers	4
GEOL 452	Hydrogeology	4
GEOL 454	Geomorphology	4
GES 441	Analysis of Sustainable Energy Solutions	3
GES 542	Biobased Fuels, Energy, and Chemicals	3
HES 307	Biomechanical Principles of Human Movement	4
HES 319	Neuromuscular Aspects of Human Movement	4
HES 403	Physiology of Exercise	4
HES 530	Clinical Biomechanics	3
HES 531	Muscle and Joint Mechanics	3
HORT 579	Mass Spectrometry Omics-Methods and Analysis	3
LIFE 201B	Introductory Genetics: Molecular/ Immunological/Developmental (GT-SC2)	3
LIFE 202B	Introductory Genetics Recitation: Molecular	1
LIFE 203	Introductory Genetics Laboratory	2
LIFE 211	Introductory Cell Biology Honors Recitation	1
LIFE 212	Introductory Cell Biology Laboratory	2
LIFE 320	Ecology	3
MATH 301	Introduction to Combinatorial Theory	3
MATH 317	Advanced Calculus of One Variable	3
MATH 331	Introduction to Mathematical Modeling	3
MATH 332	Partial Differential Equations	3
MATH 348	Theory of Population and Evolutionary Ecology	4
MATH 360	Mathematics of Information Security	3
MATH 366	Introduction to Abstract Algebra	3
MATH 369	Linear Algebra I	3
MATH 405	Introduction to Number Theory	3
MATH 417	Advanced Calculus I	3
MATH 418	Advanced Calculus II	3
MATH 419	Introduction to Complex Variables	3
MATH 430/ECE 430	Fourier and Wavelet Analysis with Apps	3
MATH 450	Introduction to Numerical Analysis I	3
MATH 451	Introduction to Numerical Analysis II	3
MATH 455	Mathematics in Biology and Medicine	3
MATH 460	Information and Coding Theory	3
MATH 466	Abstract Algebra I	3
MATH 467	Abstract Algebra II	3
MATH 469	Linear Algebra II	3
MATH 470	Euclidean and Non-Euclidean Geometry	3
MATH 472	Introduction to Topology	3
MATH 474	Introduction to Differential Geometry	3
MATH 501	Combinatorics I	3
MATH 502	Combinatorics II	3
MATH 510	Linear Programming and Network Flows	3
MATH 517	Introduction to Real Analysis	3
MATH 519	Complex Variables I	3
MATH 520	Nonlinear Programming	3
MATH 525	Optimal Control	3
MATH 530	Mathematics for Scientists and Engineers	4
MATH 532	Mathematical Modeling of Large Data Sets	3
MATH 535	Foundations of Applied Mathematics	3
MATH 540	Dynamical Systems	3
MATH 545	Partial Differential Equations I	3
MATH 546	Partial Differential Equations II	3
MATH 550/ ENGR 550	Numerical Methods in Science and Engineering	3
MATH 560	Linear Algebra	3
MATH 570	Topology I	3
MATH 571	Topology II	3
MECH 303	Energy Engineering	3
MECH 307	Mechatronics and Measurement Systems	4
MECH 324	Dynamics of Machines	4
MECH 325	Machine Design	3
MECH 331	Introduction to Engineering Materials	4
MECH 407	Laser Applications in Mechanical Engineering	3
MECH 411	Manufacturing Engineering	3
MECH 424	Advanced Dynamics	3
MECH 425	Mechanical Engineering Vibrations	4
MECH 431	Metals and Alloys	3
MECH 432	Engineering of Nanomaterials	3
MECH 437	Internal Combustion Engines	3
MECH 460	Aeronautics	3

MECH 463	Building Energy Systems	3
MECH 468	Space Propulsion and Power Engineering	3
MECH 502	Advanced/Additive Manufacturing Engineering	3
MECH 507	Laser Diagnostics for Thermosciences	3
MECH 509	Design and Analysis in Engineering Research	3
MECH 513	Simulation Modeling and Experimentation	3
MECH 524	Principles of Dynamics	3
MECH 527	Hybrid Electric Vehicle Powertrains	3
MECH 529	Advanced Mechanical Systems	3
MECH 530	Advanced Composite Materials	3
MECH 543	Biofluid Mechanics	3
MECH 552	Applied Computational Fluid Dynamics	3
MECH 558	Combustion	3
MECH 575	Solar and Alternative Energies	3
MGT 305	Fundamentals of Management	3
MGT 340	Fundamentals of Entrepreneurship	3
MIP 300	General Microbiology	3
MIP 302	General Microbiology Laboratory	2
MIP 315	Pathology of Human and Animal Disease	3
MIP 334	Food Microbiology	3
MIP 335	Food Microbiology Laboratory	2
MIP 342	Immunology	4
MIP 343	Immunology Laboratory	2
MIP 350	Microbial Diversity	3
MIP 351	Medical Bacteriology	3
MIP 352	Medical Bacteriology Laboratory	3
MIP 420	Medical and Molecular Virology	4
MIP 425	Virology and Cell Culture Laboratory	2
MIP 432/ESS 432	Microbial Ecology	3
MIP 433/ESS 433	Microbial Ecology Laboratory	1
MIP 436	Industrial Microbiology	4
MIP 443	Microbial Physiology	4
MIP 450	Microbial Genetics	3
MIP 530	Advanced Molecular Virology	4
MIP 543	RNA Biology	3
MIP 550	Microbial and Molecular Genetics Laboratory	4
MIP 555	Principles and Mechanisms of Disease	3
MIP 576/BSPM 576	Bioinformatics	3
MIP 578/BZ 578	Genetics of Natural Populations	4
MKT 305	Fundamentals of Marketing	3
MSE 501	Materials Technology Transfer	1
MSE 502A	Materials Science & Engineering Methods: Materials Structure and Scattering	1
MSE 502B	Materials Science & Engineering Methods: Computational Materials Methods	1
MSE 502C	Materials Science & Engineering Methods: Materials Microscopy	1
MSE 502D	Materials Science & Engineering Methods: Materials Spectroscopy	1
MSE 502E	Materials Science & Engineering Methods: Bulk Properties and Performance	1
MSE 502F	Materials Science & Engineering Methods: Experimental Methods for Materials Research	1
MSE 503	Mechanical Behaviors of Materials	3
MSE 504	Thermodynamics of Materials	3
MSE 505	Kinetics of Materials	3
NR 300	Biological Diversity	3
NR 319	Geospatial Applications in Natural Resources	4
NR 322	Introduction to Geographic Information Systems	4
NR 323/GR 323	Remote Sensing and Image Interpretation	3
NR 353/BZ 353	Global Change Ecology, Impacts and Mitigation	3
NR 505	Concepts in GIS	4
PH 314	Introduction to Modern Physics	4
PH 315	Modern Physics Laboratory	2
PH 341	Mechanics	4
PH 351	Electricity and Magnetism	4
PH 353	Optics and Waves	4
PH 361	Physical Thermodynamics	3
PH 451	Introductory Quantum Mechanics I	3
PH 452	Introductory Quantum Mechanics II	3
PH 517	Chaos, Fractals, and Nonlinear Dynamics	3
PH 521	Introduction to Lasers	3
PH 522	Introductory Laser Laboratory	1
PH 531	Introductory Condensed Matter Physics	3
PH 561	Elementary Particle Physics	3
PH 571	Mathematical Methods for Physics I	3
PH 572	Mathematical Methods for Physics II	3
PHIL 410	Formal Logic	3
SOCR 240	Introductory Soil Science	4
SOCR 330	Principles of Genetics	3
SOCR 400	Soils and Global Change: Science and Impacts	3
SOCR 430	Applications of Plant Biotechnology	3
SOCR 455	Soil Microbiology	3
SOCR 456	Soil Microbiology Laboratory	1
SOCR 467	Soil and Environmental Chemistry	3
SOCR 470	Soil Physics	3
SOCR 471	Soil Physics Laboratory	1
SOCR 567	Environmental Soil Chemistry	4
STAT 305	Sampling Techniques	3
STAT 340	Multiple Regression Analysis	3
STAT 341	Statistical Data Analysis I	3
STAT 342	Statistical Data Analysis II	3
STAT 350	Design of Experiments	3
STAT 400	Statistical Computing	3
STAT 420	Probability and Mathematical Statistics I	3
STAT 421	Introduction to Stochastic Processes	3
STAT 430	Probability and Mathematical Statistics II	3

STAT 460	Applied Multivariate Analysis	3
STAT 512	Design and Data Analysis for Researchers II	4
STAT 548/CS 548	Bioinformatics Algorithms	4

1 Select a total of 5 credits from Approved BME Technical Electives for BME+CBE Program. A maximum of 3 total credits of BIOM 476A, BIOM 476B, and BIOM 495 may count as BME Technical Elective credit.

2 Select a total of 5 credits from Approved CBE Techical Electives for BME+CBE Program. A maximum of 3 total credits of ENGR 422, ENGR 423 FIN 305, MGT 305, MGT 340 and MKT 305 may count as CBE Technical Elective credit.

Major Completion Map

Distinctive Requirements for Degree Program:

TO DECLARE MAJOR: Engineering is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the Department for more information.

TO PREPARE FOR FIRST SEMESTER: The curriculum for this major assumes students enter college prepared to take calculus and chemistry. To qualify for graduation, students in the biomedical engineering combined with chemical and biological engineering program must achieve a minimum 2.000 grade point average at CSU in all courses in engineering, mathematics, computer science, statistics, physics, and chemistry as well as courses taken as technical electives.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BIOM 100	Overview of Biomedical Engineering	X			1
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	4
MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	4
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CBE 101	Introduction to Chemical and Biological Engr	X			3
CBE 160	MATLAB for Chemical and Biological Eng	X			1
CHEM 113	General Chemistry II	X			3
MATH 161	Calculus for Physical Scientists II (GT-MA1)	X		1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	X		3A	5
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CBE 201	Material and Energy Balances	X			3
CBE 205	Fundamentals of Biological Engineering	X			3
CHEM 114	General Chemistry Lab II	X			1
CHEM 341	Modern Organic Chemistry I	X			3
CO 150	College Composition (GT-CO2)		X	1A	3
MATH 261	Calculus for Physical Scientists III	X			4
	Total Credits				17
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
CBE 210	Thermodynamic Process Analysis	X			3
CHEM 343	Modern Organic Chemistry II	X			3
CHEM 344	Modern Organic Chemistry Laboratory	X			2
MATH 340	Introduction to Ordinary Differential Equations	X			4
MECH 262	Engineering Mechanics		X		4
	Total Credits				16

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BMS 300	Principles of Human Physiology	X			4
CBE 310	Molecular Concepts and Applications	X			3
CBE 330	Process Simulation	X			3
CBE 331	Momentum Transfer and Mechanical Separations	X			3

LIFE 210	Introductory Eukaryotic Cell Biology		X		3
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 351	Principles of Biochemistry		X		4
BIOM 300	Problem-Based Learning Biomedical Engr Lab	X			4
CBE 320	Chemical and Biological Reactor Design	X			3
CBE 332	Heat and Mass Transfer Fundamentals	X			3
CBE 493	Professional Development Seminar	X			1
Advanced Writing			X	2	3
	Total Credits				18
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
BIOM 421	Transport Phenomena in Biomedical Engineering	X			3
CBE 333	Chemical and Biological Engineering Lab I	X			2
CBE 442	Separation Processes	X			4
CBE 451	Chemical and Biological Engineering Design I	X			3
Arts and Humanities			X	3B	3
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BIOM 422	Kinetics of Biomolecular and Cellular Systems	X			3
CBE 443	Chemical and Biological Engineering Lab II	X			2
PH 142	Physics for Scientists and Engineers II (GT-SC1)		X	3A	5
STAT 315	Statistics for Engineers and Scientists		X		3
Historical Perspectives			X	3D	3
	Total Credits				16
Fifth Year					
Semester 9		**Critical**	**Recommended**	**AUCC**	**Credits**
BIOM 486A	Biomedical Design Practicum: Capstone Design I	X		4A,4B,4C	4
BME Technical Elective (See List on Requirements Tab)			X		3
CBE Technical Elective (See List on Requirements Tab)			X		3
Arts and Humanities			X	3B	3
Diversity and Global Awareness				3E	3
	Total Credits				16
Semester 10		**Critical**	**Recommended**	**AUCC**	**Credits**
BIOM 486B	Biomedical Design Practicum: Capstone Design II	X		4A,4B,4C	4
CBE 430	Process Control and Instrumentation	X			3
BME Technical Elective (See List on Requirements Tab)		X			2
CBE Technical Elective (See List on Requirements Tab)		X			2
Social and Behavioral Sciences		X		3C	3
The benchmark courses for the 10th semester are the remaining courses in the entire program of study		X			
	Total Credits				14
	Program Total Credits:				158

Dual Degree Program: Biomedical Engineering combined with Electrical Engineering, Electrical Engineering Concentration

Requirements
Effective Fall 2019

In order to maintain professional standards required of practicing engineers, the Department of Electrical and Computer Engineering requires a cumulative grade point average of at least 2.000 in ECE courses as a graduation requirement. It is the responsibility of any student who fails to maintain a 2.000 average to work with their advisor to correct grade point deficiencies. In addition, it is required that students retake any Electrical Engineering course at the 300-level or below in which they receive a grade below a C.

Freshman

		AUCC	Credits
BIOM 100	Overview of Biomedical Engineering		1
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
ECE 102	Digital Circuit Logic		4
ECE 103	DC Circuit Analysis		3
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
Career Development Seminar[1]			0
	Total Credits		33

Sophomore

BIOM 200	Fundamentals of Biomedical Engineering		2
ECE 202	Circuit Theory Applications		4
ECE 303/STAT 303	Introduction to Communications Principles		3
MATH 261	Calculus for Physical Scientists III		4
MATH 340	Introduction to Ordinary Differential Equations		4
MECH 262	Engineering Mechanics		4
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	5
Select one group from the following:			3-4
Group A:			
CS 155	Introduction to Unix		
CS 156	Introduction to C Programming I		
CS 157	Introduction to C Programming II		
Group B:			
CS 163 or 164	CS1---No Prior Programming Experience CS1--Prior Programming Experience		
Career Development Seminar[1]			0
	Total Credits		29-30

Junior

BIOM 300	Problem-Based Learning Biomedical Engr Lab		4
ECE 311	Linear System Analysis I		3
ECE 312	Linear System Analysis II		3
ECE 331	Electronics Principles I		4
ECE 332	Electronics Principles II		4

ECE 341	Electromagnetic Fields and Devices I		3
ECE 342	Electromagnetic Fields and Devices II		3
LIFE 210	Introductory Eukaryotic Cell Biology		3
Diversity and Global Awareness		3E	3
Career Development Seminar[1]			0
	Total Credits		30

Senior

BIOM 431/ECE 431	Biomedical Signal and Image Processing		3
BMS 300	Principles of Human Physiology		4
CHEM 113	General Chemistry II		3
CHEM 245	Fundamentals of Organic Chemistry		4
ECE 251	Introduction to Microprocessors		4
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
MECH 337	Thermodynamics		4
ECE Technical Electives (See list below)			6
Arts and Humanities		3B	3
Career Development Seminar[1]			0
	Total Credits		34

Fifth Year

BIOM 486A	Biomedical Design Practicum: Capstone Design I	4A,4B,4C	4
BIOM 486B	Biomedical Design Practicum: Capstone Design II	4A,4B,4C	4
Select one course from the following:			3
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
BME Technical Electives (See list below)			6
ECE Technical Electives (See list below)			8
Arts and Humanities		3B	3
Historical Perspectives		3D	3
Career Development Seminar[1]			0
	Total Credits		31
	Program Total Credits:		157-158

BME Technical Electives – Select a minimum of 6 credits

Code	Title	Credits
BC 351	Principles of Biochemistry	4
BC 401	Comprehensive Biochemistry I	3
BC 403	Comprehensive Biochemistry II	3
BC 404	Comprehensive Biochemistry Laboratory	2
BC 411	Physical Biochemistry	4
BC 463	Molecular Genetics	3
BC 465	Molecular Regulation of Cell Function	3
BC 565	Molecular Regulation of Cell Function	4
BIOM 421	Transport Phenomena in Biomedical Engineering	3
BIOM 422	Kinetics of Biomolecular and Cellular Systems	3
BIOM 441	Biomechanics and Biomaterials	3
BIOM 470/MECH 470	Biomedical Engineering	3
BIOM 476A	Biomedical Clinical Practicum I	2
BIOM 476B	Biomedical Clinical Practicum II	4
BIOM 495	Independent Study	1-6
BIOM 504/CBE 504	Fundamentals of Biochemical Engineering	3
BIOM 518/ECE 518	Biophotonics	3
BIOM 522/CBE 522	Bioseparation Processes	3
BIOM 525/MECH 525	Cell and Tissue Engineering	3
BIOM 526/ECE 526	Biological Physics	3
BIOM 531/MECH 531	Materials Engineering	3
BIOM 533/CIVE 533	Biomolecular Tools for Engineers	3
BIOM 537/ECE 537	Biomedical Signal Processing	3
BIOM 543/CBE 543	Membranes for Biotechnology and Biomedicine	3
BIOM 570/MECH 570	Bioengineering	3
BIOM 573/MECH 573	Structure and Function of Biomaterials	3
BIOM 574/MECH 574	Bio-Inspired Surfaces	3
BIOM 576/MECH 576	Quantitative Systems Physiology	4
BIOM 578/MECH 578	Musculoskeletal Biosolid Mechanics	3
BMS 301	Human Gross Anatomy	5

BMS 302	Laboratory in Principles of Physiology	2
BMS 310	Anatomy for the Health Professions	4
BMS 325	Cellular Neurobiology	3
BMS 345	Functional Neuroanatomy	4
BMS 405	Nerve and Muscle-Toxins, Trauma and Disease	3
BMS 409	Human and Animal Reproductive Biology	3
BMS 420	Cardiopulmonary Physiology	3
BMS 430	Endocrinology	3
BMS 450	Pharmacology	3
BMS 500	Mammalian Physiology I	4
BMS 501	Mammalian Physiology II	4
BZ 311	Developmental Biology	4
BZ 350	Molecular and General Genetics	4
BZ 476/BZ 576	Genetics of Model Organisms	3
CBE 330	Process Simulation	3
CHEM 334	Quantitative Analysis Laboratory	1
CHEM 335	Introduction to Analytical Chemistry	3
CHEM 343	Modern Organic Chemistry II	3
CHEM 344	Modern Organic Chemistry Laboratory	2
CHEM 346	Organic Chemistry II	4
CHEM 433	Clinical Chemistry	3
CHEM 539A	Principles of NMR and MRI: Basic NMR Principles	1
CHEM 539B	Principles of NMR and MRI: NMR Diffusion Measurements-2D NMR and MRI	1
CHEM 539C	Principles of NMR and MRI: Advanced NMR and MRI Techniques	1
CM 501	Advanced Cell Biology	4
CM 502/NB 502	Techniques in Molecular & Cellular Biology	2
ECE 569/MECH 569	Micro-Electro-Mechanical Devices	3
ERHS 450	Introduction to Radiation Biology	3
ERHS 502	Fundamentals of Toxicology	3
ERHS 510/VS 510	Cancer Biology	3
ERHS 540	Principles of Ergonomics	3
FSHN 470	Integrative Nutrition and Metabolism	3
HES 307	Biomechanical Principles of Human Movement	4
HES 319	Neuromuscular Aspects of Human Movement	4
HES 403	Physiology of Exercise	4
HES 476	Exercise and Chronic Disease	3
MATH 455	Mathematics in Biology and Medicine	3
MECH 432	Engineering of Nanomaterials	3
MECH 543	Biofluid Mechanics	3
MIP 300	General Microbiology	3
MIP 302	General Microbiology Laboratory	2
MIP 342	Immunology	4
MIP 343	Immunology Laboratory	2
MIP 351	Medical Bacteriology	3
MIP 352	Medical Bacteriology Laboratory	3
MIP 420	Medical and Molecular Virology	4
MIP 436	Industrial Microbiology	4
MIP 443	Microbial Physiology	4
MIP 450	Microbial Genetics	3
MIP 576/BSPM 576	Bioinformatics	3
NB 500	Readings in Cellular Neurobiology	1
NB 501	Cellular and Molecular Neurophysiology	2
NB 503/BMS 503	Developmental Neurobiology	3
NB 505/BMS 505	Neuronal Circuits, Systems and Behavior	3

ECE Technical Electives – Select a minimum of 14 credits

Code	Title	Credits
CS 314	Software Engineering	3
CS 320	Algorithms--Theory and Practice	3
CS 356	Systems Security	3
CS 370	Operating Systems	3
CS 410	Introduction to Computer Graphics	4
CS 414	Object-Oriented Design	4
CS 420	Introduction to Analysis of Algorithms	4
CS 430	Database Systems	4
CS 440	Introduction to Artificial Intelligence	4
CS 445	Introduction to Machine Learning	4
CS 453	Introduction to Compiler Construction	4
CS 455	Introduction to Distributed Systems	4
CS 475	Parallel Programming	4
CS 510	Image Computation	4
CS 520	Analysis of Algorithms	4
CS 530	Fault-Tolerant Computing	4
CS 540	Artificial Intelligence	4
CS 545	Machine Learning	4
CS 553	Algorithmic Language Compilers	4
CS 556	Computer Security	4
CS 557	Advanced Networking	4
CS 575	Parallel Processing	4
ECE 4** - Any ECE Course at the 400-level		var.
A maximum of 3 credits from the following may be used to satisfy this requirement:		var.
ECE 495A	Independent Study	
ECE 495B	Independent Study: Open Option Project	
ECE 495C	Independent Study: Vertically Integrated Projects	
ECE 5** - Any ECE Course at the 500-level		var.
MATH 417	Advanced Calculus I	3
MATH 418	Advanced Calculus II	3
MATH 419	Introduction to Complex Variables	3
MATH 450	Introduction to Numerical Analysis I	3
MATH 451	Introduction to Numerical Analysis II	3
MATH 460	Information and Coding Theory	3
MATH 466	Abstract Algebra I	3
MATH 469	Linear Algebra II	3
MATH 470	Euclidean and Non-Euclidean Geometry	3
MATH 474	Introduction to Differential Geometry	3
MECH 564	Fundamentals of Robot Mechanics and Controls	3

PH 315	Modern Physics Laboratory	2
PH 425	Advanced Physics Laboratory	2
PH 451	Introductory Quantum Mechanics I	3
PH 452	Introductory Quantum Mechanics II	3
PH 462	Statistical Physics	3
STAT 421	Introduction to Stochastic Processes	3

[1] Students are required to complete three Career Development Seminars: 1) Resume Writing; 2) Mock Interview or Behavior Based Interviewing; and 3) Using LinkedIn™. Completion of the required workshops may be spread over the student's five-year program.

Major Completion Map

Distinctive Requirements for Degree Program:

TO DECLARE MAJOR: Engineering is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the Department for more information.

TO PREPARE FOR FIRST SEMESTER: The curriculum for this major assumes students enter college prepared to take calculus and chemistry. To qualify for graduation, students in the biomedical engineering combined with chemical and biological engineering program must achieve a minimum 2.000 grade point average at CSU in all courses in engineering, mathematics, computer science, statistics, physics, and chemistry as well as courses taken as technical electives.

The ECE curriculum has been modified as part of the Revolutionizing Engineering Departments initiative (RED). Three threads run through the new curriculum: Foundations, Creativity and Professional Formation of Engineers. This new curriculum incorporates skills that engineers need beyond technical expertise, in areas like communication, ethics, social impact and interaction in large, diverse groups. The ECE department requires that students also complete the following three Career Development Seminars: 1) Resume Writing; 2) Mock Interviewing or Behavior Based Interviewing; and 3) Using LinkedIn™.

In order to maintain professional standards required of practicing engineers, the Department of Electrical and Computer Engineering requires a cumulative grade point average of at least 2.000 in ECE courses as a graduation requirement. It is the responsibility of any student who fails to maintain a 2.000 average to work with their advisor to correct grade point deficiencies. In addition, it is required that students retake any Electrical Engineering course at the 300-level or below in which they receive a grade below a C.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BIOM 100	Overview of Biomedical Engineering	X			1
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CO 150	College Composition (GT-CO2)		X	1A	3
ECE 102	Digital Circuit Logic	X			4
MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	4
Career Development Seminar(s)			X		
	Total Credits				16

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 112	General Chemistry Lab I (GT-SC1)		X	3A	1
ECE 103	DC Circuit Analysis	X			3
LIFE 102	Attributes of Living Systems (GT-SC1)		X	3A	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	X		1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	X		3A	5
Career Development Seminar(s)			X		
	Total Credits				17

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
BIOM 200	Fundamentals of Biomedical Engineering	X			2
MATH 261	Calculus for Physical Scientists III	X			4
PH 142	Physics for Scientists and Engineers II (GT-SC1)	X		3A	5
Select one group from the following:					3-4
Group A:					
CS 155	Introduction to Unix	X			
CS 156	Introduction to C Programming I	X			
CS 157	Introduction to C Programming II	X			
Group B:					
CS 163 or 164	CS1---No Prior Programming Experience CS1--Prior Programming Experience	X			

Career Development Seminar(s)			X		
	Total Credits				14-15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ECE 202	Circuit Theory Applications	X			4
ECE 303/ STAT 303	Introduction to Communications Principles	X			3
MATH 340	Introduction to Ordinary Differential Equations	X			4
MECH 262	Engineering Mechanics		X		4
Career Development Seminar(s)			X		
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
ECE 311	Linear System Analysis I	X			3
ECE 331	Electronics Principles I	X			4
ECE 341	Electromagnetic Fields and Devices I	X			3
LIFE 210	Introductory Eukaryotic Cell Biology		X		3
Diversity and Global Awareness				3E	3
Career Development Seminar(s)			X		
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
BIOM 300	Problem-Based Learning Biomedical Engr Lab	X			4
ECE 312	Linear System Analysis II	X			3
ECE 332	Electronics Principles II	X			4
ECE 342	Electromagnetic Fields and Devices II	X			3
Career Development Seminar(s)			X		
	Total Credits				14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
BMS 300	Principles of Human Physiology	X			4
CHEM 113	General Chemistry II		X		3
ECE 251	Introduction to Microprocessors	X			4
ECE Technical Electives (See List on Requirements Tab)			X		3
Arts and Humanities			X	3B	3
Career Development Seminar(s)			X		
	Total Credits				17
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BIOM 431/ ECE 431	Biomedical Signal and Image Processing	X			3
CHEM 245	Fundamentals of Organic Chemistry		X		4
ECON 202	Principles of Microeconomics (GT-SS1)		X	3C	3
MECH 337	Thermodynamics		X		4
ECE Technical Elective (See List on Requirements Tab)			X		3
Career Development Seminar(s)			X		
	Total Credits				17
Fifth Year					
Semester 9		**Critical**	**Recommended**	**AUCC**	**Credits**
BIOM 486A	Biomedical Design Practicum: Capstone Design I	X		4A,4B,4C	4
Select one course from the following:		X			3
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)		X	2	
JTC 300	Professional and Technical Communication (GT-CO3)		X	2	
BME Technical Elective (See List on Requirements Tab)			X		3
ECE Technical Elective (See List on Requirements Tab)			X		3

Historical Perspectives			X	3D	3
Career Development Seminar(s)			X		
	Total Credits				16
Semester 10		**Critical**	**Recommended**	**AUCC**	**Credits**
BIOM 486B	Biomedical Design Practicum: Capstone Design II	X		4A,4B,4C	4
ECE Technical Elective (See List on Requirements Tab)		X			5
BME Technical Elective (See List on Requirements Tab)		X			3
Arts and Humanities		X		3B	3
Career Development Seminar(s)		X			
The benchmark courses for the 10th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				157-158

Dual Degree Program: Biomedical Engineering combined with Electrical Engineering, Lasers and Optical Engineering Concentration

Requirements
Effective Fall 2019

In order to maintain professional standards required of practicing engineers, the Department of Electrical and Computer Engineering requires a cumulative grade point average of at least 2.000 in ECE courses as a graduation requirement. It is the responsibility of any student who fails to maintain a 2.000 average to work with their advisor to correct grade point deficiencies. In addition, it is required that students retake any Electrical Engineering course at the 300-level or below in which they receive a grade below a C.

Freshman

		AUCC	**Credits**
BIOM 100	Overview of Biomedical Engineering		1
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
ECE 102	Digital Circuit Logic		4
ECE 103	DC Circuit Analysis		3
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
Career Development Seminar[1]			0
	Total Credits		33

Sophomore

BIOM 200	Fundamentals of Biomedical Engineering		2
ECE 202	Circuit Theory Applications		4
ECE 303/STAT 303	Introduction to Communications Principles		3
MATH 261	Calculus for Physical Scientists III		4
MATH 340	Introduction to Ordinary Differential Equations		4
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	5
PH 314	Introduction to Modern Physics		4
Select one group from the following:			3-4
Group A:			
CS 155	Introduction to Unix		

CS 156	Introduction to C Programming I		
CS 157	Introduction to C Programming II		
Group B:			
CS 163 or 164	CS1---No Prior Programming Experience CS1--Prior Programming Experience		
Career Development Seminar[1]			0
	Total Credits		29-30

Junior

BIOM 300	Problem-Based Learning Biomedical Engr Lab		4
BMS 300	Principles of Human Physiology		4
ECE 311	Linear System Analysis I		3
ECE 331	Electronics Principles I		4
ECE 332	Electronics Principles II		4
ECE 341	Electromagnetic Fields and Devices I		3
ECE 342	Electromagnetic Fields and Devices II		3
LIFE 210	Introductory Eukaryotic Cell Biology		3
Arts and Humanities		3B	3
Career Development Seminar[1]			0
	Total Credits		31

Senior

BIOM 431/ECE 431	Biomedical Signal and Image Processing		3
CHEM 113	General Chemistry II		3
CHEM 245	Fundamentals of Organic Chemistry		4
ECE 404	Experiments in Optical Electronics		2
ECE 441	Optical Electronics		3
ECE 457	Fourier Optics		3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
MECH 262	Engineering Mechanics		4
MECH 337	Thermodynamics		4
PH 353	Optics and Waves		4
Career Development Seminar[1]			0
	Total Credits		33

Fifth Year

BIOM 486A	Biomedical Design Practicum: Capstone Design I	4A,4B,4C	4
BIOM 486B	Biomedical Design Practicum: Capstone Design II	4A,4B,4C	4
PH 451	Introductory Quantum Mechanics I		3
Select one course from the following:			3
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
ECE Lasers & Optical Engineering Technical Electives (See list below)			9
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Career Development Seminar[1]			0
	Total Credits		32
	Program Total Credits:		158-159

ECE Lasers & Optical Engineering Technical Electives List – Select a minimum of 9 credits

Code	Title	Credits
ECE 312	Linear System Analysis II	3
ECE 430/MATH 430	Fourier and Wavelet Analysis with Apps	3
ECE 471A	Semiconductor Physics	1
ECE 471B	Semiconductor Junctions	1
A maximum of 3 credits from the following may be used to satisfy this requirement:		var.
ECE 495A	Independent Study	
ECE 495B	Independent Study: Open Option Project	
ECE 495C	Independent Study: Vertically Integrated Projects	
ECE 503	Ultrafast Optics	3
ECE 504	Physical Optics	3
ECE 505	Nanostructures: Fundamentals and Applications	3
ECE 506	Optical Interferometry and Laser Metrology	3
ECE 507	Plasma Physics and Applications	3
ECE 517/BIOM 517	Advanced Optical Imaging	3
ECE 518/BIOM 518	Biophotonics	3
ECE 526/BIOM 526	Biological Physics	3
ECE 546	Laser Fundamentals and Devices	3
ECE 572	Semiconductor Transistors	1
ECE 573	Semiconductor Optoelectronics Laboratory	3
ECE 574	Optical Properties in Solids	3
MATH 419	Introduction to Complex Variables	3
PH 315	Modern Physics Laboratory	2
PH 425	Advanced Physics Laboratory	2
PH 452	Introductory Quantum Mechanics II	3
PH 462	Statistical Physics	3

[1] Students are required to complete three Career Development Seminars: 1) Resume Writing; 2) Mock Interview or Behavior Based Interviewing; and 3) Using LinkedIn™. Completion of the required workshops may be spread over the student's five-year program.

Major Completion Map

Distinctive Requirements for Degree Program:

TO DECLARE MAJOR: Engineering is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the department for more information.

TO PREPARE FOR FIRST SEMESTER: The curriculum for this major assumes students enter college prepared to take calculus and chemistry. To qualify for graduation, students in the biomedical engineering combined with chemical and biological engineering program must achieve a minimum 2.000 grade point average at CSU in all courses in engineering, mathematics, computer science, statistics, physics, and chemistry as well as courses taken as technical electives.

In order to maintain professional standards required of practicing engineers, the Department of Electrical and Computer Engineering requires a cumulative grade point average of at least 2.000 in ECE courses as a graduation requirement. It is the responsibility of any student who fails to maintain a 2.000 average to work with their advisor to correct grade point deficiencies. In addition, it is required that students retake any Electrical Engineering course at the 300-level or below in which they receive a grade below a C.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
BIOM 100	Overview of Biomedical Engineering	X			1
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CO 150	College Composition (GT-CO2)		X	1A	3
ECE 102	Digital Circuit Logic	X			4
MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	4
Career Development Seminar(s)			X		
	Total Credits				16

Semester 2		Critical	Recommended	AUCC	Credits
CHEM 112	General Chemistry Lab I (GT-SC1)		X	3A	1
ECE 103	DC Circuit Analysis	X			3
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	X		1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	X		3A	5
Career Development Seminar(s)			X		
	Total Credits				17

Sophomore

Semester 3		Critical	Recommended	AUCC	Credits
BIOM 200	Fundamentals of Biomedical Engineering	X			2
MATH 261	Calculus for Physical Scientists III	X			4
PH 142	Physics for Scientists and Engineers II (GT-SC1)	X		3A	5

Select one group from the following:		X			3-4
Group A:					
CS 155	Introduction to Unix	X			
CS 156	Introduction to C Programming I	X			
CS 157	Introduction to C Programming II	X			
Group B:					
CS 163 or 164	CS1---No Prior Programming Experience CS1--Prior Programming Experience	X			
Career Development Seminar(s)			X		
	Total Credits				14-15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ECE 202	Circuit Theory Applications	X			4
ECE 303/ STAT 303	Introduction to Communications Principles	X			3
MATH 340	Introduction to Ordinary Differential Equations	X			4
PH 314	Introduction to Modern Physics	X			4
Career Development Seminar(s)			X		
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
ECE 311	Linear System Analysis I	X			3
ECE 331	Electronics Principles I	X			4
ECE 341	Electromagnetic Fields and Devices I	X			3
LIFE 210	Introductory Eukaryotic Cell Biology		X		3
Arts and Humanities			X	3B	3
Career Development Seminar(s)			X		
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
BIOM 300	Problem-Based Learning Biomedical Engr Lab	X			4
BMS 300	Principles of Human Physiology		X		4
ECE 332	Electronics Principles II	X			4
ECE 342	Electromagnetic Fields and Devices II	X			3
Career Development Seminar(s)			X		
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II		X		3
ECE 404	Experiments in Optical Electronics	X			2
ECE 441	Optical Electronics	X			3
MECH 337	Thermodynamics		X		4
PH 353	Optics and Waves	X			4
Career Development Seminar(s)			X		
	Total Credits				16
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BIOM 431/ ECE 431	Biomedical Signal and Image Processing	X			3
CHEM 245	Fundamentals of Organic Chemistry		X		4
ECE 457	Fourier Optics	X			3
ECON 202	Principles of Microeconomics (GT-SS1)		X	3C	3
MECH 262	Engineering Mechanics	X			4
Career Development Seminar(s)			X		
	Total Credits				17

Fifth Year

Semester 9		**Critical**	**Recommended**	**AUCC**	**Credits**
BIOM 486A	Biomedical Design Practicum: Capstone Design I	X		4A,4B,4C	4
PH 451	Introductory Quantum Mechanics I	X			3
Select one course from the following:		X			3
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)		X	2	
JTC 300	Professional and Technical Communication (GT-CO3)		X	2	
ECE Lasers & Optical Engineering Technical Electives (See List on Requirements tab)		X			6
Historical Perspectives			X	3D	3
Career Development Seminar(s)			X		
	Total Credits				19

Semester 10		**Critical**	**Recommended**	**AUCC**	**Credits**
BIOM 486B	Biomedical Design Practicum: Capstone Design II	X		4A,4B,4C	4
ECE Lasers & Optical Engineering Technical Electives (See List on Requirements tab)		X			3
Arts and Humanities		X		3B	3
Diversity and Global Awareness		X		3E	3
Career Development Seminar(s)		X			
The benchmark courses for the 10th semester are the remaining courses in the entire program of study.		X			
	Total Credits				13
	Program Total Credits:				158-159

Dual Degree Program: Biomedical Engineering combined with Mechanical Engineering

Requirements
Effective Fall 2019

Freshman

		AUCC	**Credits**
BIOM 100	Overview of Biomedical Engineering		1
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
MECH 103	Introduction to Mechanical Engineering		3
MECH 105	Mechanical Engineering Problem Solving		3
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
	Total Credits		32

Sophomore

BIOM 200	Fundamentals of Biomedical Engineering	2
CHEM 113	General Chemistry II	3
CIVE 260	Engineering Mechanics-Statics	3
CIVE 261	Engineering Mechanics-Dynamics	3
MATH 261	Calculus for Physical Scientists III	4

MATH 340	Introduction to Ordinary Differential Equations		4
MECH 200	Introduction to Manufacturing Processes		3
MECH 201	Engineering Design I		2
MECH 231	Engineering Experimentation		3
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	5
	Total Credits		32

Junior

BIOM 300	Problem-Based Learning Biomedical Engr Lab		4
BMS 300	Principles of Human Physiology		4
CHEM 245	Fundamentals of Organic Chemistry		4
CIVE 360	Mechanics of Solids		3
LIFE 210	Introductory Eukaryotic Cell Biology		3
MECH 202	Engineering Design II		3
MECH 324	Dynamics of Machines		4
MECH 337	Thermodynamics		4
MECH 342	Mechanics and Thermodynamics of Flow Processes		3
	Total Credits		32

Senior

BIOM 441	Biomechanics and Biomaterials		3
ECE 204	Introduction to Electrical Engineering		3
MECH 301A	Engineering Design III: Finite Element Analysis		1
MECH 301B	Engineering Design III: Computational Fluid Dynamics		1
MECH 307	Mechatronics and Measurement Systems		4
MECH 325	Machine Design		3
MECH 331	Introduction to Engineering Materials		4
MECH 338	Thermal/Fluid Sciences Laboratory		1
MECH 344	Heat and Mass Transfer		3
Advanced Writing		2	3
Arts and Humanities		3B	3
Social and Behavioral Sciences		3C	3
	Total Credits		32

Fifth Year

BIOM 486A	Biomedical Design Practicum: Capstone Design I	4A,4B,4C	4
BIOM 486B	Biomedical Design Practicum: Capstone Design II	4A,4B,4C	4
STAT 315	Statistics for Engineers and Scientists		3
BME Technical Elective (See list below)			6
MECH Technical Elective[1]			3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
	Total Credits		29
	Program Total Credits:		157

BME Technical Elective List

Code	Title	Credits
BC 351	Principles of Biochemistry	4
BC 401	Comprehensive Biochemistry I	3
BC 403	Comprehensive Biochemistry II	3
BC 404	Comprehensive Biochemistry Laboratory	2
BC 411	Physical Biochemistry	4
BC 463	Molecular Genetics	3
BC 465	Molecular Regulation of Cell Function	3
BC 565	Molecular Regulation of Cell Function	4
BIOM 421	Transport Phenomena in Biomedical Engineering	3

BIOM 422	Kinetics of Biomolecular and Cellular Systems	3
BIOM 431/ECE 431	Biomedical Signal and Image Processing	3
BIOM 470/MECH 470	Biomedical Engineering	3
BIOM 476A	Biomedical Clinical Practicum I	2
BIOM 476B	Biomedical Clinical Practicum II	4
BIOM 495	Independent Study	1-6
BIOM 504/CBE 504	Fundamentals of Biochemical Engineering	3
BIOM 518/ECE 518	Biophotonics	3
BIOM 522/CBE 522	Bioseparation Processes	3
BIOM 525/MECH 525	Cell and Tissue Engineering	3
BIOM 526/ECE 526	Biological Physics	3
BIOM 531/MECH 531	Materials Engineering	3
BIOM 533/CIVE 533	Biomolecular Tools for Engineers	3
BIOM 537/ECE 537	Biomedical Signal Processing	3
BIOM 543/CBE 543	Membranes for Biotechnology and Biomedicine	3
BIOM 570/MECH 570	Bioengineering	3
BIOM 573/MECH 573	Structure and Function of Biomaterials	3
BIOM 574/MECH 574	Bio-Inspired Surfaces	3
BIOM 576/MECH 576	Quantitative Systems Physiology	4
BIOM 578/MECH 578	Musculoskeletal Biosolid Mechanics	3
BMS 301	Human Gross Anatomy	5
BMS 302	Laboratory in Principles of Physiology	2
BMS 310	Anatomy for the Health Professions	4
BMS 325	Cellular Neurobiology	3
BMS 345	Functional Neuroanatomy	4
BMS 405	Nerve and Muscle-Toxins, Trauma and Disease	3
BMS 409	Human and Animal Reproductive Biology	3
BMS 420	Cardiopulmonary Physiology	3
BMS 430	Endocrinology	3
BMS 450	Pharmacology	3
BMS 500	Mammalian Physiology I	4
BMS 501	Mammalian Physiology II	4
BMS 503/NB 503	Developmental Neurobiology	3
BMS 505/NB 505	Neuronal Circuits, Systems and Behavior	3
BZ 311	Developmental Biology	4
BZ 350	Molecular and General Genetics	4
BZ 476/BZ 576	Genetics of Model Organisms	3
CBE 330	Process Simulation	3
CHEM 334	Quantitative Analysis Laboratory	1
CHEM 335	Introduction to Analytical Chemistry	3
CHEM 343	Modern Organic Chemistry II	3
CHEM 344	Modern Organic Chemistry Laboratory	2
CHEM 346	Organic Chemistry II	4
CHEM 433	Clinical Chemistry	3
CHEM 539A	Principles of NMR and MRI: Basic NMR Principles	1
CHEM 539B	Principles of NMR and MRI: NMR Diffusion Measurements-2D NMR and MRI	1
CHEM 539C	Principles of NMR and MRI: Advanced NMR and MRI Techniques	1
CM 501	Advanced Cell Biology	4
CM 502/NB 502	Techniques in Molecular & Cellular Biology	2
ECE 569/MECH 569	Micro-Electro-Mechanical Devices	3
ERHS 450	Introduction to Radiation Biology	3
ERHS 502	Fundamentals of Toxicology	3
ERHS 510/VS 510	Cancer Biology	3
ERHS 540	Principles of Ergonomics	3
FSHN 470	Integrative Nutrition and Metabolism	3
HES 307	Biomechanical Principles of Human Movement	4
HES 319	Neuromuscular Aspects of Human Movement	4
HES 403	Physiology of Exercise	4
HES 476	Exercise and Chronic Disease	3
MATH 455	Mathematics in Biology and Medicine	3
MECH 432	Engineering of Nanomaterials	3
MECH 543	Biofluid Mechanics	3
MIP 300	General Microbiology	3
MIP 302	General Microbiology Laboratory	2
MIP 342	Immunology	4
MIP 343	Immunology Laboratory	2
MIP 351	Medical Bacteriology	3
MIP 352	Medical Bacteriology Laboratory	3
MIP 420	Medical and Molecular Virology	4
MIP 436	Industrial Microbiology	4
MIP 443	Microbial Physiology	4
MIP 450	Microbial Genetics	3
MIP 576/BSPM 576	Bioinformatics	3
NB 500	Readings in Cellular Neurobiology	1
NB 501	Cellular and Molecular Neurophysiology	2

[1] Select 3 credits from any of the following: MECH 303 or any 400- or 500-level MECH course except MECH 486A, MECH 486B, MECH 495, MECH 498A, or MECH 498B.

Major Completion Map

Distinctive Requirements for Degree Program:

TO DECLARE MAJOR: Engineering is a controlled major: students are admitted into the major only if they meet established academic standards. The biomedical engineering combined with mechanical engineering program has additional admissions requirements and enrollment limits. Please see competitive major requirements or the advisor in the Department for more information.

TO PREPARE FOR FIRST SEMESTER: The curriculum for this major assumes students enter college prepared to take calculus and chemistry. To qualify for graduation, students in the biomedical engineering combined with mechanical engineering must achieve a minimum 2.000 grade point average at CSU in all courses in engineering, mathematics, computer science, statistics, physics, and chemistry as well as courses taken as technical electives.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
BIOM 100	Overview of Biomedical Engineering	X			1
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)		X	3A	1
CO 150	College Composition (GT-CO2)		X	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	4
MECH 103	Introduction to Mechanical Engineering	X			3
	Total Credits				16

Semester 2		Critical	Recommended	AUCC	Credits
LIFE 102	Attributes of Living Systems (GT-SC1)		X	3A	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	X		1B	4
MECH 105	Mechanical Engineering Problem Solving	X			3
PH 141	Physics for Scientists and Engineers I (GT-SC1)	X		3A	5
	Total Credits				16

Sophomore

Semester 3		Critical	Recommended	AUCC	Credits
BIOM 200	Fundamentals of Biomedical Engineering	X			2
CIVE 260	Engineering Mechanics-Statics	X			3
MATH 261	Calculus for Physical Scientists III	X			4
MECH 201	Engineering Design I	X			2
PH 142	Physics for Scientists and Engineers II (GT-SC1)	X		3A	5
	Total Credits				16

Semester 4		Critical	Recommended	AUCC	Credits
CHEM 113	General Chemistry II		X		3
CIVE 261	Engineering Mechanics-Dynamics	X			3
MATH 340	Introduction to Ordinary Differential Equations	X			4
MECH 200	Introduction to Manufacturing Processes	X			3
MECH 231	Engineering Experimentation	X			3
	Total Credits				16

Junior

Semester 5		Critical	Recommended	AUCC	Credits
CHEM 245	Fundamentals of Organic Chemistry		X		4
CIVE 360	Mechanics of Solids	X			3
LIFE 210	Introductory Eukaryotic Cell Biology		X		3
MECH 202	Engineering Design II	X			3
MECH 337	Thermodynamics	X			4
	Total Credits				17

Semester 6		Critical	Recommended	AUCC	Credits
BIOM 300	Problem-Based Learning Biomedical Engr Lab	X			4
BMS 300	Principles of Human Physiology	X			4
MECH 324	Dynamics of Machines	X			4
MECH 342	Mechanics and Thermodynamics of Flow Processes	X			3
	Total Credits				15

Senior

Semester 7		Critical	Recommended	AUCC	Credits
BIOM 441	Biomechanics and Biomaterials	X			3
ECE 204	Introduction to Electrical Engineering	X			3
MECH 325	Machine Design	X			3
MECH 331	Introduction to Engineering Materials	X			4

Social and Behavioral Sciences			X	3C	3
	Total Credits				16
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
MECH 301A	Engineering Design III: Finite Element Analysis	X			1
MECH 301B	Engineering Design III: Computational Fluid Dynamics	X			1
MECH 307	Mechatronics and Measurement Systems	X			4
MECH 338	Thermal/Fluid Sciences Laboratory		X		1
MECH 344	Heat and Mass Transfer	X			3
Advanced Writing			X	2	3
Arts and Humanities		X		3B	3
	Total Credits				16
Fifth Year					
Semester 9		**Critical**	**Recommended**	**AUCC**	**Credits**
BIOM 486A	Biomedical Design Practicum: Capstone Design I	X		4A,4B,4C	4
STAT 315	Statistics for Engineers and Scientists	X			3
BME Technical Elective (See List on Requirements tab)			X		3
MECH Technical Elective (See approved courses on Requirements Tab)			X		3
Diversity and Global Awareness				3E	3
	Total Credits				16
Semester 10		**Critical**	**Recommended**	**AUCC**	**Credits**
BIOM 486B	Biomedical Design Practicum: Capstone Design II	X		4A,4B,4C	4
BME Technical Elective (See List on Requirements tab)		X			3
Arts and Humanities		X		3B	3
Historical Perspectives		X		3D	3
The benchmark courses for the 10th semester are the remaining courses in the entire program of study.		X			
	Total Credits				13
	Program Total Credits:				157

Master of Science in Bioengineering

The M.S. curriculum includes core courses in advanced mathematics and statistics, bioengineering, and biomolecular technology, as well as technical electives chosen from numerous engineering and life science courses. The curriculum is designed to provide flexibility and support your research specialty. As an M.S. student, you may be involved in the design and regulatory approval of advanced medical technologies, as well as the manufacturing of health care products. Your research will be guided by your advisor and contribute to the knowledge base in the scientific community that will form the basis of your thesis. Funding opportunities are available for Master of Science students.

Strengths of the program include:

- Research leading to major advances in a health care field
- Nationally and internationally recognized faculty from over a dozen departments
- Coverage of regulatory issues and approval processes with animal and human subjects
- Conducting research in state-of-the-art facilities, including the nationally renowned Veterinary Teaching Hospital
- Community of innovators on the cutting edge of research in cancer, orthopaedics, cardiovascular diseases, nanotechnology, biosensors, and more

Requirements

Intra-University in Colleges of Health and Human Sceinces, Engineering, Natural Sciences, Veterinary Medicine & Biomedical Sciences

Effective Spring 2019

Code	Title	Credits
Core Course Requirements		
Select one from the following:		3
BIOM 533/ CIVE 533	Biomolecular Tools for Engineers	
CM 702B	Methods in Cell and Molecular Biology: Mammalian Cell Culture Techniques	
CM 702C	Methods in Cell and Molecular Biology: Immunochemical Techniques	
CM 702D	Methods in Cell and Molecular Biology: Radiation Cytogenetics	
BIOM 570/MECH 570	Bioengineering	3
BIOM 592	Seminar	1
MATH 530	Mathematics for Scientists and Engineers	4
STAT 512	Design and Data Analysis for Researchers II	4
Program Total Credits:		15

Specific requirements for the M.S. in Bioengineering

- Minimum of 30 semester credits of graduate work in approved course of study.
- Minimum of 24 semester credits earned at CSU (21 while in the graduate program).
- Minimum of 21 semester credits earned at CSU (not including thesis or independent study credits) in 500-level (or above) regular courses. The preceding list of core courses must be satisfied (15 credits). In addition, at least one life science course (500-level or above) and one engineering course (500-level or above) must be taken (6 credits minimum).
- Thesis credits (a minimum of 6 and a maximum of 12 credits).
- Final thesis defense.

Ph.D in Bioengineering

As a Ph.D. student, your original research will be guided by your advisor and contribute to the knowledge base in the scientific community. You may be involved in the design and regulatory approval of advanced medical technologies, as well as the manufacturing of health care products. Funding opportunities include research or teaching assistantships and fellowships. Lab rotations, funded as graduate research assistantships, are available for top Ph.D. candidates and offer a one-year opportunity for students to rotate through research labs within the School of Biomedical Engineering to find the ideal match of research project and advisor for their dissertation research.

The Ph.D. curriculum includes core courses in advanced mathematics and statistics, biomedical engineering, and biotechnology, as well as technical electives chosen from numerous engineering and life science courses. The curriculum is designed to provide flexibility and support your research specialty. You will also be required to complete a Ph.D. qualifying process, present your research plan in a preliminary exam, and defend your completed research in a final exam/dissertation defense.

Strengths of the program include:

- Opportunities to develop major advances in the health care field
- Nationally and internationally recognized faculty from over a dozen departments
- Practical and academic experience with regulatory issues and approval processes with animal and human subjects
- Conducting research in state-of-the-art facilities, including the nationally renowned Veterinary Teaching Hospital
- Community of innovators on the cutting edge of research in cancer, orthopaedics, cardiovascular disease, nanotechnology, biosensors, and more

Requirements

Intra-University in Colleges of Health and Human Sciences, Engineering, Natural Sciences, Veterinary Medicine and Biomedical Sciences

Effective Spring 2019

Code	Title	Credits
Core Course Requirements		
Select one from the following:		3
BIOM 533/ CIVE 533	Biomolecular Tools for Engineers	
CM 702B	Methods in Cell and Molecular Biology: Mammalian Cell Culture Techniques	
CM 702C	Methods in Cell and Molecular Biology: Immunochemical Techniques	
CM 702D	Methods in Cell and Molecular Biology: Radiation Cytogenetics	
BIOM 570/MECH 570	Bioengineering	3
BIOM 592	Seminar	1
MATH 530	Mathematics for Scientists and Engineers	4
STAT 512	Design and Data Analysis for Researchers II	4
Program Total Credits:		15

Specific requirements for the Ph.D. in Bioengineering

- Minimum of 72 semester credits of graduate work in approved course of study.
- Minimum of 42 semester credits earned at CSU (while in the graduate program).
- Minimum of 32 semester credits earned after admission to CSU.
- 10 credits earned after master's degree is accepted for credit with approval from the student's major advisor, the bioengineering program, and the Graduate School.
- Minimum of 12 semester credits in 500 level (and above) formerly taught courses (not including dissertation and independent study) earned at CSU (post master's degree). The preceding list of core courses must be satisfied (15 credits). In addition, at least two life science courses (500-level or above) and two engineering courses (500-level or above) must be taken (12 credits minimum) as part of their graduate study (either as a master's student or Ph.D. student).
- Successful completion of the qualifying exam.
- Successful completion of the preliminary exam.
- Successful completion of the dissertation defense.

Department of Systems Engineering

Engineering Building, Suite 202
(970) 491-7067
engr.colostate.edu/se/ (https://www.engr.colostate.edu/se)

Thomas Bradley, Interim Department Head
Ingrid Bridge, Graduate Student Advisor

Graduate

Graduate Programs in Systems Engineering

The Master of Engineering program produces graduates who can design and manage complex multidisciplinary engineering systems with a rigorous systems engineering approach. The applied focus in courses builds skills that can be utilized immediately in current projects and prepares students for future career opportunities.

Graduates of the Master of Science program will be capable of designing and managing complex multidisciplinary engineering systems, with a rigorous systems engineering approach. The research component of the thesis- and project-based M.S. programs equip students with cutting edge skills in specific focus areas, preparing them for future career opportunities.

The Ph.D. prepares students to become leaders in systems engineering. Throughout the program, students produce significant academic contributions in terms of original research to the field, driving advancements and leading to improvements in energy efficiency, environmental impact, cybersecurity, and economic growth, among other areas of application for systems engineering.

The Doctor of Engineering in Systems Engineering degree will include core studies in systems engineering and its applications to complex systems in a working environment. Curriculum includes professional and applied/translational courses, a systems engineering practicum, and a dissertation to assist working professionals attain a higher level of value to their organizations.

Master's Programs

- Master of Science in Systems Engineering, Plan A
- Master of Science in Systems Engineering, Plan B
- Master of Engineering, Plan C, Systems Engineering Specialization

Ph.D.

Ph.D. in Systems Engineering

Professional Doctorate

Doctor of Engineering in Systems Engineering

Graduate Certificates

Certificate in Systems Engineering Practice

Graduate Interdisciplinary Studies Program

Systems Engineering Graduate Interdisciplinary Studies Program

Master of Science in Systems Engineering

Graduates of the Master of Science program will be capable of designing and managing complex multidisciplinary engineering systems, with a rigorous systems engineering approach. The research component of the thesis- and project-based M.S. programs equip students with cutting edge skills in specific focus areas, preparing them for future career opportunities.

Plan A
Effective Fall 2019

Code	Title	Credits
Core Requirements		
Select 5 courses from the following:		15
CIS 600	Information Technology and Project Management	
or CIS 670	Advanced IT Project Management	
or ENGR 502	Engineering Project and Program Management	
ENGR 501	Foundations of Systems Engineering	
ENGR 530	Overview of Systems Engineering Processes	
ENGR 531	Engineering Risk Analysis	
ECE 532/ ENGR 532	Dynamics of Complex Engineering Systems	
ECE 565/ ENGR 565	Electrical Power Engineering	
ECE 566	Grid Integration of Wind Energy Systems	
ENGR 567	Systems Engineering Architecture	
ENGR 510	Engineering Optimization: Method/ Application	
ENGR 520	Engineering Decision Support/Expert Systems	
MECH 513	Simulation Modeling and Experimentation	
Technical Electives [1]		6
Thesis		
ENGR 699	Thesis	9
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

[1] Select 6 credits with approval by student's advisory committee. A maximum of 6 credit hours are permitted at the 400-level. The remainder must be at the 500-level or above.

Plan B
Effective Fall 2019

Code	Title	Credits
Core Requirements		
Select 5 courses from the following:		15
CIS 600	Information Technology and Project Management	
or CIS 670	Advanced IT Project Management	
or ENGR 502	Engineering Project and Program Management	
ENGR 501	Foundations of Systems Engineering	
ENGR 530	Overview of Systems Engineering Processes	
ENGR 531	Engineering Risk Analysis	
ECE 532/ ENGR 532	Dynamics of Complex Engineering Systems	
ECE 565/ ENGR 565	Electrical Power Engineering	
ECE 566	Grid Integration of Wind Energy Systems	
ENGR 567	Systems Engineering Architecture	
ENGR 510	Engineering Optimization: Method/ Application	
ENGR 520	Engineering Decision Support/Expert Systems	
MECH 513	Simulation Modeling and Experimentation	
Technical Electives [1]		12
Research		
ENGR 695	Independent Study [2]	3
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

1 Select 6 credits with approval by student's advisory committee. A maximum of 6 credit hours are permitted at the 400-level. The remainder must be at the 500-level or above.

2 Complete ENGR 695 or select a comparable course with a minimum of 3 credits with approval of graduate advisor.

Doctor of Engineering in Systems Engineering

The Doctor of Engineering in Systems Engineering degree will include core studies in systems engineering and its applications to complex systems in a working environment. Curriculum includes professional and applied/translational courses, a systems engineering practicum, and a dissertation to assist working professionals attain a higher level of value to their organizations.

Requirements Effective Fall 2019

Code	Title	Credits
Required Courses:		
ENGR 501	Foundations of Systems Engineering [1]	3
ENGR 502	Engineering Project and Program Management [1]	3
or CIS 600	Information Technology and Project Management	
or CIS 670	Advanced IT Project Management	
ENGR 530	Overview of Systems Engineering Processes [1]	3
ENGR 531	Engineering Risk Analysis [1]	3
Applied Required Course:		
ENGR 786	Applied Systems Engineering Practicum	9
Professional Required Course:		
ENGR 710	Leadership/Innovation in Systems Engineering	3
Technical Electives – Select 3 credits from the following: [2]		3
ENGR 510	Engineering Optimization: Method/ Application	
ENGR 520	Engineering Decision Support/Expert Systems	
ENGR 532/ ECE 532	Dynamics of Complex Engineering Systems	
ENGR 567	Systems Engineering Architecture	
MECH 513	Simulation Modeling and Experimentation	
Applied Electives – Select 3 credits from the following: [2]		3
BUS 500	Business Systems and Processes	
BUS 601	Quantitative Business Analysis	
CIS 570	Business Intelligence	
CIS 575	Applied Data Mining and Analytics in Business	
Professional Electives – Select 3 credits from the following: [2]		3
BUS 620	Leadership and Teams	
BUS 630	Information Management	
CIS 676	Information Technology Management	
ENGR 711	Ethics in Systems Engineering	
PSY 647	Applied Industrial Psychology	
PSY 648	Applied Organizational Psychology	
Research and Dissertation		
ENGR 799B	Dissertation: Professional Doctorate	9
Additional credits required to complete this degree:		30
Applicable Master's Degree Credit (a maximum of 30 credits may be accepted from a master's degree)		
Technical courses as advised (500-level or higher)		
Program Total Credits:		72

1 If required courses or the equivalent have not been taken, they must be taken prior to any other technical elective.

2 Other courses may be selected with advisor approval.

A minimum of 72 credits are required to complete this program.

Ph.D in Systems Engineering

The Ph.D. prepares students to become leaders in systems engineering. Throughout the program, students produce significant academic contributions in terms of original research to the field, driving advancements and leading to improvements in energy efficiency, environmental impact, cybersecurity, and economic growth, among other areas of application for systems engineering.

Requirements Effective Fall 2019

Code	Title	Credits
Core Requirements		
Select 7 courses from the following:		21
CIS 600	Information Technology and Project Management	
or CIS 670	Advanced IT Project Management	
or ENGR 502	Engineering Project and Program Management	
ECE 532/ ENGR 532	Dynamics of Complex Engineering Systems	
ECE 565/ ENGR 565	Electrical Power Engineering	
ECE 566	Grid Integration of Wind Energy Systems	
ECE 622/ ENGR 622	Energy Networks and Power Distribution Grids	
ENGR 501	Foundations of Systems Engineering	
ENGR 510	Engineering Optimization: Method/ Application	
ENGR 520	Engineering Decision Support/Expert Systems	
ENGR 530	Overview of Systems Engineering Processes	
ENGR 531	Engineering Risk Analysis	
ENGR 567	Systems Engineering Architecture	
MECH 513	Simulation Modeling and Experimentation	
Technical Electives [1]		18
Research		
ENGR 799A	Dissertation: PhD	33
Program Total Credits:		72

A minimum of 72 credits are required to complete this program.

[1] Select 18 credits with approval by student's advisory committee. A maximum of 6 credit hours are permitted at the 400-level. The remainder must be at the 500-level or above. 3 credit hours of ENGR 795 may be used by students who have had their Ph.D. research, which was performed while enrolled at CSU, accepted for publication (completely or with minor revisions) in at least two peer-reviewed journal or conference publications may fill out a form listing citations and validating documentation and have the form approved by the student's Ph.D. committee.

Graduate Certificate in Systems Engineering Practice

This certificate will give students an introduction to systems engineering concepts and practices with coursework that instills the key core competencies and skills needed to practice as a systems engineer. This certificate prepares engineers or other professionals in aerospace technology, energy, biosciences, environmental resources, and other fields to lead systems engineering development from concept creation through the system lifecycle.

Requirements Effective Fall 2019

Additional coursework may be required due to prerequisites.

Code	Title	Credits
ENGR 501	Foundations of Systems Engineering	3
ENGR 530	Overview of Systems Engineering Processes	3
ENGR 531	Engineering Risk Analysis	3
Select one course from the following:		3
CIS 600	Information Technology and Project Management	
CIS 670	Advanced IT Project Management	
ENGR 502	Engineering Project and Program Management	
Program Total Credits:		12

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

College of Health and Human Sciences

Office in L.L. Gibbons Building, Room 217
(970) 491-6331
chhs.colostate.edu (https://www.chhs.colostate.edu)

Professor Jeff McCubbin, Dean
Professor Audrey Shillington, Associate Dean for Academic Affairs
TBD, Associate Dean for Research and Graduate Programs
Professor Lise Youngblade, Associate Dean for Strategic Initiatives

Undergraduate Majors

Apparel and Merchandising
Construction Management
Early Childhood Education
Family and Consumer Sciences
Fermentation Science and Technology
Health and Exercise Science
Hospitality Management
Human Development and Family Studies
Interior Architecture and Design
Nutrition and Food Science
Social Work

Undergraduate Minors

Construction Management
Merchandising
Nutrition

Interdisciplinary Minors

Food Science/Safety Interdisciplinary Minor
Gerontology Interdisciplinary Minor

Undergraduate Certificates

Design Thinking

For a complete list of departmental program offerings (including certificates), see individual department catalog pages.

Graduate Programs

For detailed information about graduate programs, contact individual departments. See also the **Graduate and Professional Bulletin**.

College Programs

The College of Health and Human Sciences (https://www.chhs.colostate.edu) comprises six academic departments and two schools. It is a human-centered place, with a focus on educating students for people-oriented professions and on applying creative, interdisciplinary research to solve social problems. Each of its units offers professional education for careers and for lifelong learning, through a solid grounding in the natural sciences, social sciences, and humanities as well as courses specific to each field of study. The College currently includes the Departments of Construction Management; Design and Merchandising; Food Science and Human Nutrition; Health and Exercise Science; Human Development and Family Studies; and Occupational Therapy; and the Schools of Education and Social Work.

Learning within the College takes place in a variety of settings on and off campus, forging strong links between the classroom and the workplace. All of the College's programs combine classroom instruction with hands-on experience in state-of-the-art computer laboratories, research laboratories, or specialized centers and institutes that emphasize the practical application of new knowledge.

Faculty in the College of Health and Human Sciences maintain valued and useful relationships with a broad range of constituents, enhancing College visibility within the larger community, fulfilling CSU's land-grant mission. These vital connections also provide students with excellent opportunities for working internships in their fields. For all its students, the College places a strong emphasis on experiential learning and leadership opportunities that allow students to test new skills in real-world settings. Numerous scholarships (https://www.chhs.colostate.edu/academics/scholarships) are available through the College of Health and Human Sciences each spring semester.

Certificate in Design Thinking

The Certificate in Design Thinking provides students with an opportunity to explore creative approaches used to solve problems. Students will gain an awareness of the impact of design thinking and its application – regardless of their discipline, profession, or major.

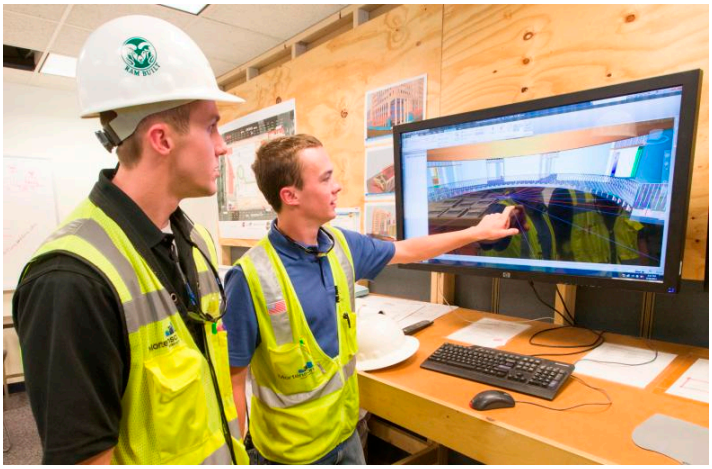
Learn more about the Certificate in Design Thinking on the Richardson Design Center website (http://design.colostate.edu/academics.aspx).

Requirements
Effective Spring 2019

Additional coursework may be required due to prerequisites.

Code	Title	Credits
IDEA 210	Introduction to Design Thinking (GT-AH1)	3
IDEA 450	Design Thinking Collaborative	4
Select 5 credits from the following courses:		5
IDEA 310A	Design Thinking Toolbox: Paper Products	
IDEA 310B	Design Thinking Toolbox: 3D Modeling	
IDEA 310C	Design Thinking Toolbox: Advanced 3D Modeling	
IDEA 310D	Design Thinking Toolbox: Digital Imaging	
IDEA 310E	Design Thinking Toolbox: Wood	
IDEA 310F	Design Thinking Toolbox: Textiles	
IDEA 310G	Design Thinking Toolbox: Infographics	
Program Total Credits:		12

Department of Construction Management



Office in Guggenheim Hall, Room 102
(970) 491-7353
https://www.chhs.colostate.edu/cm

The Construction Management (CM) program at CSU is one of the top-ranked programs in the nation. Since its inception in 1946, more than 5,000 students have graduated, many of them going on to become leaders in their field. The program is accredited by the American Council for Construction Education.

Construction management is the overall planning, coordination, and control of a project from inception to completion. The CM major addresses issues related to the management of multiple project sites and the applications of resource management, schedule control, cost control, design, and other requirements of the construction process. Design elements concentrate on the relationship between the built environment and the comfort of its inhabitants while safety education emphasizes the health of the individual worker.

Undergraduate Program

A major in Construction Management provides a strong foundation for professional careers in the construction industry. The curriculum integrates technology and innovative management systems with the basics of civil engineering, business and management, and the communication skills required to be successful in today's world. Coursework includes construction methods, estimating, scheduling, computer technologies, architectural principles, fundamentals of management and law, steel and concrete structures, and soils. The curriculum incorporates hands-on labs for most courses. This diverse program creates a broad range of career options for graduates.

Graduate Program

The Department of Construction Management offers graduate study leading to the Master of Science degree. The focus of the department is on professional programs that successfully combine theory and application with a strong emphasis in applied management. The master's program is an advanced curriculum designed to allow students to tailor a portion of the specialization requirements to meet individual interests and goals.

Undergraduate Major

- Major in Construction Management

Minor

- Minor in Construction Management

Graduate

Graduate Programs in Construction Management

The Department of Construction Management offers graduate study leading to the Master of Science degree. The focus of the department is on professional programs that successfully combine theory and application with a strong emphasis in applied management. The master's program is an advanced curriculum designed to allow students to tailor a portion of the specialization requirements to meet individual interests and goals.

Each program can be individually tailored to meet the needs and interests of the student.

Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Construction Mangagement (http://cm.chhs.colostate.edu).

Master's Programs

- Master of Science in Construction Management, Plan A
- Master of Science in Construction Management, Plan B

Courses

Construction Management (CON)

CON 101 Introduction to Construction Management Credits: 3 (3-0-0)
Course Description: Introduction to the construction industry; including methods, practices, trends, careers, and constituencies involved in the design and construction process.
Prerequisite: None.
Registration Information: Pre-Construction Management Majors and Construction Management Majors and Minors Only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 131 Graphic Communications for Construction Credits: 2 (0-4-0)
Course Description: Reading technical drawings, 2D/3D visualization, manual drafting techniques, introduction to design software applications.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 151 Construction Materials and Methods Credits: 3 (3-0-0)
Course Description: Materials and methods utilized in the construction of the built environment.
Prerequisite: None.
Registration Information: Agricultural Education, Interior Architecture and Design, Pre-Interior Architecture and Design majors, and Construction Management majors and minors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 192 Construction Management Seminar Credit: 1 (0-0-1)
Course Description: Introduction to the construction management major, career paths, industry sectors, campus resources, and tools for academic success. Information and skills necessary to succeed in the construction management major.
Prerequisite: CON 101.
Registration Information: Construction management majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 251 Materials Testing and Processing Credits: 2 (1-2-0)
Course Description: Testing of construction materials for standards and quality. Conduct material tests, document and interpret results.
Prerequisite: CON 151 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Construction Management Majors Only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CON 253 Surveying and Construction Layout Credits: 2 (0-2-1)
Course Description: Surveying fundamentals related to construction: project layout, measurement procedures, vertical controls, line and grade, and surveying instrument operation.
Prerequisite: (CON 131 with a minimum grade of C) and (MATH 125 or MATH 160).
Registration Information: Construction management, environmental horticulture, and landscape architecture majors only. Must register for laboratory and recitation. Credit not allowed for both CON 253 and CON 261.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 261 Construction Surveying Credits: 3 (2-3-0)
Course Description: Surveying fundamentals related to construction: building layout, measurement procedures, vertical controls, line and grade, and surveying instrument operation.
Prerequisite: (CON 131 with a minimum grade of C or INTD 166) and (MATH 125 or MATH 160).
Registration Information: Must register for lecture and laboratory. Construction management, environmental horticulture, and landscape architecture majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CON 265 Plan Reading and Quantity Survey Credits: 3 (2-2-0)
Course Description: Practice in construction document reading, interpretation and analysis for quantity surveying and material quantity organizing using industry-recognized methods including, but not limited to, a project manual-based work breakdown structure.
Prerequisite: CON 131 with a minimum grade of C and CON 151 with a minimum grade of C.
Registration Information: Construction management majors and minors only. Must register for lecture and laboratory. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 267 Construction Management Pre-Internship Credit: 1 (0-0-1)
Course Description: Skills and concepts related to successful internships within the construction management industry.
Prerequisite: CON 265 with a minimum grade of C.
Registration Information: Construction Management Majors Only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 270 Introduction to Road Construction Credits: 3 (3-0-0)
Course Description: Steps necessary to construct a paved roadway from conception, land acquisition and finance through paving operations and trafficking.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CON 317 Safety Management Credits: 2 (2-0-0)
Course Description: Construction safety management, accident prevention, and hazard control. Federal, state, and local regulation compliance.
Prerequisite: None.
Registration Information: Construction Management majors and minors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 351 Construction Field Management Credits: 2 (1-2-0)
Course Description: Applications of materials and methods in construction; administrative and organizational planning for construction field practice.
Prerequisite: CON 251, may be taken concurrently and CON 317, may be taken concurrently.
Registration Information: Must register for lecture and laboratory. Construction management majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CON 352 Metal Fabrication for Construction Credits: 2 (1-2-0)
Course Description: Shaping, cutting, and joining of structural and non-structural metal. Emphasis on jobsite safety, economics, and efficiency.
Prerequisite: CON 251.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 353 Field Management for Construction Credits: 3 (1-2-1)
Course Description: Applications of materials and methods in construction; administrative and organizational planning for construction field practice.
Prerequisite: (CON 251, may be taken concurrently) and (CON 253 or CON 261) and (CON 317, may be taken concurrently).
Registration Information: Construction management majors only. Must register for lecture, lab, and recitation. Credit not allowed for both CON 351 and CON 353.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 358 Structural Systems for Construction I Credits: 3 (3-0-0)
Course Description: Behavior of structural components and systems, overview of structural engineering analysis and the design process for construction.
Prerequisite: CON 151 with a minimum grade of C and MATH 125.
Registration Information: Construction management majors only. Credit not allowed for CON 358 and CON 359.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 359 Structures I Credits: 4 (4-0-0)
Course Description: Behavior of structural components and systems, overview of structural engineering analysis and the design process.
Prerequisite: CON 151 with a minimum grade of C and MATH 125.
Registration Information: Construction management majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 360 Electrical Systems in Construction Credits: 3 (2-2-0)
Course Description: Electrical terminology, theory, components, systems, and applications within the construction industry.
Prerequisite: CON 265 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Construction Management Majors Only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 365 Construction Estimating Credits: 3 (2-2-0)
Course Description: Industry-recognized methods for work item analysis, quantity surveying, resource estimating, and bid development using a work breakdown structure.
Prerequisite: CON 265 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Construction Management majors and minors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 366 Construction Equipment and Methods Credits: 3 (2-2-0)
Course Description: Equipment and methods used in heavy-highway, heavy-civil and utility construction. Equipment and crew productivity. Equipment ownership and operating costs. Estimating, planning and directing heavy construction operations.
Prerequisite: CON 265 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Construction Management majors and minors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 367 Construction Contracts/Project Administration Credits: 3 (3-0-0)
Course Description: Construction contracts and clauses, stakeholder responsibilities, disputes, resolution methods and risk. Utilization of construction administration documents, systems and procedures to meet project requirements.
Prerequisite: CON 351, may be taken concurrently.
Registration Information: Construction management majors and minors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 370 Asphalt Pavement Materials and Construction Credits: 3 (2-2-0)
Course Description: Constituents of asphalt pavements; manufacture of asphalt cement, emulsions, and cutbacks; material properties and behavior.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 371 Mechanical and Plumbing Systems Credits: 3 (3-0-0)
Course Description: Heating, ventilation, air conditioning, plumbing, and fire suppression in the built environment.
Prerequisite: CON 360, may be taken concurrently or INTD 276, may be taken concurrently.
Registration Information: Interior Design and Construction Management Majors Only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 382A Study Abroad: European Perspectives Credits: 3 (0-0-3)
Course Description: A study of the physical resources and the human behaviors, which inform design and construction. Exploration of infrastructure and its relationship to resources, materials, and the culture in which it exists. Review of international perspectives of the built environment of Europe, past and present trends, and what the future holds. Survey of construction over time and trends in the preservation of existing infrastructure.
Prerequisite: None.
Registration Information: Sophomore standing. This is a partial semester course. Required field trips. You must apply through the Office of International Programs.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CON 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 450 Travel Abroad-Sustainable Building Credits: 3 (3-0-0)
Also Offered As: INTD 450.
Course Description: Major components of sustainable design and construction, energy, healthy buildings, natural resources and other environmental issues.
Prerequisite: None.
Registration Information: Credit not allowed for both CON 450 and INTD 450.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CON 458 Structural Systems for Construction II Credits: 3 (3-0-0)
Course Description: Review and analysis of shop drawings and details for structural systems. Overview of cast-in-place and prestressed concrete systems. Design of structural wood systems, connections, and formwork for cast-in-place concrete.
Prerequisite: CON 358 with a minimum grade of C or CON 359 with a minimum grade of C.
Registration Information: Construction management majors only. Credit not allowed for both CON 458 and CON 459.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 459 Structures II Credits: 4 (4-0-0)
Course Description: Design of formwork, falsework, and shoring.
Prerequisite: CON 359.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 461 Construction Scheduling and Cost Control Credits: 3 (2-2-0)
Course Description: Strategies and techniques for efficient scheduling of project activities and control of project costs; emphasis on Critical Path Method.
Prerequisite: CON 365.
Registration Information: Construction management majors and minors only. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 462 Financial Management for Construction Credits: 3 (3-0-0)
Course Description: Financial statements, financial ratios, time value of money, cash flow analysis and financial reporting for construction companies.
Prerequisite: ACT 205 or ACT 210.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 464 Construction Leadership Credits: 3 (1-0-2)
Course Description: Leading projects and people in a construction business and application of skills in a construction-based community service learning project.
Prerequisite: CON 365 and CON 367, may be taken concurrently.
Registration Information: Must register for lecture and recitation. Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 465 Construction Management Professional Practice Credits: 3 (1-0-2)
Course Description: Professional practice using an understanding of the contractual and working relationships among all participants in the design/construction process.
Prerequisite: (CON 461, may be taken concurrently) and (CON 487A or CON 487E or CON 487B).
Registration Information: Construction management majors only. Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 469 Soil Mechanics for Construction Credits: 3 (2-0-1)
Course Description: Analysis of the physical characteristics and properties of soil for construction project decision making. Interpretation of soils reports, conducting of testing procedures and evaluation of soils for use as a construction material. Assessment of the impact of soil characteristics on construction activities and project risk.
Prerequisite: CON 366 with a minimum grade of C.
Registration Information: Must register for lecture and recitation. Construction management majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 471 Project Management for Mechanical Systems Credits: 3 (3-0-0)
Course Description: Fundamental principles of mechanical systems. Presentation and practice of management principles relevant to mechanical projects.
Prerequisite: CON 371 and CON 365, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CON 476 Sustainable Practice-Design and Construction Credits: 3 (3-0-0)
Course Description: Major components of sustainable design/construction: energy, healthy buildings, cultural, natural resources, use, other environment/economic issues.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CON 477 Residential Aging-in-Place and Green Building Credits: 3 (3-0-0)
Course Description: Aging-in-place and green building aspects of the residential construction market.
Prerequisite: CON 265.
Restriction: .
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 487A Internship: Construction Management I Credits: 6 (0-0-18)
Course Description:
Prerequisite: CON 267 and CON 367.
Registration Information: OSHA 10-hour construction safety card.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CON 487B Internship: Construction Management II Credits: 3 (0-0-9)
Course Description:
Prerequisite: CON 267 and CON 367.
Registration Information: OSHA 10-hour construction safety card; 500 hours documented work experience.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CON 492A Seminar: Emerging Construction Technologies Credit: 1 (0-0-1)
Course Description: Emerging technologies in construction management practice. Applications of current and cutting-edge software, hardware, processes, tools and equipment in the industry.
Prerequisite: CON 351 and CON 365.
Registration Information: Construction Management majors only. Maximum of 3 credits allowed per subtopic. This is a partial semester course. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 492B Seminar: Construction Issues and Trends Credit: 1 (0-0-1)
Course Description: Issues and trends impacting construction project management and field operations. The impact of current trends on project management practice, risk mitigation and project controls.
Prerequisite: CON 351 and CON 365.
Registration Information: Construction Management majors only. Maximum of 3 credits allowed per subtopic. This is a partial semester course. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 492C Seminar: Heavy Civil Project Management Credit: 1 (0-0-1)
Course Description: Applications of project management practice for heavy civil construction projects. Exploration of heavy civil construction project management principles and concepts through industry-specific case studies, processes and tutorials.
Prerequisite: CON 351 and CON 365.
Registration Information: Construction Management majors only. Maximum of 3 credits allowed per subtopic. This is a partial semester course. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 492D Seminar: Commercial Project Management Credit: 1 (0-0-1)
Course Description: Applications of project management practice for commercial construction projects. Exploration of commercial construction project management principles and concepts through industry-specific case studies, processes and tutorials.
Prerequisite: CON 351 and CON 365.
Registration Information: Construction Management majors only. Maximum of 3 credits allowed per course. This is a partial semester course. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 492E Seminar: Residential Project Management Credit: 1 (0-0-1)
Course Description: Applications of project management practice for residential construction projects. Exploration of residential construction project management principles and concepts through industry-specific case studies, processes and tutorials.
Prerequisite: CON 351 and CON 365.
Registration Information: Construction Management majors only. Maximum of 3 credits allowed per subtopic. This is a partial semester course. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 495 Independent Study-Construction Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 496 Group Study-Construction Management Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 9 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 502 Research in Construction Management I Credits: 3 (2-0-1)
Course Description: Research, discuss, and present current issues and trends in the construction industry related to business, management, engineering, and technology.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Credit not allowed for both CON 502 and CON 562.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CON 503 Research in Construction Management II Credits: 3 (3-0-0)
Course Description: Models and methods of disciplined inquiry used in diverse application-based organizations. Preparation to use disciplined inquiry methods to solve applied problems in construction management or related fields. Topics include problem/topic selection, writing research questions and objectives, literature reviews, selection of research methods, data collection and analysis, and conclusions and implications.
Prerequisite: CON 502.
Registration Information: Credit not allowed for both CON 503 and CON 500.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 511 Project Procurement and Preconstruction Credits: 3 (2-0-1)
Course Description: Advanced project procurement procedures with a focus on early design phase planning applications and preconstruction management techniques.
Prerequisite: CON 461, may be taken concurrently.
Registration Information: Must register for lecture and recitation. Credit not allowed for both CON 511 and CON 566.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CON 512 Post-Award Construction Management Credits: 3 (2-0-1)
Course Description: Advanced topics related to post-award construction management issues with a focus on multiple project controls and project risk management.
Prerequisite: CON 461.
Registration Information: Must register for lecture and recitation. Credit not allowed for both CON 512 and CON 560.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 521 Sustainable Building & Infrastructure Systems Credits: 3 (2-0-1)
Course Description: Issues and state-of-the-art resources needed to construct, remodel/retrofit, operate and maintain the built environment (buildings and infrastructure). Specifically, resources will include major materials, components and technologies, as well as energy and water resources are needed in the different life-cycle phases of the building or infrastructure project.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Credit not allowed for both CON 521 and CON 576.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 561 Applied Productivity Improvement Credits: 3 (3-0-0)
Course Description: Existing and emerging tools for productivity enhancement in project and production environment.
Prerequisite: None.
Registration Information: Admission to the construction management master's program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 565 Legal Aspects of Construction Process Credits: 3 (3-0-0)
Course Description: Common points of dispute; methods of avoiding disputes among owner, architect, engineer, and contractor.
Prerequisite: None.
Registration Information: Admission to the construction management master's program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 568 Construction Industry Institute Practices Credits: 3 (3-0-0)
Course Description: Senior executives from the Construction Industry Institute (CII) present best practices developed by CII over the last 25 years.
Prerequisite: CON 367.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CON 569 Regulatory Impact on Construction Credits: 3 (3-0-0)
Course Description: Role government plays in the design and construction of the built environment.
Prerequisite: None.
Registration Information: Admission to the construction management master's program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 571 Facility Planning and Management Credits: 3 (3-0-0)
Course Description: Planning, organizing and managing large educational and/or commercial facilities.
Prerequisite: None.
Registration Information: Admission to the construction management master's program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 590 Workshop Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 592 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 687 Internship Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 699 Thesis Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Construction Management

The Construction Management major at CSU is one of the top-ranked programs in the nation. Since its inception in 1946, more than 5,000 students have graduated, many of them going on to become leaders in their field. The program is accredited by the American Council for Construction Education.

Construction management is the overall planning, coordination, and control of a project from inception to completion. The Construction Management major addresses issues related to the management of multiple project sites and the applications of resource management, schedule control, cost control, design, and other requirements of the construction process. Design elements concentrate on the relationship between the built environment and the comfort of its inhabitants while safety education emphasizes the health of the individual worker.

A Construction Management major provides a strong foundation for professional careers in the construction industry. The curriculum integrates technology and innovative management systems with the basics of civil engineering, business and management, and the communication skills required to be successful in today's world. Coursework includes construction methods, estimating, scheduling, computer technologies, architectural principles, fundamentals of management and law, steel and concrete structures, and soils. The curriculum incorporates hands-on labs for most courses. This diverse program creates a broad range of career options for graduates.

The Construction Management major is controlled, and all students admitted to CSU or seeking to change their major must first be designated as pre-construction management. To be considered for admission to Construction Management, students must:

- Complete a minimum of 15 credits at CSU
- Earn a minimum 2.750 cumulative CSU GPA
- Complete CON 101 with a "B" grade or better
- Complete CO 150 with a "B" grade or better
- Complete MATH 125 with a "C" grade or better

Once a student has met the minimum requirements listed above they are eligible to apply to the Construction Management program.

During their academic career, Construction Management students are required to obtain an internship (full-time structured work experience) position with any one of a variety of construction companies and organizations. Our Phelps Placement Office assists current and graduating students, as well as alumni.

Learning Outcomes

Students will develop and demonstrate:

- Professional, analytical, and problem solving skills related to the career requirements in construction management
- Strong professional communication skills with an emphasis on written, graphic, and verbal skills related to the career requirements in construction management
- Technical proficiency in the following construction management areas: design/engineering, management, materials and methods, estimating, scheduling, safety, surveying, and project administration

Potential Occupations

The construction industry has become a highly technical industry marked by continuous and dramatic change. There is a continued demand for capable and highly trained construction management professionals who can adapt and become effective leaders in the field. Construction Management continues to boast one of the highest placement rates and entry level salaries of all majors.

The Construction Management department prides itself on its in-house intern and job search assistance and counseling. Construction Management continues to boast one of the highest placement rates and entry-level salaries of all majors.

Services provided by the Phelps Placement Office include:

- Construction industry career fair hosted each semester
- On-campus interviews and information sessions
- Individual career counseling and assessment
- Job and internship search strategies
- Resume and business correspondence resources
- Year-round intern and job postings

Entry-level occupations include, but are not limited to: field engineer, assistant estimator, project scheduler, cost control engineer, safety engineer, project supervisor, project coordinator, quality assurance specialist, project engineer, assistant project manager, and assistant superintendent. Recruiting Industries include: Commercial, Heavy Civil and Heavy Highway, Industrial and Utility, Mechanical and Electrical, Project Controls and Consulting, Residential Development, Specialty Contracting, and Transportation.

Students may consider simultaneously completing the requirements for a minor in Business Administration. Several of the courses required for the minor in Business Administration are also required for the major in Construction Management curriculum.

Learn more about the Construction Management major on the Department of Construction Management website (https://www.chhs.colostate.edu/cm/programs-and-degrees/b-s-in-construction-management).

Requirements Effective Fall 2019

Every student pursuing the Construction Management (CM) major will start as Pre-Construction Management and must meet the following admission requirements before being fully admitted to the Construction Management major:

- Earn a minimum 2.750 cumulative CSU GPA
- Complete CON 101 , Introduction to Construction Management, with a "B" grade or better
- Complete CO 150, College Composition, with a "B" grade or better
- Complete MATH 125, Numerical Trigonometry, with a "C" grade or better

Besides CON 101, Pre-Construction Management students are not able to take CON courses until fully admitted to Construction Management.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
CON 101	Introduction to Construction Management		3
CON 131	Graphic Communications for Construction		2
CON 151	Construction Materials and Methods		3
CON 192	Construction Management Seminar		1
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
GEOL 121	Introductory Geology Laboratory (GT-SC1)	3A	1
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 125	Numerical Trigonometry (GT-MA1)	1B	1
Select one course from the following:			3
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)	3A	
GEOL 122	The Blue Planet - Geology of Our Environment (GT-SC2)	3A	
GEOL 124	Geology of Natural Resources (GT-SC2)	3A	
Arts and Humanities		3B	3
Historical Perspectives		3D	3
Diversity and Global Awareness		3E	3
	Total Credits		31

Sophomore

ACT 205	Fundamentals of Accounting		3
BUS 205	Legal and Ethical Issues in Business		3
CON 251	Materials Testing and Processing		2
CON 265	Plan Reading and Quantity Survey		3
CON 317	Safety Management		2
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
PH 110	Physics of Everyday Phenomena (GT-SC2)	3A	3
PH 111	Physics of Everyday Phenomena Laboratory (GT-SC1)	3A	1
SPCM 200	Public Speaking		3
Select one group from the following:			5
Group A:			
CON 261	Construction Surveying		
CON 351	Construction Field Management		
Group B:			
CON 253	Surveying and Construction Layout		
CON 353	Field Management for Construction		
Arts and Humanities		3B	3
	Total Credits		31

Junior

CON 267	Construction Management Pre-Internship		1
CON 360	Electrical Systems in Construction		3
CON 365	Construction Estimating	4A	3
CON 366	Construction Equipment and Methods		3
CON 367	Construction Contracts/Project Administration	4B	3
CON 371	Mechanical and Plumbing Systems		3
Select one course from the following:			3-4
CON 358	Structural Systems for Construction I		
CON 359	Structures I		

Select one group (6 credits) from the following:[1]			6
Group A			
CON 487A	Internship: Construction Management I		
Group B			
CON 487B	Internship: Construction Management II		
CON Elective			
Select one course from the following:			3
STAT 201	General Statistics		
STAT 204	Statistics for Business Students		
CON Elective			3
	Total Credits		31-32

Senior

CON 461	Construction Scheduling and Cost Control	4A	3
CON 462	Financial Management for Construction		3
CON 465	Construction Management Professional Practice	4C	3
CON 469	Soil Mechanics for Construction		3
MGT 305	Fundamentals of Management		3
MGT 473	Employment Relations: Labor and Management		3
Select one course from the following:			3-4
CON 458	Structural Systems for Construction II		
CON 459	Structures II		
Advanced Writing		2	3
Electives[2]			1-3
	Total Credits		26-27
	Program Total Credits:		120

1 The required internship may be completed in different terms in consultation with an advisor.

2 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

Every student pursuing the Construction Management (CM) major will start as Pre-Construction Management and must meet the following admission requirements before being fully admitted to the Construction Management major:

- Earn a minimum 2.750 cumulative CSU GPA
- Complete CON 101, Introduction to Construction Management, with a "B" grade or better
- Complete CO 150, College Composition, with a "B" grade or better
- Complete MATH 125, Numerical Trigonometry, with a "C" grade or better

Besides CON 101, Pre-Construction Management students are not able to take CON courses until fully admitted to Construction Management.

There is a required internship that takes place prior to the student's graduation. Students must complete CON 487A (6-credit) or CON 487B (3-credit) petition for Internship Reduction Packet by the last Friday of October during the fall semester prior to the internship experience.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)	X		1A	3
CON 101	Introduction to Construction Management	X			3
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 125	Numerical Trigonometry (GT-MA1)	X		1B	1
Arts and Humanities			X	3B	3
Historical Perspectives			X	3D	3

CON 101, CO 150 and MATH 125 must be completed by the end of Semester 1		X			
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CON 131	Graphic Communications for Construction	X			2
CON 151	Construction Materials and Methods	X			3
CON 192	Construction Management Seminar		X		1
ECON 202	Principles of Microeconomics (GT-SS1)			3C	3
GEOL 121	Introductory Geology Laboratory (GT-SC1)			3A	1
Select one course from the following:					3
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)			3A	
GEOL 122	The Blue Planet - Geology of Our Environment (GT-SC2)			3A	
GEOL 124	Geology of Natural Resources (GT-SC2)			3A	
Diversity and Global Awareness				3E	3
	Total Credits				16
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 205	Legal and Ethical Issues in Business				3
CON 251	Materials Testing and Processing	X			2
MATH 141	Calculus in Management Sciences (GT-MA1)			1B	3
SPCM 200	Public Speaking				3
Select one course from the following:					2-3
CON 261	Construction Surveying	X			
CON 253	Surveying and Construction Layout				
Arts and Humanities					3
Admission to Construction Management major required by the end of Semester 3.		X			
	Total Credits				17
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 205	Fundamentals of Accounting				3
CON 265	Plan Reading and Quantity Survey	X			3
CON 317	Safety Management	X			2
PH 110	Physics of Everyday Phenomena (GT-SC2)			3A	3
PH 111	Physics of Everyday Phenomena Laboratory (GT-SC1)			3A	1
Select one course from the following:					2-3
CON 351	Construction Field Management	X			
CON 353	Field Management for Construction				
If taking CON 487B (3 credits), obtain Petition for Internship Reduction Packet from CM Advising Office					
	Total Credits				14
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
CON 360	Electrical Systems in Construction	X			3
Select one course from the following:					3-4
CON 358	Structural Systems for Construction I				
CON 359	Structures I	X			
Select 6 credits from the following:					6
Group A					
CON 487A	Internship: Construction Management I	X			
Group B					
CON 487B	Internship: Construction Management II	X			
CON Elective					

Select one course from the following:					3
STAT 201	General Statistics				
STAT 204	Statistics for Business Students				
If taking CON 487B (3 credit), complete the Petition for Internship Reduction Packet and submit to Phelps Placement Office no later than the last Friday in October the fall semester before your internship.					
	Total Credits				15-16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
CON 267	Construction Management Pre-Internship	X			1
CON 365	Construction Estimating	X		4A	3
CON 366	Construction Equipment and Methods		X		3
CON 367	Construction Contracts/Project Administration	X		4B	3
CON 371	Mechanical and Plumbing Systems				3
CON Elective					3
	Total Credits				16
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
CON 461	Construction Scheduling and Cost Control	X		4A	3
MGT 305	Fundamentals of Management				3
MGT 473	Employment Relations: Labor and Management				3
Select one course from the following:					3-4
CON 458	Structural Systems for Construction II				
CON 459	Structures II				
	Total Credits				12-13
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
CON 462	Financial Management for Construction	X			3
CON 465	Construction Management Professional Practice	X		4C	3
CON 469	Soil Mechanics for Construction	X			3
Advanced Writing				2	3
Electives					1-3
	Total Credits				14
	Program Total Credits:				120

Master of Science in Construction Management, Plan A

The Department of Construction Management offers graduate study leading to the Master of Science degree. The focus is on professional programs that successfully combine theory and application with a strong emphasis in applied management. The master's program is an advanced curriculum designed to allow students to tailor a portion of the requirements to meet individual interests and goals.

The Department of Construction Management at CSU is a Science, Technology, Engineering, and Mathematics (STEM) program.

Our faculty members pursue applied research opportunities by maintaining a close association with the needs of the regional, national, and global Architecture/Engineering/Construction industry. In pursuing this applied research, the faculty has identified three core research alliance areas that span research, teaching, and outreach activities and provide a common ground for interaction between faculty and students. As the demands of the industry change over time, these research alliance areas may evolve and additional areas may be established. Current research alliance areas are:

- **Sustainability** (e.g., energy-efficient buildings, sustainable development and construction, social sustainability, life cycle assessment)
- **Transportation Infrastructure** (e.g., asset management, traffic, and work-zone safety, transportation project management, asphalt and concrete paving)
- **Productivity and Workforce Development** (e.g., construction safety, construction leadership, construction pedagogy and training, construction productivity improvement)

The learning outcomes of this program are:

1. Students will identify research problem(s), develop research question(s), design research methodologies, collect and analyze data, and interpret research results as components of scientific research.
2. Students will develop critical thinking skills needed to conceive, develop, test, and refine scientific ideas and hypotheses.
3. Students will communicate the results of their original research in a clear and well organized manner both in written (proposal and thesis) and verbal (thesis and oral defense) format.
4. Students will write manuscript(s) for submission to a refereed scientific journal or a conference based on their research.

5. Students will develop expertise in one or more fields of construction management at which the student can successfully function in the profession (either academia or industry).

Each construction management graduate student must complete a final project of professional quality to demonstrate their capability in their area of interest and their readiness for professional practice. The final research project is original work, involving a substantial degree of independent research and analysis. The research project results are presented as either a Thesis (Plan A) or Professional Research Paper (Plan B). Each student will work with their advisor to determine if a thesis or a professional paper is more appropriate. Each graduate student is required to submit an article to a journal or proceedings approved by the adviser prior to graduation.

The goal of the program is to provide graduate students with skills related to advance construction management problem-solving. To attain this goal, the CM department encourages students to perform applied research that is industry, institutional, or "client" based.

Learn more about the Construction Management program on the Department of Construction Management website (https://www.chhs.colostate.edu/cm/programs-and-degrees/m-s-in-construction-management).

Requirements Effective Fall 2019

Code	Title	Credits
Core Requirements - Required of All Students		
CON 502	Research in Construction Management I	3
CON 503	Research in Construction Management II	3
CON 511	Project Procurement and Preconstruction	3
CON 512	Post-Award Construction Management	3
CON 521	Sustainable Building & Infrastructure Systems	3
CON 699	Thesis	6
Electives [1]		9
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

[1] With approval by advisor. A minimum of one CON graduate elective course is required (other than CON 695). A maximum of 3 credits of CON 695 are allowed.

Master of Science in Construction Management, Plan B

The Department of Construction Management (https://www.chhs.colostate.edu/cm) offers graduate study leading to the Master of Science degree. The focus is on professional programs that successfully combine theory and application with a strong emphasis in applied management. The master's program is an advanced curriculum designed to allow students to tailor a portion of the requirements to meet individual interests and goals.

The focus of the department is on professional programs that successfully combine theory and application with a strong emphasis in applied management. The master's program is an advanced curriculum designed to allow students to tailor a portion of the specialization requirements to meet individual interests and goals.

The Department of Construction Management at CSU is a Science, Technology, Engineering, and Mathematics (STEM) program.

Our faculty members pursue applied research opportunities by maintaining a close association with the needs of the regional, national, and global Architecture/Engineering/Construction industry. In pursuing this applied research, the faculty has identified three core research alliance areas that span research, teaching, and outreach activities and provide a common ground for interaction between faculty and students. As the demands of the industry change over time, these research alliance areas may evolve and additional areas may be established. Current research alliance areas are:

- **Sustainability** (e.g., energy-efficient buildings, sustainable development and construction, social sustainability, life cycle assessment)
- **Transportation Infrastructure** (e.g., asset management, traffic, and work-zone safety, transportation project management, asphalt and concrete paving)
- **Productivity and Workforce Development** (e.g., construction safety, construction leadership, construction pedagogy and training, construction productivity improvement)

The learning outcomes of this program are:

1. Students will identify research problem(s), develop research question(s), design research methodologies, collect and analyze data, and interpret research results as components of scientific research.
2. Students will develop critical thinking skills needed to conceive, develop, test, and refine scientific ideas and hypotheses.
3. Students will communicate the results of their original research in a clear and well organized manner both in written (proposal and professional paper) and verbal (professional paper and oral defense) format.
4. Students will write manuscript(s) for submission to a refereed scientific journal or a conference based on their research.
5. Students will develop expertise in one or more fields of construction management at which the student can successfully function in the profession (either academia or industry).

Each construction management graduate student must complete a final project of professional quality to demonstrate their capability in their area of interest and their readiness for professional practice. The final research project is original work, involving a substantial degree of independent research and analysis. The research project results are presented as either a Thesis (Plan A) or Professional Research Paper (Plan B). Each student will work with their advisor to determine if a thesis or a professional paper is more appropriate. Each graduate student is required to submit an article to a journal or proceedings approved by the advisor prior to graduation.

Students who want to develop technical proficiency in a particular area or emphasis may choose Plan B. Professional research paper is not held to the same standards for replicability of the research methodology used for a thesis. Results from a professional paper may be directed toward providing a solution to a specific applied problem for a small audience. There is an expectation that the professional paper could still be published, but the outlets would likely be different than those of a

thesis. A minimum of 30 upper-division credits are required for Plan B students.

The goal of the program is to provide graduate students with skills related to advance construction management problem-solving. To attain this goal, the CM department encourages students to perform applied research that is industry, institutional, or "client" based.

Learn more about the Construction Management program on the Department of Construction Management website. (https://www.chhs.colostate.edu/cm/programs-and-degrees/m-s-in-construction-management)

Requirements Effective Fall 2019

Code	Title	Credits
Core Requirements - Required of All Students		
CON 502	Research in Construction Management I	3
CON 503	Research in Construction Management II	3
CON 511	Project Procurement and Preconstruction	3
CON 512	Post-Award Construction Management	3
CON 521	Sustainable Building & Infrastructure Systems	3
CON 698	Research	3
Electives [1]		12
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

[1] With approval by advisor. A minimum of two CON graduate elective courses are required (other than CON 695). A maximum of 3 credits of CON 695 are allowed.

Minor in Construction Management

About the Minor

The Construction Management minor is designed to provide students an opportunity to study basic concepts of construction, materials, techniques, design, and managerial skills required for the construction industry. The minor has admission criteria, and consists of nine courses beginning with CON 101 Introduction to Construction Management. The minor will take students a minimum of five semesters to complete.

How to add the Construction Management minor

Students must meet with a Construction Management advisor to declare interest in the minor and will be given an override to register for CON 101. An application must be completed. Once a student satisfies the admission criteria, they will be admitted to the minor and allowed to register for additional required Construction Management courses.

Admission Criteria:

- Earn a minimum 2.750 cumulative CSU GPA
- Complete CON 101 with a "B" grade or better
- Complete CO 150 with a "B" grade or better
- Complete MATH 125 with a "C" grade or better

Once a student has met the minimum requirements listed above, they are eligible to apply to the minor in Construction Management Students are admitted each semester in May and December.

Learn more about the Construction Management minor on the Department of Construction Management website. (https://www.chhs.colostate.edu/cm/programs-and-degrees/minor-in-construction-management)

Requirements Effective Fall 2019

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
LOWER DIVISION		
CON 101	Introduction to Construction Management	3
CON 151	Construction Materials and Methods	3
CON 265	Plan Reading and Quantity Survey	3
Select one course from the following:		2-3
CON 131	Graphic Communications for Construction	
INTD 256	Computer-Aided Design for Interior Designers	
UPPER DIVISION		
CON 317	Safety Management	2
CON 365	Construction Estimating	3
CON 367	Construction Contracts/Project Administration	3
CON 461	Construction Scheduling and Cost Control	3
Select one course from the following:		3-4
CON 358	Structural Systems for Construction I	
CON 359	Structures I	
Program Total Credits:		25-27

Department of Design and Merchandising

Office in Nancy Richardson Design Center, Room 114
(970) 491-1629
chhs.colostate.edu/dm (http://www.dm.chhs.colostate.edu)

Professor Karen Hyllegard, Department Head

Mission Statement

An ongoing commitment to cultivating innovative and socially responsible solutions to local and global human-centered opportunities and challenges in apparel, interior design, merchandising, and product development by:

1. Creatively assessing issues and alternative viable solutions positively impacting quality of life for diverse stakeholders.
2. Addressing and communicating future societal needs by analyzing historic and current needs, as well as considering national and international perspectives.
3. Incorporating a pragmatic and socially responsible approach to teaching, research, and engagement.
4. Applying technology in pursuit of creative human-centered solutions to societal needs.
5. Designing, producing, and marketing industry-relevant products and services for diverse populations.
6. Balancing ethical and profitable product and service lifecycle management.
7. Enhancing students' preparedness through experiential, collaborative, community, and industry-based learning.
8. Fostering students' intellectual curiosity, objectivity, and independence, as well as their ability to critically evaluate information and to use resources in addressing problems.
9. Advancing interdisciplinary and global perspectives.
10. Maximizing business, cultural, and socially responsible opportunities enhancing and highlighting the principles of design.

Undergraduate

Majors

- Major in Apparel and Merchandising
  - Apparel Design and Production Concentration
  - Merchandising Concentration
  - Product Development Concentration
- Major in Interior Architecture and Design

Minor

- Minor in Merchandising

Graduate

Graduate Programs in Design and Merchandising

The department offers graduate programs leading to a Master of Science degree in Design and Merchandising. Students may specialize in Apparel and Merchandising or Interior Design. For more information about program emphases and requirements, contact the department. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Design and Merchandising (http://www.dm.chhs.colostate.edu).

Learning Outcomes

Design and Merchandising graduate students will:

- Demonstrate mastery of design and merchandising concepts and theories in their respective focal areas, including apparel design and production, consumer behavior, creativity, merchandising, interior design, product development, social/cultural/historical aspects of dress and design, sustainability/resilience, and textile science.
- Critically review and interpret research through a review of literature relevant to a research problem or challenge.
- Demonstrate an understanding of how to conduct and implement original research in design and merchandising as demonstrated through problem identification, literature review, study design, data collection, and data analysis/interpretation.
- Effectively communicate outcomes of design and merchandising research in diverse presentation formats (e.g., oral, written, visual).
- Be successful in procuring positions in industry or academia and/or admission to doctoral-level programs.
- Be involved in co-curricular activities.

Certificate

Evidence-Based Design

Master's Programs

- Master of Science in Design and Merchandising, Plan A
- Master of Science in Design and Merchandising, Plan B, Apparel and Merchandising Specialization
- Master of Science in Design and Merchandising, Plan A, Interior Design Specialization
- Master of Science in Design and Merchandising, Plan B, Interior Design Specialization

Courses

Subjects in this department include: Apparel and Merchandising (AM), Design and Merchandising (DM), and Interior Design (INTD).

Apparel and Merchandising (AM)

AM 101 Fashion Industries Credits: 3 (3-0-0)
Course Description: Development, organization, and trends of domestic and foreign fashion industries.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AM 110 Apparel and Merchandising Digital Technology Credits: 3 (2-2-0)
Course Description: Introduction to computer technologies used in apparel and merchandising industries.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 130 Awareness and Appreciation of Design Credits: 3 (3-0-0)
Course Description: Awareness and appreciation of design as it exists in the context of everyday life and is expressive of cultural character and human creativity. Awareness and appreciation of design comes as a natural consequence of learning how to recognize and interpret the elements from which it is created.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B.

AM 143 Introduction to Apparel Design Credits: 4 (2-4-0)
Course Description: Apparel and garment-pattern development, construction, quality, skill development in technical drawing and rendering.
Prerequisite: None.
Registration Information: Acceptance into Apparel Design and Production program concentration required. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 240 Computer-Aided Apparel Design Credits: 3 (0-6-0)
Course Description: Apparel design using the computer to generate drawings for fabric, graphic logo, and apparel.
Prerequisite: AM 143.
Registration Information: Portfolio review required.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 241 Apparel Production Credits: 3 (1-4-0)
Course Description: Production processes of sewn textile products, flat pattern, pattern grading, marker making, and writing specifications.
Prerequisite: (AM 143) and (MATH 117) and (MATH 118) and (MATH 124, may be taken concurrently).
Registration Information: Portfolio review required. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 243 Adobe Photoshop for Textile Design Credits: 3 (3-0-0)
Course Description: Textile design using Adobe Photoshop to generate drawings for surface and structural textile design.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AM 244 Illustration for Apparel Design Credits: 3 (1-4-0)
Course Description: Illustration skills using traditional media/CAD applications and analysis of visual communication.
Prerequisite: AM 143.
Registration Information: Portfolio review required. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AM 250 Clothing, Adornment and Human Behavior (GT-SS3) Credits: 3 (3-0-0)
Course Description: Psychological, sociological and cultural factors influencing clothing and adornment.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

AM 270 Merchandising Processes Credits: 3 (3-0-0)
Course Description: Forecasting, planning, developing, and presenting merchandise lines to meet target market demands.
Prerequisite: (AM 101 with a minimum grade of C and AM 130 with a minimum grade of C and DM 120 with a minimum grade of C) and (MATH 124 or MATH 141).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 275 Product Development I Credits: 3 (3-0-0)
Course Description: Fundamental techniques and skills applied to the development of apparel and textile products.
Prerequisite: AM 101 with a minimum grade of C and AM 110 and AM 130 with a minimum grade of C and MATH 124.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 290 Workshop Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 321 Advanced Textiles Credits: 3 (3-0-0)
Course Description: Textile product serviceability; effect of fiber structure on properties and performance; new developments.
Prerequisite: DM 120.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 330 Textile and Apparel Economics Credits: 3 (3-0-0)
Course Description: Manufacture of textile and apparel products; structure of the industries; international trade and consumption.
Prerequisite: (AM 270 with a minimum grade of C) and (AREC 202 with a minimum grade of C or ECON 202 with a minimum grade of C).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AM 335 Textiles and Apparel Supply Chains Credits: 3 (3-0-0)
Course Description: Managing the flow of materials, information, and finances as they move in a process from supplier to retailers and consumers in a global environment.
Prerequisite: AM 270.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 341 Computer-Aided Apparel Production Credits: 3 (1-4-0)
Course Description: Computer-aided design technology used in apparel sketching, pattern drafting, grading, and marker making.
Prerequisite: AM 241.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 342 Computer-Aided Textile Design Credits: 3 (2-2-0)
Course Description: Ethnic textile design traditions and current approaches to textile production in industry and in individual design studios; computer-aided technology and multicultural research used to create repeat, knit, and woven textile designs.
Prerequisite: AM 110.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 344 Adobe Illustrator for Apparel Design Credits: 3 (0-0-3)
Course Description: Apparel design using Adobe Illustrator to generate drawings for garment technical sketching, fashion illustration, and graphic logos.
Prerequisite: AM 243, may be taken concurrently.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AM 345 Draping Design Credits: 3 (0-6-0)
Course Description: Apparel designing through basic draping techniques.
Prerequisite: AM 241.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 346 Apparel Line Concept Development and Planning Credits: 3 (2-2-0)
Course Description: Use of computer-aided design software to transfer apparel design concepts to garment pattern completion. Develop ideation sketches, fashion illustrations, technical flat drawings, and garment patterns for an original design line.
Prerequisite: AM 244 and AM 341, may be taken concurrently and AM 345, may be taken concurrently and DM 272.
Restriction: .
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 363 Historic Costume Credits: 3 (3-0-0)
Course Description: Influence of social, political, and economic conditions on costume of predynastic Egypt to present time.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 364 History of Fashion Designers/Manufacturers Credits: 3 (0-0-3)
Course Description: Fashion designers and manufacturers who established the field and their contemporaries.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AM 366 Merchandising Promotion Credits: 3 (3-0-0)
Course Description: Activities used to influence sale of merchandise and services; to promote trends and ideas.
Prerequisite: (AM 270 or MKT 300 or MKT 305) and (DM 272).
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AM 371 Merchandising Systems Credits: 4 (3-2-0)
Course Description: Business mathematics and current practices related to acquisition, negotiation, distribution, and sale of merchandise.
Prerequisite: (ACT 205 or ACT 210) and (AM 270 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 373 Apparel Design and Retail Entrepreneurship Credits: 3 (3-0-0)
Course Description: Entrepreneurship opportunities relative to apparel design, product development, and merchandising; development of understanding to initiate an apparel products and/or services business.
Prerequisite: AM 270 and ECON 202.
Registration Information: Junior standing. Required field trips. Credit not allowed for both AM 373 and DM 380A1.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AM 375 Product Development II Credits: 3 (2-2-0)
Course Description: Product design and development for apparel and other soft goods through industry-driven projects.
Prerequisite: DM 272 with a minimum grade of C and AM 270 with a minimum grade of C and AM 275.
Registration Information: Must register for lecture and lab. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 384 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 421 Textiles Product Quality Assessment Credits: 3 (2-2-0)
Course Description: Role of quality assurance in product development, production, performance, and user satisfaction with sewn products and the textile and other components of those products.
Prerequisite: DM 120.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 430 International Retailing Credits: 3 (3-0-0)
Course Description: Application of retail principles to analyze the internationalization process of retailing.
Prerequisite: AM 330 and DM 360 or MKT 360.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AM 446 Apparel Design and Production Credits: 3 (1-4-0)
Course Description: Computer-aided design technology used in apparel sketching, pattern drafting, grading and marker making; final portfolio preparation and review.
Prerequisite: AM 341 and AM 342.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 450 Social-Psychological Aspects of Clothing Credits: 3 (3-0-0)
Course Description: Psychological and social factors influencing clothing and its effect on others.
Prerequisite: AM 250 and PSY 100 or SOC 100.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AM 460 Historic Textiles Credits: 3 (3-0-0)
Course Description: Historic development of textiles from a global perspective, focusing on textiles produced by diverse cultures.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AM 466 Retail Environment Design and Planning Credits: 3 (2-2-0)
Course Description: Application of design/merchandising principles to retail selling environments, including traditional store design/layout, direct mail, and websites.
Prerequisite: AM 130 and AM 270.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AM 475 Product Development III Credits: 3 (3-0-0)
Course Description: Technology-based product innovation for positive social and environmental impacts.
Prerequisite: AM 335 and AM 375.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 479 Merchandising Policies and Strategies Credits: 3 (3-0-0)
Course Description: Examination of merchandising environment as influenced by its structure, and economic, legal, demographic, and psychographic trends.
Prerequisite: (AM 270 and AM 330 and AM 366 and AM 371) and (DM 360 or MKT 360).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 495A Independent Study: Merchandising Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 495B Independent Study: Apparel Design and Production Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 495D Independent Study: Textiles and Clothing Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 496A Group Study: Merchandising Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 496B Group Study: Apparel Design Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 496C Group Study: Apparel Production Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 496D Group Study: Textiles and Clothing Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 525 Application of Textile Technology to Design Credits: 3 (1-2-1)
Course Description: Advanced study of textile technology in apparel, merchandising and interior design; recent advances in the field.
Prerequisite: AM 321 or AM 421.
Registration Information: Must register for lecture, laboratory, and recitation.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AM 546 Theoretical Apparel Design Credits: 3 (1-2-1)
Course Description: Applications of theoretical frameworks and computer-aided design techniques for the development of wearable and fiber art.
Prerequisite: None.
Registration Information: Must register for lecture, laboratory, and recitation.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 550 Appearance, Self, and Society Credits: 3 (0-0-3)
Course Description: Analysis of social science theories and concepts as they apply to appearance and dress research.
Prerequisite: AM 450 or PSY 000 to 9999 - at least 6 credits or SOC 000 to 9999 - at least 6 credits.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AM 572 Merchandising Theories and Strategies Credits: 3 (0-0-3)
Course Description: Theoretical perspective on the design and development of merchandising strategies for U.S. and global production, distribution, and consumption.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing or written consent of instructor.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AM 590B Workshop: Apparel Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Design and Merchandising (DM)

DM 120 Textiles Credits: 3 (2-2-0)
Course Description: Fibers, fabrics, and finishes basic to selection, use, and care.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 192 Design and Merchandising First Year Seminar Credit: 1 (0-0-1)
Course Description: Introduction to the Apparel and Merchandising and Interior Design majors, career options, campus resources, tools for academics, and industry topics.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

DM 272 Consumers in the Marketplace Credits: 3 (3-0-0)
Course Description: Analysis and evaluation of consumers in the marketplace as applied to merchandising.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 360 Retailing Credits: 3 (3-0-0)
Also Offered As: MKT 360.
Course Description: Retail markets, institutions, operations, and problems.
Prerequisite: MKT 300 or MKT 305.
Registration Information: Credit not allowed for both DM 360 and MKT 360. Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 400 U.S. Travel-New York City Credits: 3 (1-2-1)
Course Description: Interview/analyze designers, manufacturers, buying offices, retail stores, magazine firms, interior design and architecture firms, etc.
Prerequisite: None.
Registration Information: Must have taken 6 credits in the following courses: DM, AM, INTD. Must register for lecture, laboratory, and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

DM 470A International Design and Merchandising: Apparel Credits: 2 (1-0-1)
Course Description: Historical, cultural, and business aspects of international design and merchandising in selected countries.
Prerequisite: AM 101 and AM 130 and DM 120 and DM 482A, may be taken concurrently.
Registration Information: Must have concurrent registration in DM 482A. Must register for lecture and recitation.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 470B International Design and Merchandising: Interior Design Credits: 2 (1-0-1)
Course Description: Historical, cultural, and business aspects of international design and merchandising in selected countries.
Prerequisite: ART 100 and INTD 129 and INTD 166 and DM 482B, may be taken concurrently.
Registration Information: Must have concurrent registration in DM 482B. Must register for lecture and recitation.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 474 Fashion Show Production and Event Planning Credits: 3 (1-0-2)
Course Description: Planning and implementing full production fashion show of student-designed collections, including promotions and fund-raising activities.
Prerequisite: AM 101 or INTD 129.
Registration Information: Written consent of instructor. Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

DM 482 Travel Abroad Credit: 1 (0-0-1)
Course Description: Historical, cultural, aesthetic, and business aspects of design and merchandising in the selected country(ies).
Prerequisite: AM 101 and AM 130 and DM 120 and DM 470A, may be taken concurrently.
Registration Information: Must have concurrent registration in DM 470A.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 482A Study Abroad: Design/Merchandising–Scotland/ England Credit: 1 (0-0-1)
Course Description: Historical, cultural, aesthetic, and business aspects of international design and merchandising in the selected country(ies).
Prerequisite: DM 470A or DM 470B.
Grade Mode: Traditional.
Special Course Fee: No.

DM 487A Internship: Merchandising Credits: Var[12-16] (0-0-0)
Course Description:
Prerequisite: (AM 371) and (DM 360 or MKT 360) and (DM 492).
Registration Information: GPA 2.50.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 487B Internship: Apparel Design and Production Credits: Var[12-16] (0-0-0)
Course Description:
Prerequisite: AM 244 and DM 492.
Registration Information: GPA 2.50.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 487C Internship: Product Development Credits: Var[12-16] (0-0-0)
Course Description:
Prerequisite: AM 375 and DM 492.
Registration Information: GPA 2.500.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 487F Internship: General Credits: Var[3-16] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor; GPA2.500.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 490A Workshop: Merchandising Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 490B Workshop: Apparel Design and Production Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 490C Workshop: Interior Design Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 492 Preinternship Seminar Credits: 2 (1-0-1)
Course Description: Professional standards and corporate structure of apparel and merchandising companies in apparel design, product development, and/or merchandising.
Prerequisite: None.
Registration Information: Minimum 2.5 GPA; minimum of 60 credits completed. Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 10 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of three credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 501 Research and Theory-Design and Merchandising Credits: 3 (0-0-3)
Course Description: Theory and various approaches and philosophies of research in design and merchandising. Critical evaluation and synthesis of scholarly literature.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 510 Consumer Behavior Credits: 3 (3-0-0)
Course Description: Evaluation of psychological, sociological, and cultural theories of consumer behavior through examination of factors that influence decision making.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

DM 540 Promotional Strategies in Merchandising Credits: 3 (3-0-0)
Course Description: Integrated marketing communications while fostering cultural and global awareness, social responsibility and ethical decision-making.
Prerequisite: None.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

DM 542 Advanced Computer-Aided Textile Design Credits: 3 (1-4-0)
Course Description: Use of computer-aided design system to produce fabric designs for apparel or interior professional end use.
Prerequisite: AM 342.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

DM 551 Research Methods Credits: 3 (3-0-0)
Course Description: Design and methods of research applicable to design and merchandising.
Prerequisite: DM 501.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 563 Care and Exhibit of Museum Collections Credits: 3 (1-2-1)
Course Description: Hands-on experience in management, care, exhibition, and interpretation of museum collections.
Prerequisite: ART 100 to 499 - at least 3 credits or HIST 100 to 499 - at least 3 credits or AM 100 to 499 - at least 3 credits or DM 100 to 499.
Registration Information: Must register for lecture, laboratory and recitation. Required field trips.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

DM 570 Creativity in Design Credits: 3 (0-0-3)
Course Description: Multiple perspectives in creativity integrating theory and research impacting design.
Prerequisite: DM 501.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

DM 575 Human Factors in Design Credits: 3 (3-0-0)
Course Description: Theories and contemporary issues related to human factors in consumer product design.
Prerequisite: DM 501, may be taken concurrently.
Registration Information: Senior standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

DM 590A Workshop: Merchandising Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 590B Workshop: Apparel Design and Production Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 590C Workshop: Interior Design Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 592 Seminar Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 596 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 684 Supervised College Teaching Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 687 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 698 Research Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Interior Design (INTD)

INTD 110 Visual Expression of Interior Environments (GT-AH1) Credits: 3 (3-0-0)
Course Description: Introduction to interior environments conceptualizing the interior architectural environment in the context of an interrelated system of spaces. Observation and analysis of spatial environments as a way of understanding how spatial environments produce and communicate culture as well as are shaped by those who design, navigate, and participate in these spaces.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Arts & Expression (GT-AH1).

INTD 129 Introduction-Interior Architecture & Design Credits: 3 (3-0-0)
Course Description: Industry perspective to the profession of interior architecture and design through commercial and residential interiors with a focus on the role of key elements such as lighting, color, texture, and pattern on shaping interior architectural environments. Emphasis will be on disciplinary professional values and design process in interior architecture and design.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 166 Visual Communication-Drawing Credits: 3 (0-6-0)
Course Description: Hand drafting, free-hand drawing and conceptualization to communicate interior architecture and design concepts visualizing two- and three-dimensional representations.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 200 Housing Values in America Credits: 3 (3-0-0)
Course Description: Housing issues in the U.S.; values, norms, roles of government and building professions; interaction of issues with U.S. public values to meet housing needs.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 201 Two-Dimensional Fundamentals-Interior Design Credits: 3 (0-6-0)
Course Description: Demonstration of 2-dimensional elements and principles of design incorporating creative thinking, design fundamentals, design communication skills.
Prerequisite: INTD 129 and INTD 166.
Registration Information: Design scenario advancement.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 210 Studio I-Interior Architecture and Design Credits: 3 (1-4-0)
Course Description: Applying basic concepts of human behavior, anthropometrics, ergonomics, space planning, and furniture arrangement to residential and commercial interiors.
Prerequisite: None.
Registration Information: Sophomore standing. Design scenario advancement. Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

INTD 236 Three-Dimensional Thinking Credits: 3 (0-6-0)
Course Description: Demonstration and application in visualizing interior space in three dimensions.
Prerequisite: INTD 129 and INTD 166.
Registration Information: Design scenario advancement.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 255 Residential Interiors Credits: 3 (0-0-3)
Course Description: Theories, issues, and planning elements that impact the design of residential interiors.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 256 Computer-Aided Design for Interior Designers Credits: 3 (1-4-0)
Course Description: Use of computer-aided design (CAD), specifically two-dimensional and three-dimensional drafting using PC software.
Prerequisite: INTD 129 and INTD 166.
Registration Information: Design scenario advancement. Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 266 Visual Communication-Digital Multi-Media Credits: 3 (0-6-0)
Course Description: Visual communication using design software applications and multi-media techniques for expressing design ideas.
Prerequisite: None.
Registration Information: Sophomore standing. Design scenario advancement.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 276 Studio II-Interior Architecture and Design Credits: 3 (1-4-0)
Course Description: Introduction to small-scale interior architecture and design projects, including residential, educational, and commercial dining spaces.
Prerequisite: INTD 210 with a minimum grade of C and INTD 266, may be taken concurrently.
Registration Information: Interior Architecture and Design majors only. Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

INTD 296A Group Study: Space Planning and Application Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Design scenario advancement.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

INTD 296B Group Study: Design Application Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Design scenario advancement.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

INTD 310 Studio III-Interior Architecture and Design Credits: 4 (1-6-0)
Course Description: Create a comprehensive design that reflects the integration of knowledge of structural and building systems. The design project is guided by a clear brief and developed through an Integrated Design Process, informed at each stage by data and analysis. The project is documented through working drawings, annotated diagrams, and information graphics.
Prerequisite: INTD 276 with a minimum grade of C and INTD 330, may be taken concurrently and INTD 335, may be taken concurrently and INTD 350, may be taken concurrently.
Registration Information: Interior architecture and design majors only. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

INTD 330 Lighting Design Credits: 3 (2-2-0)
Course Description: Application of lighting design in interiors.
Prerequisite: INTD 276 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

INTD 335 Interior Architecture and Design Technologies Credits: 3 (2-2-0)
Course Description: Principles and procedures required in building information modeling for digital design, detailing, documentation, and visualization in interior architecture and design.
Prerequisite: INTD 266.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both INTD 235 and INTD 335.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 336 Color Credits: 3 (0-0-3)
Course Description: Color theories, principles, trends and application in design.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 340 Interior Materials and Products Credits: 3 (3-0-0)
Course Description: Analysis of materials, finishes, furnishings, objects, and resources for interior architecture and design.
Prerequisite: INTD 350.
Registration Information: Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 350 Codes-Health and Safety Credits: 3 (3-0-0)
Course Description: Health, safety, and wellness issues in interiors, including laws, codes, standards, regulations, and guidelines.
Prerequisite: INTD 210, may be taken concurrently.
Registration Information: Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 359 History of Interior Architecture and Design Credits: 3 (3-0-0)
Course Description: Survey of interior architecture and design history from ancient times through the present.
Prerequisite: None.
Registration Information: AUCC 2 or concurrent registration. Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 376 Studio IV-Interior Architecture and Design Credits: 4 (1-6-0)
Course Description: Applications of creative problem-solving, digital and design skills to develop innovative interior design projects with a focus on medium-scale commercial interiors.
Prerequisite: INTD 310 with a minimum grade of C and INTD 340, may be taken concurrently.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

INTD 384 Supervised College Teaching Credits: Var[1-10] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

INTD 400 Interior Design Research Proposal Credits: 4 (1-4-1)
Course Description: Research, development, and presentation of a programming proposal for a large scale interior design project with service learning component.
Prerequisite: INTD 376 with a minimum grade of C.
Registration Information: Must register for lecture, laboratory, and recitation. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 410 Evidence-based Design Theory Credits: 3 (3-0-0)
Course Description: Theory and application of evidence-based design processes including research, development, and presentation of a programming proposal for a large scale interior project.
Prerequisite: INTD 310 with a minimum grade of C and PSY 100.
Registration Information: Completion of AUCC category 2.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

INTD 450 Travel Abroad-Sustainable Building Credits: 3 (3-0-0)
Also Offered As: CON 450.
Course Description: Major components of sustainable design and construction, energy, healthy buildings, natural resources and other environmental issues.
Prerequisite: None.
Registration Information: Credit not allowed for both INTD 450 and CON 450.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 456 Professional Practice-Interior Arch & Design Credits: 3 (3-0-0)
Course Description: Current design and business practices, project management and communication, exposure to multi-disciplinary ways of working in design. Emphasis on several key aspects of professional practice including entrepreneurship, ethics, and socially mediated communication.
Prerequisite: INTD 310, may be taken concurrently.
Registration Information: Completion of AUCC category 2. Credit not allowed for both INTD 356 and INTD 456.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 476 Capstone-Interior Architecture and Design Credits: 4 (1-6-0)
Course Description: Large scale projects representing research-based design solutions, illustrating synthesis and analysis of entry level professional competencies in interior architecture and design.
Prerequisite: INTD 400 with a minimum grade of C or INTD 410 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

INTD 487 Internship Credits: Var[3-16] (0-0-0)
Course Description:
Prerequisite: INTD 356 and INTD 376 with a minimum grade of C.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

INTD 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 10 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

INTD 496A Group Study: Program Skills Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 10 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

INTD 496B Group Study: Design Application Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 10 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

INTD 550 Universal Design Credits: 3 (3-0-0)
Course Description: Analysis and evaluation of universal design as it applies to diverse population segments and interior environments.
Prerequisite: INTD 376 with a minimum grade of C, may be taken concurrently.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 575 Problems-Interior Design Credits: Var[1-8] (0-0-0)
Course Description:
Prerequisite: INTD 376 with a minimum grade of C - at least 9 credits.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 578 Trends/Issues in Interior Design Credits: 3 (2-0-1)
Course Description:
Prerequisite: INTD 376 with a minimum grade of C or DM 551.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 675 Problems-Interior Design Credits: Var[1-8] (0-0-0)
Course Description:
Prerequisite: INTD 575 - at least 4 credits.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Major in Apparel and Merchandising

The Major in Apparel and Merchandising emphasizes the study of apparel and textile design, product development and sourcing, and the promotion, distribution, and retailing of consumer goods in the global environment, while fostering awareness of cultural diversity and a commitment to social responsibility. The program encompasses the study of the cultural/historical, economic, social/psychological, and scientific aspects of the textile and apparel industry. There are three concentrations in the major: Apparel Design and Production, Merchandising, and Product Development.

Learning Outcomes

Students will demonstrate mastery of core knowledge and skills specific to their program/concentration areas. The three concentration areas include:

- Apparel Design and Production: core knowledge and skills include use of industry-related technology for sketching, pattern drafting, marker making, constructing; and cross-discipline knowledge and skills in conceptual design, technical production specifications communication, materials sourcing, and marketing.
- Merchandising: core knowledge and skills include consumer behavior and market research, retailing, assortment planning, merchandise buying, sales and customer service, advertising and promotion, and cross-discipline knowledge and skills in accounting/budgeting, purchasing, management, and marketing.
- Product Development: core knowledge and skills include market research, product design and development, prototypes, specification sheets, global sourcing, and supply chain management. Skills in this concentration are enhanced through industry-related technology. Students will be able to assess and synthesize multiple factors in creating/producing quality products, services, and design solutions. The factors will address human, design, industry and business, global, science, and technology sensitivities.

Students will demonstrate an understanding of professional practices, processes, and skills utilized in the areas of apparel design and production, merchandising, and product development. These practices, processes, and skills include critical and creative thinking, communication, ethics, social responsibility and sustainability, collaborative problem-solving, and interdisciplinary learning.

Students also will demonstrate professional behaviors and ethical business practices that enhance the well-being of others and contribute to the advancement of the global industry.

Students may enroll in internship credits one to two semesters prior to graduation and in the pre-internship course during their third year in the major. Student internship placement with businesses and organizations in national and international settings is designed to facilitate the depth and integration of knowledge in the study of apparel and merchandising and to enhance professional development and career opportunities. Students with a 2.500 GPA are eligible to participate in department-facilitated internships.

Students who are interested in co-curricular learning experiences have the opportunity to visit apparel and fashion headquarters, manufacturers, and markets, network with industry professionals, participate in department-led study tours, engage in project-based learning experiences, assist with department recruiting events and new student orientations, and participate in a variety of leadership events.

Potential Occupations

Career options for Apparel Design and Production graduates include, but are not limited to: apparel and fashion designer, computer-aided design (CAD) manager, creative director, design director, fashion illustrator, fashion magazine editorial contributor, fashion stylist, pattern-maker, technical designer, and trend/fashion forecaster.

Career options for Merchandising graduates include, but are not limited to: consumer or market researcher, brand/product merchandise manager, merchandise buyer, retail analyst, retail manager, retail store/website planner, resident buying office administrator, sales representative, showroom coordinator/manager, inventory control agent, consumer or market researcher, product trend analyst, advertising and promotions coordinator/manager, public relations specialist, social media specialist, and visual merchandiser.

Career options for Product Development graduates include, but are not limited to: consumer or market researcher, product designer/developer, prototype engineer, production manager, sourcing agent, product testing specialist, quality control agent, and import/export specialist.

Concentrations

- Apparel Design and Production Concentration
- Merchandising Concentration
- Product Development Concentration

Learn more about the Apparel and Merchandising Program on the Department of Design and Merchandising website (https://www.chhs.colostate.edu/dm/programs-and-degrees/b-s-in-apparel-and-merchandising).

Major in Apparel and Merchandising, Apparel Design and Production Concentration

The Apparel Design and Production concentration focuses on the development of knowledge and skills necessary to engage in the design and creation of textile and apparel goods for an identified target market. This includes coursework in aesthetics and design, fashion/trend forecasting, fashion illustration, pattern development; material selection (e.g., fibers, fabrics, dyes/finishes), apparel construction techniques, computer-aided design (CAD), historic textiles and costume, and social-psychological aspects of dress.

Students applying to the Apparel Design and Production concentration are accepted first into the Apparel and Merchandising major. Full acceptance into the Apparel Design and Production concentration requires passing the portfolio review held in the spring semester and a minimum 2.5 G.P.A. Industry professionals in the field of apparel design and manufacturing evaluate student portfolios. Each year, the 20 to 25 students who receive the highest scores on the portfolio evaluation are accepted into the Apparel Design and Production concentration, and they become eligible to enroll in apparel design and production courses.

Learn more about the Apparel Design and Production concentration on the Department of Design and Merchandising website (https://www.chhs.colostate.edu/dm/programs-and-degrees/b-s-in-apparel-and-merchandising/apparel-design-and-production-concentration).

Requirements

Effective Fall 2019

Freshman

		AUCC	Credits
AM 101	Fashion Industries		3
AM 110	Apparel and Merchandising Digital Technology		3
AM 130	Awareness and Appreciation of Design	3B	3

AM 143	Introduction to Apparel Design		4
CO 150	College Composition (GT-CO2)	1A	3
DM 120	Textiles		3
DM 192	Design and Merchandising First Year Seminar		1
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
Select one course from the following:			3
PSY 100	General Psychology (GT-SS3)	3C	
SOC 100	General Sociology (GT-SS3)	3C	
Biological and Physical Sciences		3A	3
Elective			1
	Total Credits		30

Sophomore

AM 240	Computer-Aided Apparel Design		3
AM 241	Apparel Production		3
AM 244	Illustration for Apparel Design		3
AM 250	Clothing, Adornment and Human Behavior (GT-SS3)	3E	3
AM 270	Merchandising Processes		3
AM 275	Product Development I		3
CHEM 103	Chemistry in Context (GT-SC2)	3A	3
CHEM 104	Chemistry in Context Laboratory (GT-SC1)	3A	1
DM 272	Consumers in the Marketplace		3
SPCM 200	Public Speaking		3
Arts and Humanities		3B	3
	Total Credits		31

Junior

AM 341	Computer-Aided Apparel Production		3
AM 342	Computer-Aided Textile Design	4B	3
AM 345	Draping Design		3
AM 363	Historic Costume	4A	3
DM 492	Preinternship Seminar		2
Select one course from the following:			3
PHIL 110	Logic and Critical Thinking (GT-AH3)	3B	
STAT 201	General Statistics		
Advanced Writing		2	3
Historical Perspectives		3D	3
Upper-Division AM or DM Electives[1]			6
Elective			3
	Total Credits		32

Senior

AM 421	Textiles Product Quality Assessment		3
AM 446	Apparel Design and Production	4C	3
AM 460	Historic Textiles		3
DM 487B[2]	Internship: Apparel Design and Production		12
Upper-Division AM or DM Electives[1]			6
	Total Credits		27
	Program Total Credits:		120

Internship Alternative Courses [2,3]

Code	Title	Credits
AM 321	Advanced Textiles	3
AM 330	Textile and Apparel Economics	3
AM 335	Textiles and Apparel Supply Chains	3
AM 342	Computer-Aided Textile Design	3
AM 344	Adobe Illustrator for Apparel Design	3
AM 363	Historic Costume	3
AM 364	History of Fashion Designers/Manufacturers	3
AM 366	Merchandising Promotion	3
AM 371	Merchandising Systems	4
AM 373	Apparel Design and Retail Entrepreneurship	3
AM 421	Textiles Product Quality Assessment	3
AM 430	International Retailing	3
AM 450	Social-Psychological Aspects of Clothing	3
AM 460	Historic Textiles	3
AM 466	Retail Environment Design and Planning	3
ART 350	Fibers II	4
ART 351	Fibers III	4
ART 450	Fibers IV	4
ART 451	Fibers V	4
DM 360/MKT 360	Retailing	3
DM 400	U.S. Travel-New York City	3
DM 470A	International Design and Merchandising: Apparel	2
DM 470B	International Design and Merchandising: Interior Design	2
DM 474	Fashion Show Production and Event Planning	3
DM 482	Travel Abroad	1
JTC 301	Corporate and Professional Communication (GT-CO3)	3
JTC 310	Copy Editing	3
JTC 311	History of Media	3
JTC 316	Multiculturalism and the Media	3
JTC 320A	Reporting: General News	3
JTC 320B	Reporting: Sports	3
JTC 320C	Reporting: Business	3
JTC 320D	Reporting: Government and Political	3
JTC 320E	Reporting: Health and Medicine	3
JTC 320F	Reporting: Technology and Innovation	3
JTC 320G	Reporting: Education	3
JTC 320H	Reporting: Special Topics	3
JTC 326	Online Storytelling and Audience Engagement	3
JTC 340	Digital Video Editing	3
JTC 342	Writing for Specialized Electronic Media	3
JTC 350	Public Relations	3
JTC 361	Writing for Specialized Magazines	3
JTC 372	Web Design and Management	3
JTC 411	Media Ethics and Issues	3
JTC 412	International Mass Communication	3
JTC 413	New Communication Technologies and Society	3
JTC 414	Media Effects	3
JTC 415	Communications Law	3
JTC 464	Technical Communication	3
JTC 471	Research for Public Communicators	3

MGT 320	Contemporary Management Principles/Practices	3
MGT 330	Creativity, Innovation, and Value Creation	3
MGT 340	Fundamentals of Entrepreneurship	3
MGT 410	Leadership and Organizational Behavior	3
MGT 420	New Venture Creation	3
MGT 425	Organizational Communication Strategies	3
MGT 440	New Venture Management	3
MGT 470	Managerial Decisions-Issues and Analysis	3
MGT 475	International Business Management	3
MKT 366	Services Marketing	3
SOC 301	Development of Sociological Thought	3
SOC 302	Contemporary Sociological Theory	3
SOC 330	Social Inequality	3
SOC 342	Leisure and Society	3
SOC 362	Social Change	3
SOC 371	Symbolic Interaction	3
SOC 460	Society and Environment	3
TH 363	Costume Design II	3

[1] Select upper-division (300- to 400-level) AM or DM courses ending in -00 to -79.

[2] Acceptance for DM 487B depends on the student's GPA and acceptance by a cooperating company. Students not enrolled in an internship will select 12 credits from the department list of Internship Alternative Courses.

[3] Courses used to fulfill upper division AM or DM electives in the program cannot be used to fulfill internship alternative courses.

Major Completion Map

Distinctive Requirements for Degree Program:

Competitive Selection process: Portfolio Review required for all students who desire to declare Apparel Design and Production (ADAZ) concentration. Upon successful passing of the Portfolio Review, students are able to take AM 143. No course requirements to submit a Portfolio.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
AM 101	Fashion Industries	X			3
AM 110	Apparel and Merchandising Digital Technology				3
AM 130	Awareness and Appreciation of Design		X	3B	3
CO 150	College Composition (GT-CO2)			1A	3
DM 192	Design and Merchandising First Year Seminar				1
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
AM 143	Introduction to Apparel Design	X			4
DM 120	Textiles	X			3
MATH 124	Logarithmic and Exponential Functions (GT-MA1)			1B	1
Select one course from the following:					3
PSY 100	General Psychology (GT-SS3)			3C	
SOC 100	General Sociology (GT-SS3)			3C	
Biological and Physical Sciences				3A	3
Elective					1
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
AM 241	Apparel Production		X		3
AM 244	Illustration for Apparel Design		X		3

AM 250	Clothing, Adornment and Human Behavior (GT-SS3)			3E	3
CHEM 103	Chemistry in Context (GT-SC2)			3A	3
CHEM 104	Chemistry in Context Laboratory (GT-SC1)			3A	1
DM 272	Consumers in the Marketplace	X			3
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
AM 240	Computer-Aided Apparel Design		X		3
AM 270	Merchandising Processes	X			3
AM 275	Product Development I				3
SPCM 200	Public Speaking				3
Arts and Humanities				3B	3
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
AM 342	Computer-Aided Textile Design	X		4B	3
DM 492	Preinternship Seminar				2
Select one course from the following:					3
PHIL 110	Logic and Critical Thinking (GT-AH3)			3B	
STAT 201	General Statistics				
Historical Perspectives				3D	3
Upper-Division AM or DM Elective					3
Electives					3
	Total Credits				17
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
AM 341	Computer-Aided Apparel Production	X			3
AM 345	Draping Design		X		3
AM 363	Historic Costume		X	4A	3
Advanced Writing				2	3
Upper-Division AM or DM Elective					3
DM 492 must be completed by the end of Semester 6.		X			
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
AM 421	Textiles Product Quality Assessment	X			3
AM 446	Apparel Design and Production	X		4C	3
AM 460	Historic Textiles	X			3
Upper-Division AM or DM Electives					6
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
DM 487B	Internship: Apparel Design and Production	X			12
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12
	Program Total Credits:				120

Major in Apparel and Merchandising, Merchandising Concentration

The Merchandising concentration focuses on the development of knowledge and skills necessary to engage in the marketing and retailing of consumer goods for an identified target market. This includes coursework in consumer behavior, entrepreneurship, merchandising processes/management, merchandise buying/procurement, promotion, retailing, retail store design, and the global industry (economics, politics, and trade).

Learn more about the Merchandising concentration on the Department of Design and Merchandising website (https://www.chhs.colostate.edu/dm/programs-and-degrees/b-s-in-apparel-and-merchandising/merchandising-concentration).

Requirements

Effective Fall 2019

Freshman

		AUCC	Credits
AM 101	Fashion Industries		3
AM 110	Apparel and Merchandising Digital Technology		3
AM 130	Awareness and Appreciation of Design	3B	3
CO 150	College Composition (GT-CO2)	1A	3
DM 120	Textiles		3
DM 192	Design and Merchandising First Year Seminar		1
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
Select one course from the following:			3
PSY 100	General Psychology (GT-SS3)	3C	
SOC 100	General Sociology (GT-SS3)	3C	
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	3
Historical Perspectives		3D	3
	Total Credits		31

Sophomore

ACT 205	Fundamentals of Accounting		3
AM 250	Clothing, Adornment and Human Behavior (GT-SS3)	3E	3
AM 270	Merchandising Processes		3
AM 275	Product Development I		3
CHEM 103	Chemistry in Context (GT-SC2)	3A	3
CHEM 104	Chemistry in Context Laboratory (GT-SC1)	3A	1
DM 272	Consumers in the Marketplace		3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
SPCM 200	Public Speaking		3
Select one course from the following:			3
STAT 201	General Statistics		
STAT 204	Statistics for Business Students		
Elective			2
	Total Credits		30

Junior

AM 321	Advanced Textiles		3
AM 330	Textile and Apparel Economics	4B	3
AM 366	Merchandising Promotion		3
AM 371	Merchandising Systems		4
DM 360/MKT 360	Retailing		3
DM 492	Preinternship Seminar		2
Select one course from the following:			3
FIN 305	Fundamentals of Finance		
Upper-Division AM or DM Elective[1]			
MGT 305	Fundamentals of Management		3
MKT 305	Fundamentals of Marketing		3
Upper-Division AM or DM Elective[1]			3
Advanced Writing		2	3
	Total Credits		33

Senior

AM 479	Merchandising Policies and Strategies	4A,4C	3
DM 487A[2]	Internship: Merchandising		12
Upper-Division AM or DM Elective[1]			6
Electives			5
	Total Credits		26
	Program Total Credits:		120

Internship Alternative Courses [2,3]

Code	Title	Credits
AM 321	Advanced Textiles	3
AM 330	Textile and Apparel Economics	3
AM 335	Textiles and Apparel Supply Chains	3
AM 342	Computer-Aided Textile Design	3
AM 344	Adobe Illustrator for Apparel Design	3
AM 363	Historic Costume	3
AM 364	History of Fashion Designers/Manufacturers	3
AM 366	Merchandising Promotion	3
AM 371	Merchandising Systems	4
AM 373	Apparel Design and Retail Entrepreneurship	3
AM 421	Textiles Product Quality Assessment	3
AM 430	International Retailing	3
AM 450	Social-Psychological Aspects of Clothing	3
AM 460	Historic Textiles	3
AM 466	Retail Environment Design and Planning	3
ART 350	Fibers II	4
ART 351	Fibers III	4
ART 450	Fibers IV	4
ART 451	Fibers V	4
DM 360/MKT 360	Retailing	3
DM 400	U.S. Travel-New York City	3
DM 470A	International Design and Merchandising: Apparel	2
DM 470B	International Design and Merchandising: Interior Design	2
DM 474	Fashion Show Production and Event Planning	3
DM 482	Travel Abroad	1

JTC 301	Corporate and Professional Communication (GT-CO3)	3
JTC 310	Copy Editing	3
JTC 311	History of Media	3
JTC 316	Multiculturalism and the Media	3
JTC 320A	Reporting: General News	3
JTC 320B	Reporting: Sports	3
JTC 320C	Reporting: Business	3
JTC 320D	Reporting: Government and Political	3
JTC 320E	Reporting: Health and Medicine	3
JTC 320F	Reporting: Technology and Innovation	3
JTC 320G	Reporting: Education	3
JTC 320H	Reporting: Special Topics	3
JTC 326	Online Storytelling and Audience Engagement	3
JTC 340	Digital Video Editing	3
JTC 342	Writing for Specialized Electronic Media	3
JTC 350	Public Relations	3
JTC 361	Writing for Specialized Magazines	3
JTC 372	Web Design and Management	3
JTC 411	Media Ethics and Issues	3
JTC 412	International Mass Communication	3
JTC 413	New Communication Technologies and Society	3
JTC 414	Media Effects	3
JTC 415	Communications Law	3
JTC 464	Technical Communication	3
JTC 471	Research for Public Communicators	3
MGT 320	Contemporary Management Principles/Practices	3
MGT 330	Creativity, Innovation, and Value Creation	3
MGT 340	Fundamentals of Entrepreneurship	3
MGT 410	Leadership and Organizational Behavior	3
MGT 420	New Venture Creation	3
MGT 425	Organizational Communication Strategies	3
MGT 440	New Venture Management	3
MGT 470	Managerial Decisions-Issues and Analysis	3
MGT 475	International Business Management	3
MKT 366	Services Marketing	3
SOC 301	Development of Sociological Thought	3
SOC 302	Contemporary Sociological Theory	3
SOC 330	Social Inequality	3
SOC 342	Leisure and Society	3
SOC 362	Social Change	3
SOC 371	Symbolic Interaction	3
SOC 460	Society and Environment	3
TH 363	Costume Design II	3

1 Select upper-division (300- to 400-level) AM or DM courses ending in -00 to -79.

2 Registration for DM 487A depends on acceptance by a cooperating company. Students not enrolled in an internship will select 12 credits from the department list of Internship Alternative Courses.

3 Courses used to fulfill upper-division AM or DM electives in the program cannot be used to fulfill course requirements for internship alternatives.

Major Completion Map

Distinctive Requirements for Degree Program:

Minimum grade requirements for Apparel and Merchandising - Merchandising concentration are as follows: AM 101, AM 130, DM 120, AM 270, DM 272, MATH 117, MATH 118, MATH 124 with grades of C or better.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
AM 101	Fashion Industries	X			3
AM 130	Awareness and Appreciation of Design		X	3B	3
CO 150	College Composition (GT-CO2)			1A	3
DM 192	Design and Merchandising First Year Seminar				1
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
Select one course from the following:					3
PSY 100	General Psychology (GT-SS3)			3C	
SOC 100	General Sociology (GT-SS3)			3C	
	Total Credits				15

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
AM 110	Apparel and Merchandising Digital Technology	X			3
DM 120	Textiles	X			3
MATH 124	Logarithmic and Exponential Functions (GT-MA1)			1B	1
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
Historical Perspectives				3D	3
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 205	Fundamentals of Accounting		X		3
AM 275	Product Development I				3
CHEM 103	Chemistry in Context (GT-SC2)			3A	3
CHEM 104	Chemistry in Context Laboratory (GT-SC1)			3A	1
DM 272	Consumers in the Marketplace	X			3
ECON 202	Principles of Microeconomics (GT-SS1)		X	3C	3
	Total Credits				16

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
AM 250	Clothing, Adornment and Human Behavior (GT-SS3)			3E	3
AM 270	Merchandising Processes	X			3
SPCM 200	Public Speaking				3
Select one course from the following:					3
STAT 201	General Statistics				
STAT 204	Statistics for Business Students				
Elective					2
	Total Credits				14

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
AM 330	Textile and Apparel Economics	X		4B	3
AM 366	Merchandising Promotion		X		3
AM 371	Merchandising Systems		X		4
MKT 305	Fundamentals of Marketing	X			3
Upper-Division AM/DM Elective					3
	Total Credits				16

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
AM 321	Advanced Textiles	X			3

DM 360/ MKT 360	Retailing	X			3
DM 492	Preinternship Seminar	X			2
MGT 305	Fundamentals of Management				3
Select one course from the following:					3
FIN 305	Fundamentals of Finance				
Upper-Division AM/DM Elective					
Advanced Writing				2	3
	Total Credits				17

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
AM 479	Merchandising Policies and Strategies		X	4A,4C	3
Upper-Division AM/DM Electives					6
Electives					5
	Total Credits				14
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
DM 487A	Internship: Merchandising	X			12
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12
	Program Total Credits:				120

Major in Apparel and Merchandising, Product Development Concentration

The Product Development concentration offers unique learning opportunities in developing and innovating consumer products. This concentration teaches students necessary skills and knowledge for product development, including market potential analysis, trend forecasting, technology and material research, concept development, product line development, computer-aided design, technical package, packaging/branding strategies, pricing and costing, product line management, quality assurance, sourcing, supply chain management, and new venture start-up.

Students in this concentration gain competence to be successful industry professionals or entrepreneurs through market-driven, industry-sponsored projects, which allows them to develop further networks with the real world. Students graduating with this concentration often pursue careers in highly technical product development fields such as outdoor products or sportswear industries.

Learn more about the Product Development concentration on the Department of Design and Merchandising website (https://www.chhs.colostate.edu/dm/programs-and-degrees/b-s-in-apparel-and-merchandising/product-development-concentration).

Requirements

Effective Fall 2019

Freshman

		AUCC	**Credits**
AM 101	Fashion Industries		3
AM 110	Apparel and Merchandising Digital Technology		3
AM 130	Awareness and Appreciation of Design	3B	3
AM 143	Introduction to Apparel Design		4
CO 150	College Composition (GT-CO2)	1A	3
DM 120	Textiles		3
DM 192	Design and Merchandising First Year Seminar		1

MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
Select one course from the following:			3
PSY 100	General Psychology (GT-SS3)	3C	
SOC 100	General Sociology (GT-SS3)	3C	
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	3
	Total Credits		32

Sophomore

ACT 205	Fundamentals of Accounting		3
AM 250	Clothing, Adornment and Human Behavior (GT-SS3)	3E	3
AM 270	Merchandising Processes		3
AM 275	Product Development I		3
CHEM 103	Chemistry in Context (GT-SC2)	3A	3
CHEM 104	Chemistry in Context Laboratory (GT-SC1)	3A	1
DM 272	Consumers in the Marketplace		3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
SPCM 200	Public Speaking		3
Select one course from the following:			3
STAT 201	General Statistics		
STAT 204	Statistics for Business Students		
Historical Perspectives		3D	3
	Total Credits		31

Junior

AM 321	Advanced Textiles		3
AM 330	Textile and Apparel Economics		3
AM 335	Textiles and Apparel Supply Chains		3
AM 342	Computer-Aided Textile Design		3
AM 363	Historic Costume		3
AM 373	Apparel Design and Retail Entrepreneurship		3
AM 375	Product Development II	4B	3
DM 492	Preinternship Seminar		2
MKT 305	Fundamentals of Marketing		3
Advanced Writing		2	3
Elective			1
	Total Credits		30

Senior

AM 421	Textiles Product Quality Assessment		3
AM 460	Historic Textiles		3
AM 475	Product Development III	4A,4C	3
DM 487C[1]	Internship: Product Development		12
Upper-Division AM or DM Electives[2]			6
	Total Credits		27
	Program Total Credits:		120

Internship Alternative Courses [1,3]

Code	Title	Credits
AM 321	Advanced Textiles	3
AM 330	Textile and Apparel Economics	3
AM 342	Computer-Aided Textile Design	3
AM 344	Adobe Illustrator for Apparel Design	3
AM 363	Historic Costume	3
AM 364	History of Fashion Designers/ Manufacturers	3
AM 366	Merchandising Promotion	3
AM 371	Merchandising Systems	4
AM 373	Apparel Design and Retail Entrepreneurship	3
AM 421	Textiles Product Quality Assessment	3
AM 430	International Retailing	3
AM 450	Social-Psychological Aspects of Clothing	3
AM 460	Historic Textiles	3
AM 466	Retail Environment Design and Planning	3
ART 350	Fibers II	4
ART 351	Fibers III	4
ART 450	Fibers IV	4
ART 451	Fibers V	4
DM 360/MKT 360	Retailing	3
DM 400	U.S. Travel-New York City	3
DM 470A	International Design and Merchandising: Apparel	2
DM 470B	International Design and Merchandising: Interior Design	2
DM 474	Fashion Show Production and Event Planning	3
DM 482	Travel Abroad	1
JTC 301	Corporate and Professional Communication (GT-CO3)	3
JTC 310	Copy Editing	3
JTC 311	History of Media	3
JTC 316	Multiculturalism and the Media	3
JTC 320A	Reporting: General News	3
JTC 320B	Reporting: Sports	3
JTC 320C	Reporting: Business	3
JTC 320D	Reporting: Government and Political	3
JTC 320E	Reporting: Health and Medicine	3
JTC 320F	Reporting: Technology and Innovation	3
JTC 320G	Reporting: Education	3
JTC 320H	Reporting: Special Topics	3
JTC 326	Online Storytelling and Audience Engagement	3
JTC 340	Digital Video Editing	3
JTC 342	Writing for Specialized Electronic Media	3
JTC 350	Public Relations	3
JTC 361	Writing for Specialized Magazines	3
JTC 372	Web Design and Management	3
JTC 411	Media Ethics and Issues	3
JTC 412	International Mass Communication	3
JTC 413	New Communication Technologies and Society	3
JTC 414	Media Effects	3
JTC 415	Communications Law	3
JTC 464	Technical Communication	3
JTC 471	Research for Public Communicators	3
MGT 320	Contemporary Management Principles/ Practices	3
MGT 330	Creativity, Innovation, and Value Creation	3
MGT 340	Fundamentals of Entrepreneurship	3
MGT 410	Leadership and Organizational Behavior	3
MGT 420	New Venture Creation	3
MGT 425	Organizational Communication Strategies	3
MGT 440	New Venture Management	3
MGT 470	Managerial Decisions-Issues and Analysis	3
MGT 475	International Business Management	3
MKT 366	Services Marketing	3
SOC 301	Development of Sociological Thought	3
SOC 302	Contemporary Sociological Theory	3
SOC 330	Social Inequality	3
SOC 342	Leisure and Society	3
SOC 362	Social Change	3
SOC 371	Symbolic Interaction	3
SOC 460	Society and Environment	3
TH 363	Costume Design II	3

1 Registration for DM 487C depends on acceptance by a cooperating company. Students not enrolled in an internship will select 12 credits from the department list of Internship Alternative Courses.

2 Select upper-division (300- to 400-level) AM or DM subject code courses ending in -00 to -79.

3 Courses used to fulfill upper-division AM or DM electives in the program cannot be used to fulfill course requirements for internship alternatives.

Major Completion Map

Distinctive Requirements for Degree Program:

Minimum grade requirements for Apparel and Merchandising - Product Development concentration are as follows: **AM 101, AM 130, DM 272,MATH 117, MATH 118, MATH 124** with grades of C or better.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
AM 101	Fashion Industries	X			3
AM 130	Awareness and Appreciation of Design		X	3B	3
CO 150	College Composition (GT-CO2)			1A	3
DM 192	Design and Merchandising First Year Seminar				1

MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
Select one course from the following:					3
PSY 100	General Psychology (GT-SS3)			3C	
SOC 100	General Sociology (GT-SS3)			3C	
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
AM 110	Apparel and Merchandising Digital Technology	X			3
AM 143	Introduction to Apparel Design				4
DM 120	Textiles	X			3
MATH 124	Logarithmic and Exponential Functions (GT-MA1)			1B	1
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
	Total Credits				17
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 205	Fundamentals of Accounting				3
AM 250	Clothing, Adornment and Human Behavior (GT-SS3)			3E	3
AM 275	Product Development I				3
CHEM 103	Chemistry in Context (GT-SC2)			3A	3
CHEM 104	Chemistry in Context Laboratory (GT-SC1)			3A	1
DM 272	Consumers in the Marketplace	X			3
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
AM 270	Merchandising Processes	X			3
ECON 202	Principles of Microeconomics (GT-SS1)			3C	3
SPCM 200	Public Speaking				3
Select one course from the following:					3
STAT 201	General Statistics				
STAT 204	Statistics for Business Students				
Historical Perspectives				3D	3
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
AM 330	Textile and Apparel Economics		X		3
AM 342	Computer-Aided Textile Design		X		3
AM 373	Apparel Design and Retail Entrepreneurship				3
AM 375	Product Development II	X		4B	3
Advanced Writing				2	3
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
AM 321	Advanced Textiles	X			3
AM 335	Textiles and Apparel Supply Chains	X			3
AM 363	Historic Costume	X			3
DM 492	Preinternship Seminar				2
MKT 305	Fundamentals of Marketing				3
Elective					1
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
AM 421	Textiles Product Quality Assessment	X			3
AM 460	Historic Textiles	X			3

AM 475	Product Development III	X		4A,4C	3
Upper-Division AM/DM Electives					6
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
DM 487C	Internship: Product Development	X			12
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12
	Program Total Credits:				120

Minor in Merchandising

A minor in Merchandising provides students in other majors an opportunity to gain knowledge and skills specific to the field of merchandising. The minor may be of special interest to students majoring in areas such as art, business, and journalism and technical communication. The perspectives gleaned by selecting a Merchandising minor both enhance understanding of the student's major program and expand career opportunities available to the student.

The Apparel and Merchandising program emphasizes study in apparel and textile design, product development and sourcing, and the marketing and retailing of consumer goods. The program encompasses the global study of the cultural/historical economic, and scientific aspects of the textile and apparel industry while fostering an understanding and implementation of socially responsible business practices.

Learn more about the minor in Merchandising on the Department of Design and Merchandising website (https://www.chhs.colostate.edu/dm/programs-and-degrees/minor-in-merchandising).

Requirements
Effective Fall 1999

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Lower Division		
AM 101	Fashion Industries	3
AM 270	Merchandising Processes	3
DM 120	Textiles	3
Upper Division		
AM 330	Textile and Apparel Economics	3
or AM 366	Merchandising Promotion	
AM 371	Merchandising Systems	4
AM*** Upper-Division Elective [1]		3
DM 360/MKT 360	Retailing	3
Program Total Credits:		22

[1] Select in consultation with advisor. Must be upper-division (300- to 400-level).

Major in Interior Architecture and Design

The Major in Interior Architecture and Design exemplifies the definition of the professional designer as qualified by education, experience, and examination to design interior environments that enhance the function and quality of life, increase productivity, and protect the health, safety, and welfare of the public. Academic preparation is grounded in research-based problem solving and experiential education through studio instruction, service learning, and internships that encompass a variety of cultural, environmental, and historical perspectives. The program is accredited by the Council for Interior Design Accreditation (CIDA), recognizing the highest academic standards established by the profession.

Students seeking to apply to the Interior Architecture and Design major at CSU first are admitted to CSU as Pre-Interior Architecture and Design. All students who wish to be considered for admission to Interior Architecture and Design major will be required to complete the Interior Design Scenario. Selective advancement into the major is based on the score received at the Interior Design Scenario determined by external reviewers who assess student competencies in writing, drawing, problem-solving, and conceptual frameworks. A cohort of approximately 40 students is selected upon completion of the Interior Design Scenario. The Interior Design Scenario occurs annually in the spring semester. See the Department of Design and Merchandising (https://www.chhs.colostate.edu/dm) for more information regarding the Interior Design Scenario.

In order to participate in the Interior Design Scenario students must have the following:

- GPA of 2.500 or higher.
- Completion of or current enrollment in INTD 110, INTD 129 and INTD 166 or equivalent. Equivalent courses from other institutions must be approved at least two weeks prior to the Interior Design Scenario by the Interior Design transfer advisor.

The Design and Merchandising department Academic Success Coordinator will work with Pre-Interior Architecture and Design students and advise them on their current performance in relation to the possibility of their admission to Interior Architecture and Design.

Faculty in the Interior Architecture and Design program value learning as a collaborative effort inviting diversity, design research as a basis for excellence in design practice, and new models for learning to respond to new ways of working. The program guides students toward becoming dedicated professional designers who have strong communication skills, are active as team players and creative problem solvers, and who make a positive impact in the practice of interior architecture and design. Students engage in research-based problem solving, providing a solid transition from education to practice in a global community. An internship in interior architecture / interior design practice is required for graduation.

The Interior Architecture and Design graduate will learn the entirety of the design process, beginning with assessment of client needs through design programming, development of alternative design solutions, development of conceptual and theoretical frameworks, selection of furniture and finish materials, construction documentation, core compliance, and contract administration including project management and post-occupancy evaluation methodologies. In addition, students take course work in construction/ building systems and codes, business principles in interior architecture and design, computer-aided design and drafting, building information modeling, animation, multimedia, graphic visualization, history of architecture and interiors, and sustainable practices.

The teaching facilities include design studios; display, resource, and critique spaces; and computer labs.

Learning Outcomes

- Interior Architecture and Design core skills will include but are not limited to: applications of history and culture; space and form; color and light; fixtures, equipment, and finish materials; environmental systems; building systems, and interior construction; technology; and regulations.
- Students in the Interior Architecture and Design major will be able to assess and synthesize multiple factors in creating/producing quality products, services, and design solutions. The factors will address human, design, industry and business, global, science and technology sensitivities.
- Students will be able to describe their understanding of multiple processes that are involved in the practice of interior architecture and design. These processes include but are not limited to critical and creative thinking, communication, ethics, social responsibility and sustainability, and interdisciplinary collaboration.
- Students will distinguish and demonstrate qualities of professionalism and business practices that contribute to the industry, and advance the value of their knowledge to the interior built environments.
- Students will enroll in Internships credits at least one semester before graduation.
- Students who engage in co-curricular learning experiences will have the opportunity to network with industry professionals, engage in project-based learning experiences, assist with department recruiting events and new student orientations, and attend a variety of leadership events.

Potential Occupations

Students are prepared as entry-level interior architects/ interior designers with competency in design fundamentals, space planning and programming, code compliance, lighting, materials research, project management, and professional practices in the design of diverse interior spaces.

Graduates seek employment in interior design and architecture firms as residential, corporate, retail, health care, institutional, education, and hospitality designers. Graduates also work in lighting design, product development, marketing, research, design-related journalism, illustration, facility management, showroom management, and as manufacturers' representatives.

Learn more about the Interior Architecture and Design major on the Department of Design and Merchandising website (https://www.chhs.colostate.edu/dm/programs-and-degrees/b-s-in-interior-architecture-and-design).

Requirements

Effective Fall 2019

Distinctive Requirements for Degree Program:
First year students are identified as Pre-Interior Architecture and Design (IAD0). Students who qualify for the Selective Advancement Design Scenario must have **INTD 110** , INTD 129, INTD 166 and a cumulative reported GPA of 2.500 or better to participate. All majors in the program must earn a minimum grade of C in the studio course sequence to advance to the next studio (i.e., INTD 210, INTD 276, INTD 310, INTD 376, INTD 410).

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
CON 151	Construction Materials and Methods		3
DM 192	Design and Merchandising First Year Seminar		1
INTD 110	Visual Expression of Interior Environments (GT-AH1)	3B,3B	3
INTD 129	Introduction-Interior Architecture Design		3
INTD 166	Visual Communication-Drawing		3

MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
PSY 100	General Psychology (GT-SS3)	3C	3
Select one course from the following:			3
ART 100	Introduction to the Visual Arts (GT-AH1)	3B	
IDEA 210	Introduction to Design Thinking (GT-AH1)	3B	
LAND 110	Introduction to Landscape Architecture	3B	
Biological and Physical Sciences		3A	4
Elective			1
	Total Credits		30

Sophomore

INTD 210	Studio I-Interior Architecture and Design		3
INTD 266	Visual Communication-Digital Multi-Media		3
INTD 276	Studio II-Interior Architecture and Design		3
Focus Area[1]			9
Advanced Writing		2	3
Historical Perspectives		3D	3
Electives			6
	Total Credits		30

Junior

INTD 310	Studio III-Interior Architecture and Design		4
INTD 330	Lighting Design		3
INTD 335	Interior Architecture and Design Technologies		3
INTD 340	Interior Materials and Products		3
INTD 350	Codes-Health and Safety		3
INTD 359	History of Interior Architecture and Design		3
INTD 376	Studio IV-Interior Architecture and Design		4
INTD 410	Evidence-based Design Theory	4A	3
Select one course from the following:			3
AM 460	Historic Textiles		
HIST 354	American Architectural History		
Elective			3
	Total Credits		32

Senior

INTD 456	Professional Practice-Interior Arch Design	4B	3
INTD 476	Capstone-Interior Architecture and Design	4C	4
INTD 487[2]	Internship		12
Biological and Physical Sciences		3A	3
Diversity and Global Awareness		3E	3
Elective[3]			3
	Total Credits		28
	Program Total Credits:		120

[1] In addition to required courses in the major, students must complete a minimum of 9 credits from one of the following focus areas. These credits may be used to fulfill required courses in a certificate, minor, interdisciplinary minor, second major, or a focused group of courses approved by an advisor.

Focus Areas:

- Art History
- Business Administration
- Construction Management
- Design Thinking
- Entrepreneurship
- Gerontology
- Global Environmental Sustainability
- Graphic Design
- Media Studies
- Merchandising
- Real Estate
- Psychology

[2] Substitute experiences could include study abroad or elective courses or independent study (service learning) with advisor approval.

[3] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be Upper-Division (300- or 400- level).

Major Completion Map

Distinctive Requirements for Degree Program:
First year students are identified as Pre-Interior Architecture and Design (IAD0). Students who qualify for the Selective Advancement Design Scenario must have **INTD 110** , INTD 129, INTD 166 and a cumulative reported GPA of 2.500 or better to participate. Approximately 40 students are selected to advance to the Second Year and majors are changed to Interior Architecture and Design (IARD-BS). The IARD-BS major is a cohort program - after students pass the Design Scenario, semesters 3, 4, 5, 6 ,7, and 8 are sequential.

All majors in the program must earn a minimum grade of C in the studio course sequence to advance to the next studio (i.e., INTD 210, INTD 276, INTD 310, INTD 376, INTD 410).

Students must complete a 12-credit internship prior to graduation. For students who are unable to participate in an internship, substitute experiences could include study abroad or elective courses or independent study (service learning) with advisor approval.

In addition to required courses in the major, students must complete a minimum of 9 credits from one of the following focus areas. These credits may be used to fulfill required courses in a certificate, minor, interdisciplinary minor, second major, or a focused group of courses approved by an advisor.

Focus Areas:

- Art History
- Business Administration
- Construction Management
- Design Thinking
- Entrepreneurship
- Gerontology
- Global Environmental Sustainability
- Graphic Design
- Media Studies
- Merchandising
- Real Estate
- Psychology

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
CO 150	College Composition (GT-CO2)		X	1A	3
DM 192	Design and Merchandising First Year Seminar				1
INTD 110	Visual Expression of Interior Environments (GT-AH1)	X		3B,3B	3
MATH 117	College Algebra in Context I (GT-MA1)		X	1B	1
MATH 118	College Algebra in Context II (GT-MA1)		X	1B	1

PSY 100	General Psychology (GT-SS3)		X	3C	3
Select one course from the following:					3
ART 100	Introduction to the Visual Arts (GT-AH1)			3B	
IDEA 210	Introduction to Design Thinking (GT-AH1)			3B	
LAND 110	Introduction to Landscape Architecture			3B	
INTD 110 Required for selective advancement		X			
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CON 151	Construction Materials and Methods	X			3
INTD 129	Introduction-Interior Architecture Design	X			3
INTD 166	Visual Communication-Drawing	X			3
MATH 124	Logarithmic and Exponential Functions (GT-MA1)			1B	1
Biological and Physical Sciences				3A	4
Elective					1
CO 150 and AUCC 1B (Quantitative Reasoning) must be completed by the end of Semester 2.		X			
INTD 129 and INTD 166 required for selective advancement.		X			
	Total Credits				15
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
INTD 210	Studio I-Interior Architecture and Design	X			3
INTD 266	Visual Communication-Digital Multi-Media		X		3
Focus Area Electives (See Major Requirements Tab.)					6
Elective					3
INTD 266 must be completed by the end of Semester 3.		X			
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
INTD 276	Studio II-Interior Architecture and Design	X			3
Focus Area Elective (See Major Requirements Tab.)					3
Advanced Writing				2	3
Historical Perspectives				3D	3
Elective					3
PSY 100 must be completed by the end of Semester 4.		X			
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
INTD 310	Studio III-Interior Architecture and Design	X			4
INTD 330	Lighting Design	X			3
INTD 335	Interior Architecture and Design Technologies				3
INTD 350	Codes-Health and Safety	X			3
Select one course from the following:			X		3
AM 460	Historic Textiles				
HIST 354	American Architectural History				
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
INTD 340	Interior Materials and Products	X			3
INTD 359	History of Interior Architecture and Design		X		3
INTD 376	Studio IV-Interior Architecture and Design	X			4
INTD 410	Evidence-based Design Theory	X		4A	3
Elective					3
	Total Credits				16

Senior

Semester 7		Critical	Recommended	AUCC	Credits
INTD 456	Professional Practice-Interior Arch Design			4B	3
INTD 476	Capstone-Interior Architecture and Design	X		4C	4
Biological and Physical Sciences				3A	3
Diversity and Global Awareness				3E	3
Elective					3
	Total Credits				16

Semester 8		Critical	Recommended	AUCC	Credits
INTD 487	Internship	X			12
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12
	Program Total Credits:				120

Graduate Certificate in Evidence-Based Design

This certificate features skill development, theoretical understanding, and linkage to research approaches, assessment of instruments, exposure to professionals engaged in evidence-based projects, and use of the tools and concepts learned in each course applied to evidence-based research projects in the community. Professionals in design, healthcare, education, engineering, construction, and product manufacturing are the target audience of this sequential cohort-based certificate.

Effective Spring 2016

Additional coursework may be required due to prerequisites.

Code	Title	Credits
DM 501	Research and Theory-Design and Merchandising	3
DM 551	Research Methods	3
INTD 578	Trends/Issues in Interior Design	3
Program Total Credits:		9

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Master of Science in Design and Merchandising, Plan A

The M.S. in Design and Merchandising offers the opportunity for students to critically explore how apparel products are designed and developed, distributed, and merchandised as well as the ways in which consumers interact with and use those products in various historical and cultural contexts. Emphasis is placed upon fostering cultural awareness and a commitment to social responsibility. The Plan A emphasizes the development of content knowledge and research skills through the completion of an original research study, preparing graduates well for doctoral level work or for industry positions requiring critical thinking and analytical abilities and/or depth of knowledge in the field.

Areas of graduate study and research in Apparel and Merchandising (AM) include:

- Apparel Design and Production
- Consumer Behavior
- Historic Costume and Textiles
- Merchandising
- Product Development
- Social-Psychological and Cultural Aspects of Dress and Appearance
- Textile Science

Learn more about the M.S. in Design and Merchandising on the Department of Design and Merchandising website (https://www.chhs.colostate.edu/dm/programs-and-degrees/m-s-in-design-and-merchandising).

Requirements Effective Fall 2001

Code	Title	Credits
Department Core		
DM 501	Research and Theory-Design and Merchandising	3
DM 551	Research Methods	3
Specialized research/data analysis methods [1]		3
Breadth		
Out-of-department Course [2]		3
Specialization Courses		
Select a minimum of 12 credits [3]		12
Thesis		
DM 699	Thesis	6
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

1. Select a minimum of one course from department list with approval of advisor.
2. Select an out-of-department course at the 500-level with approval of advisor.
3. Select 500-level courses from the AM, DM, or INTD subject codes with approval of advisor.

Master of Science in Design and Merchandising, Plan B, Apparel and Merchandising Specialization

The M.S. in Design and Merchandising, Apparel and Merchandising Specialization offers the opportunity for students to critically explore how apparel products are designed and developed, distributed, and merchandised as well as the ways in which consumers interact with and use those products in various historical and cultural contexts. Emphasis is placed upon fostering cultural awareness and a commitment to social responsibility. The Plan B emphasizes the development of content knowledge and critical thinking skills through the completion of a project, preparing graduates well for industry positions requiring higher-order analytical abilities and/or depth of knowledge in the field.

Areas of graduate study and research in Apparel and Merchandising (AM) include:

- Apparel Design and Production
- Consumer Behavior
- Historic Costume and Textiles
- Merchandising
- Product Development
- Social-Psychological and Cultural Aspects of Dress and Appearance
- Textile Science

Learn more about the M.S. in Design and Merchandising, Apparel and Merchandising Specialization on the Department of Design and Merchandising website (https://www.chhs.colostate.edu/dm/programs-and-degrees/m-s-in-design-and-merchandising/apparel-and-merchandising-specialization).

Requirements Effective Summer 2008

Code	Title	Credits
Department Core		
DM 501	Research and Theory-Design and Merchandising	3
DM 551	Research Methods	3
Specialized research/data analysis methods [1]		3
Content Coursework		
Select courses from AM, DM, or INTD subject codes [2]		15
Paper/Project		
DM 698	Research	3
Breadth		
At least 3 credits in out-of-department courses		3
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

1. Select a minimum of one course which must be approved by the student's committee. In some cases, students may need to complete prerequisites before enrolling in approved data analysis courses.
2. Select courses with approval from advisor.

Master of Science in Design and Merchandising, Plan A, Interior Design Specialization

The M.S. in Design and Merchandising, Interior Design Specialization offers the opportunity for you to explore creativity, sustainability, and health and wellness within the context of interior design. Whether you are seeking greater depth and the research skills to engage in evidence-based design or planning to return to practice with terminal degree credentials enabling you to teach, our program can change your career. The Plan A emphasizes the development of content knowledge and research skills through the completion of an original research study, preparing graduates well for doctoral level work or for industry positions requiring critical thinking and analytical abilities and/or depth of knowledge in the field.

Areas of graduate study and research in Interior Design (ID) include:

- Commercial design
- Creativity
- Cultural/global design
- Healthcare facilities design
- Sense of place/sense of self
- Sustainable design
- Universal design

Learn more about the M.S. in Design and Merchandising, Interior Design Specialization on the Department of Design and Merchandising website (https://www.chhs.colostate.edu/dm/programs-and-degrees/m-s-in-design-and-merchandising/interior-design-specialization).

Requirements Effective Fall 2001

Code	Title	Credits
Department Core		
DM 501	Research and Theory-Design and Merchandising	3
DM 551	Research Methods	3
Specialized research/data analysis methods [1]		3
Breadth		
Out-of-department Course [2]		3
Specialization Courses		
Select a minimum of 12 credits [3]		12
Thesis		
DM 699	Thesis	6
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

1. Select a minimum of one course from department list with approval of advisor.
2. Select an out-of-department course at the 500-level with approval of advisor.
3. Select 500-level courses from the AM, DM, or INTD subject codes with approval of advisor.

Master of Science in Design and Merchandising, Plan B, Interior Design Specialization

The M.S. in Design and Merchandising, Interior Design Specialization offers the opportunity for you to explore creativity, sustainability, and health and wellness within the context of interior design. Whether you are seeking greater depth and the research skills to engage in evidence-based design or planning to return to practice with terminal degree credentials enabling you to teach, our program can change your career. The Plan B emphasizes the development of content knowledge and critical thinking skills through the completion of a project, preparing graduates well for industry positions requiring higher-order analytical abilities and/or depth of knowledge in the field.

Areas of graduate study and research in Interior Design (ID) include:

- Commercial design
- Creativity
- Cultural/global design
- Healthcare facilities design
- Sense of place/sense of self
- Sustainable design
- Universal design

Learn more about the M.S. in Design and Merchandising, Interior Design Specialization on the Department of Design and Merchandising website (https://www.chhs.colostate.edu/dm/programs-and-degrees/m-s-in-design-and-merchandising/interior-design-specialization).

Requirements Effective Spring 2010

Code	Title	Credits
Department Core		
DM 501	Research and Theory-Design and Merchandising	3
DM 551	Research Methods	3
Specialized research/data analysis methods course [1]		3
Content Coursework		
Select a minimum of 15 credits from AM, DM, INTD prefixes [2]		15
Breadth		
Out-of-department Course [3]		3
Paper/Project		
DM 698	Research	3
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

1. Select a minimum of one course with approval of graduate committee.
2. Select courses with advisor approval.
3. A minimum of 3 credits taken outside the department in addition to the specialized research/data analysis course(s), with advisor approval.

School of Education

Office in Education Building, Room 209
(970) 491-6317

chhs.colostate.edu/soe (https://www.chhs.colostate.edu/soe)

Professor Susan C. Faircloth, Director

The **School of Education** (https://www.chhs.colostate.edu/soe) is part of the College of Health and Human Sciences. Our programs advance communication and leadership skills in order to support students in becoming effective, caring, and transformational educators and leaders.

Offering a variety of degree programs and certificates at the undergraduate, masters and doctoral levels, the School of Education equips educators to teach, mentor, counsel, and lead people of all ages. Learning takes place in a variety of settings, including distance, online, on-campus, and hybrid formats.

The School of Education is committed to scholarly excellence. Partnering with the external professional community through formal partnerships and outreach, centers and institutes, faculty and students use research and engagement to impact social and educational issues. Faculty are comprised of scholars, scholar-practitioners and scholar-activists, with research topics focused on critical social and educational needs of today's organizations and institutions. Programs offer students opportunities for practical application of knowledge and skills gained through coursework, ensuring they are prepared to put these to work in real-world environments.

Center for Educator Preparation (CEP)

Office in Education Building, Room 111
(970) 491-5292
chhs.colostate.edu/soe/center-for-educator-preparation (https://www.chhs.colostate.edu/soe/center-for-educator-preparation)

Part of the School of Education, the educator preparation program at CSU is nationally accredited by the Council for the Accreditation of Educator Preparation (CAEP) and state accredited by the Colorado Department of Education and the Colorado Department of Higher Education. CEP consists of clinical practitioners, scholars, and advocates collaboratively preparing educational professionals through a Professional Development School model.

Section 207 of Title II of the Higher Education Act mandates that the Department of Education collect data on state requirements for teacher certification and licensure, as well as data on the performance of teacher preparation programs. The Title II Institutional Report for CSU is available through the **School of Education website**.

Learning Outcomes

Students will demonstrate:

- Employment of innovative instructional methods to promote student success and to meet state and national standards
- Understanding of how students differ in their approaches to learning and create instructional opportunities that are adapted to diverse learners
- Mastery of the content knowledge students will use for teaching a subject
- Ability to impact learning of P-12 students through course work and field experiences
- Knowledge about careers in teaching and of education governance

Potential Occupations

Examples include:

- Public or private school teacher
- Principal
- Staff developer
- School counselor
- Early childhood center director
- Post-secondary teacher
- School social worker
- School occupational therapist
- Curriculum specialist
- Human resources trainer
- Educational sales

One of the most important ways to help people and to impact our society is through involvement in schools. Teachers make lasting contributions to our nation and its many generations of learners. Teacher education programs at CSU serve the needs of individuals preparing to teach in:

- Early Childhood Education (PreK-3rd grade)
- Grades K-12: Art, Foreign Languages, Instructional Technology, Music

- Secondary (Grades 7-12): Agricultural Education, Business Education, English, Family and Consumer Sciences, Marketing Education, Mathematics, Science, Social Studies, Speech, Technology Education

CSU is one of the public institutions in Colorado designated to offer programs leading towards a career and technical (vocational) credential. Candidates for teacher licensure are skilled in a teaching concentration and educational methodology. These students take their professional education course work concurrently while completing their content area coursework. Candidates may complete licensure while enrolled in an undergraduate program or after completing a bachelor's degree at an accredited university.

Endorsements available through the program include:

Endorsement	Levels	U	P	G
Agricultural Education	Secondary	X	X	X
Art	K-12	X	X	X
Business Education	Secondary		X	X
Early Childhood Education	Ages 0-8	X	X	X
English/Language Arts	Secondary	X	X	X
Family and Consumer Sciences	Secondary	X	X	X
Foreign Language (French, German, Spanish)	K-12	X	X	X
Instructional Technology	K-12	X	X	X
Marketing Education	Secondary		X	X
Mathematics	Secondary	X	X	X
Music	K-12	X	X	
Science	Secondary	X	X	X
Social Studies	Secondary	X	X	X
Speech	Secondary	X	X	X
Technology Education	Secondary	X	X	X

Special Services/Administrative Endorsements

Endorsement	Levels	U	P	G
Occupational Therapist	Ages 0-21			X
School Counselor	Ages 0-21			X
School Principal	K-12			X
School Social Worker	Ages 0-21			X

(Pursued at indicated level(s). G = graduate; P = post-baccalaureate; U = undergraduate)

Approved Majors for Teacher Endorsements

At CSU, the following are the approved majors for each endorsement area. Undergraduate teacher licensure candidates must be majoring in one of the approved majors that align with their endorsement area for admission to the teacher preparation program.

For detailed four-year curriculum on the degrees listed below, refer to the specific program in this catalog.

Endorsement	Approved Major for Licensure	College	Program Link
Agricultural Education	Agricultural Education (B.S.)	Agricultural Sciences	Major in Agricultural Education, Teacher Development Concentration
Art	Art (B.F.A.)	Liberal Arts	Major in Art, Art Education Concentration
Early Childhood Education	Early Childhood Education (B.S.)	Health and Human Sciences	Major in Early Childhood Education
English/Language Arts	English (B.A.)	Liberal Arts	Major in English, English Education Concentration
Family and Consumer Sciences	Family and Consumer Sciences (B.S.)	Health and Human Sciences	Major in Family and Consumer Sciences, Education Concentration
Foreign Language (French, German, Spanish)	Languages, Literatures, and Cultures (B.A.)	Liberal Arts	Major in Languages, Literatures, and Cultures, Teaching Endorsement

Instructional Technology	Applied Computing Technology (B.S.)	Natural Sciences	Major in Applied Computing Technology, Computing Education Concentration
Mathematics	Mathematics (B.S.)	Natural Sciences	Major in Mathematics, Mathematics Education Concentration
Music	Music (B.M.)	Liberal Arts	Major in Music, Music Education Concentration
Science	Natural Sciences (B.S.)	Natural Sciences	Major in Natural Sciences
Social Studies	Ethnic Studies (B.A.)	Liberal Arts	Major in Ethnic Studies, Social Studies Teaching Concentration
Social Studies	History (B.A.)	Liberal Arts	Major in History, Social Studies Teaching Concentration
Speech	Communication Studies (B.A.)	Liberal Arts	Major in Communication Studies, Speech Teacher Licensure Concentration
Technology Education	Engineering Science (B.S.)	Engineering	Major in Engineering Science, Teacher Education Concentration

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Admission to Teacher Licensure

Students who wish to pursue an endorsement program should apply for admission to the CEP teacher preparation program. Students have three different program options - undergraduate, post-bachelor, and Master of Education. Application and admission requirements differ based on which program a student is interested. (Note: Admission requirements are subject to change based on program and state licensing requirements and laws.)

For detailed information about application and admission requirements, and deadline dates, please **contact the Center for Educator Preparation Advising Office** (https://www.chhs.colostate.edu/soe/center-for-educator-preparation/advising); we welcome your in-person visit, phone call, or email.

Student Teaching

Teacher licensure candidates apply for student teaching placement one semester before student teaching. Candidates must pass the state licensing exam (Praxis II) in their respective teaching content area by mid-April or mid-October before beginning their student teaching experience. Additionally, candidates must demonstrate acceptable professional dispositions and academic fitness. Student teaching must be completed at an approved school. Placement is contingent upon acceptance of the student by a school system. All assignments are made by CSU. The experience is full-time for the specified time period.

Requirements for Licensure

Colorado licensure requires completion of an approved teacher preparation program and the recommendation of the institution at which the program was completed. The CEP Co-Directors and Student Teaching Coordinator serve as the licensure officers for CSU. Additional requirements of the Colorado Department of Education and the Colorado Department of Higher Education include the successful completion of the state licensing exam. Successful completion of the approved teacher preparation program at CSU does not guarantee successful completion of the state licensing exam. CEP does not assume responsibility for the successful completion of the state licensing exam.

CSU's approved teacher preparation program requirements include completion of a baccalaureate degree, completion of content area and professional education course work, and fulfillment meeting the Colorado Performance-Based Standards for teachers at the proficient or advanced proficient level. Additionally, all grades in professional education and content courses must be a C or better for licensing. The minimum scholastic average acceptable for completion of the teacher preparation program and recommendation for licensing is 2.75, computed for all course work, except for social studies where a 3.00 GPA is required.

CSU reserves the right to not recommend a student for licensure on the basis of unacceptable professional dispositions and academic fitness/performance.

Professional Education Coursework for Licensure

The professional education requirements listed below apply to all teaching endorsement areas except early childhood education where **EDUC 400**, **EDUC 425**, and **EDUC 426** are required in place of **EDUC 350**, **EDUC 386**, **EDUC 450**, and **EDUC 486E**. Additional courses may be required by specific endorsement areas. For clarification, refer to individual coursework check sheets which can be obtained in the Education Building, room 111, and **on the CEP website** (https://www.chhs.colostate.edu/soe/center-for-educator-preparation/undergraduate-teacher-licensure).

Candidates in all endorsement areas must complete appropriate methods courses the semester prior to enrolling in student teaching. (EDUC/EDCT 4XX - level courses)

Career and Technical Education

Individuals desiring to teach in or administer career and technical programs in the state of Colorado must qualify for a credential in addition to a teaching license. Those who plan to qualify as career and technical education (CTE) teachers or directors must meet the requirements for a CTE credential established by the Community Colleges of Colorado and the Colorado Department of Education. Credentialing questions may be directed to the Department of Education, (303) 866-6628.

Professional Education Course Requirements

The professional education course requirements listed under Professional Education Coursework for Licensure apply to all teaching endorsement areas in career and technical education.

Agricultural Education

Kellie Enns, Ph.D., Program Chair

Candidates studying Agricultural Education are prepared to teach youth and adults in high schools, community colleges, junior colleges, area career and technical schools, and technical institutes. Two thousand hours in the agriculture industry are required in addition to completion of the agriculture curriculum and professional education coursework.

For the detailed four-year curriculum, refer to the **College of Agricultural Sciences**, Department of Agricultural and Resource Economics, major in Agricultural Education, or contact the Center for Educator Preparation Advising Center in the Education Building, Room 111.

Family and Consumer Sciences

Dawn Mallette, Ph.D., Program Chair

Candidates majoring in Family and Consumer Sciences with a concentration in Family and Consumer Sciences Education are prepared to be employed as teachers in middle schools, junior or senior high schools, community and junior colleges, area career and technical schools, and technical institutes.

For the detailed four-year curriculum, refer to the interdepartmental major in Family and Consumer Sciences, **Family and Consumer Sciences Education concentration**, under the School of Education.

Technology Education

Ms. Allis Werkmeister, Degree Adviser

The **B.S. degree program in Engineering Science** (https://www.engr.colostate.edu/content/engineering-science) with an Engineering Education concentration provides students with opportunities to enter junior and senior high school laboratories to teach engineering design principles and concepts in an exciting engineering and technology education classroom. The program consists of a balanced mix of mathematics, science, and engineering courses with additional professional education coursework in the Center for Educator Preparation leading to a B.S. degree in Engineering Science and teacher licensure in Technology Education (Engineering).

For the detailed degree and licensure curriculum, refer to the major in **Engineering Science, Teacher Education concentration**, in the College of Engineering.

Undergraduate Majors

- Major in Family and Consumer Sciences
  - Family and Consumer Sciences Concentration
  - Family and Consumer Sciences Education Concentration

Graduate Graduate Programs

Office in Education Building, Room 212
(970) 491-6317
soe.chhs.colostate.edu (http://soe.chhs.colostate.edu)

The School of Education offers graduate programs leading to a Master of Arts in Counseling and Career Development, a Master of Education in Education and Human Resource Studies, a Master of Science in Student Affairs in Higher Education, and a Doctor of Philosophy degree in Education and Human Resource Studies.

Master of Arts specializations are available in Career Counseling, Clinical Mental Health Counseling, and School Counseling.

Master of Education specializations are available in Adult Education and Training; Education Sciences; and Organizational Learning, Performance and Change.

The Master of Science degree in Student Affairs in Higher Education follows the Council for the Advancement of Standards in higher education.

Doctoral degree specializations are available in Education, Equity, and Transformation; Higher Education Leadership; Organizational Learning, Performance and Change; and School Leadership.

Regional Graduate Program status has been given to the doctoral degree by the Western Interstate Commission on Higher Education (WICHE). This arrangement, approved by the State of Colorado, permits citizens of other states to pay resident tuition rates under certain conditions. Contact the School of Education for further details.

Non-degree programs are also available that lead to licensure/credential/endorsement as a school principal.
Students interested in graduate work should refer to the Graduate and Professional Bulletin and the School of Education. (http://soe.chhs.colostate.edu)

The Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu) is the office at CSU responsible for licensure of K-12 teachers in 15 content areas, and of public school principals, K-12.

Certificates

- Adult Basic Education
- Campus Crisis Management
- Facilitating Adult Learning
- High Impact On-Demand Solutions Learning
- Postsecondary Access and Success Programs
- Student Affairs Administration
- Student Affairs Management of Auxiliary Enterprises

Master's Programs

- Master of Arts in Counseling and Career Development
  - Master of Arts in Counseling and Career Development, Plan B, Career Counseling Specialization
  - Master of Arts in Counseling and Career Development, Plan B, Clinical Mental Health Counseling Specialization
  - Master of Arts in Counseling and Career Development, Plan B, School Counseling Specialization
- Master of Education in Education and Human Resource Studies, Plan A, Adult Education and Training Specialization
- Master of Education in Education and Human Resource Studies, Plan B, Adult Education and Training Specialization
- Master of Education in Education and Human Resource Studies, Education Sciences Specialization
- Master of Education in Education and Human Resource Studies, Organizational Learning, Performance and Change Specialization
- Master of Science in Student Affairs in Higher Education

Ph.D.

- Ph.D. in Education and Human Resource Studies, Education, Equity, and Transformation Specialization
- Ph.D. in Education and Human Resource Studies, Higher Education Leadership Specialization
- Ph.D. in Education and Human Resource Studies, Organizational Learning, Performance, and Change Specialization
- Ph.D. in Education and Human Resource Studies, School Leadership Specialization

Courses

Subjects in this department include: Education - Adult (EDAE), Education - Community College (EDCL), Education - Counseling and Career Development (EDCO), Education - Career and Teaching (EDCT), Education - General (EDUC), Education - Higher Education (EDHE), Education - Organizational Performance and Change (EDOD), Education - Research Methods (EDRM), and Family + Consumer Sci - (FACS).

Education - Adult (ADAE)

EDAE 495 Independent Study-Adult Education Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDAE 520 Adult Education Credits: 3 (0-0-3)
Course Description: Philosophical foundations, a description of program service areas, adult participation trends, and current issues.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 530 Adult Basic Education Credits: 3 (2-0-1)
Course Description: Enhance instructor skills in literacy and numeracy instruction for adult learners functioning below the 12th grade equivalency.
Prerequisite: None.
Registration Information: Bachelor's degree or consent of instructor. Must register for lecture and recitation. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 540 Teach English as Second Lang—Adult Learners Credits: 3 (2-0-1)
Course Description: Instructors learn the tools necessary to successfully deliver English learning to adult speakers of other languages.,
Prerequisite: None.
Registration Information: Bachelor's degree or consent of instructor. Must register for lecture and recitation. Offered as an online course only.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 586 Practicum Credits: Var[1-18] (0-0-0)
Course Description: Participation in field experience relevant to study program and objectives.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDAE 590 Workshop Credits: Var[1-18] (0-0-0)
Course Description: Specially designed learning situations to provide opportunities for concentrated problem-solving experiences.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDAE 601 Philosophy/Organization of Workforce Education Credits: 3 (3-0-0)
Course Description: Principles, philosophy, practices, and innovations of workforce education and human resources.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 620 Processes and Methods Credits: 3 (0-0-3)
Course Description: Processes and methods including helping theories used by adult learning facilitators.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 624 Adult Teaching and Learning I Credits: 3 (0-0-3)
Course Description: Using theory and best practices to design and deliver instruction for adults.
Prerequisite: EDAE 520.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 629 Program Development Credits: 3 (0-0-3)
Course Description: Models for planning, implementing, and evaluating programs for adult learners.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 630 Using Mobile Technology for Training Credits: 3 (1-0-2)
Course Description: Facilitating learning and developing knowledge access through mobile technologies for adult learners. Using mobile technologies to develop a learning event for targeted adult learners.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online or Mixed Face-to-Face.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 639 Instructional Design Credits: 3 (1-0-2)
Course Description: Apply instructional design principles in the development of a course or workshop and explore application of various learning methods.
Prerequisite: EDAE 620 and EDAE 624 and EDRM 600.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 664 Assessment and Evaluation in Adult Education Credits: 3 (2-0-1)
Course Description: Assessment of learning, evaluation of learning events, and determining the value of the training to the adult learners in the organization.
Prerequisite: EDAE 620.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 668 Cognitive Theory and Learning Transfer Credits: 3 (1-0-2)
Course Description: Investigation of learning processes and training strategies that lead to application of learning outside of the classroom.
Prerequisite: EDAE 620 and EDAE 624.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 682 Cultural Applications of Lifelong Learning Credits: 3 (0-0-3)
Course Description: Immersion experience examining cultural differences and establishing lifelong learning practices in Belize.
Prerequisite: EDUC 651.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have completed 6 credits in the Adult Education and Training specialization under the M.Ed.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 682A Study Abroad: Applications of Lifelong Learning-Thailand Credits: 3 (0-0-3)
Course Description: Historical, social, political, and cultural perspectives that shape lifelong learning in the host country-Thailand. The educational activities are structured to allow reflection of pedagogical approaches and teaching philosophies specific to adult learners. Develop a deep understanding of adult education concepts through immersion, comparison, reflection, and application.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as Mixed Face-to-Face.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 687 Internship Credits: Var[1-18] (0-0-0)
Course Description: Career or job fieldwork experience with an adult education institution, agency, or program.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDAE 692 Seminar-Adult Education Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDAE 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDAE 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: EDAE 520 and EDAE 624 and EDRM 600.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDAE 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: EDAE 520 and EDAE 624 and EDRM 600.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDAE 724 Adult Teaching and Learning II Credits: 3 (0-0-3)
Course Description: Adult teaching and learning, alternative delivery systems, performance technology, and faculty evaluation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

Education - Community College (EDCL)

EDCL 675 The Community College Credits: 3 (3-0-0)
Course Description: Role and scope of community college: history, philosophy, organization, administration.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in EDCL 702.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCL 687 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCL 701 Higher Education Law Credits: 3 (0-0-3)
Course Description: Legal theory, analysis, and review of cases relevant to higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDCL 702 Community College Curriculum Credits: 3 (2-0-1)
Course Description: Investigation and research of critical curricular issues affecting the community college now and in the future.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in EDCL 675. Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCL 703 Community College Leadership Credits: 3 (2-0-1)
Course Description: Investigation and research of critical leadership issues affecting the community college now and in the future.
Prerequisite: EDCL 675.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDCL 750 Simulated Presidential Cabinet I Credits: 3 (0-0-3)
Course Description: Issues and challenges relating to students, faculty, instructional programs, noninstructional programs, and instructional delivery.
Prerequisite: EDCL 701 and EDUC 710.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCL 751 Simulated Presidential Cabinet II Credits: 3 (0-0-3)
Course Description: Issues and challenges relating to internal/external governances, legal authority, institutional revenues, expenditures and insurances, human resources.
Prerequisite: EDCL 701 and EDUC 710.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCL 792 Seminar Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

Education - Counseling/Career Development (EDCO)

EDCO 500 Career and Employment Concepts Credits: 3 (0-0-3)
Course Description: Career and lifestyle studies that provide an understanding of career development, employment concepts, and career counseling resources.
Prerequisite: None.
Registration Information: Bachelor's degree. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 550 Professional School Counseling Credits: 3 (3-0-0)
Course Description: History, professionalism, ethics, program planning and program development of school counseling programs.
Prerequisite: None.
Registration Information: Admission to Counseling and Career Development Program or approval of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 552 School Counseling Program Delivery/Evaluation Credits: 3 (0-0-3)
Course Description: Effective school counseling program development, delivery, and evaluation.
Prerequisite: EDCO 550.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 590 Workshop Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCO 625 Foundations of Counseling Credits: 3 (2-0-1)
Course Description: Foundations and techniques of individual guidance and counseling.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor's degree. Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 650 Theories of Counseling and Development Credits: 3 (2-0-1)
Course Description: Theories of individual counseling and development.
Prerequisite: EDCO 625.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. This is a partial semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 651 Group Guidance and Counseling Credits: 3 (2-0-1)
Course Description: Theory and techniques of group guidance and counseling.
Prerequisite: EDCO 650.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 652 Ethics in Counseling/Career Development Credits: 3 (3-0-0)
Course Description: Awareness and critical analysis of ethical and legal issues in counseling and career development.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Counseling and Career Development Program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 653 Counseling for Cultural Diversity Credits: 3 (2-0-1)
Course Description: Influence of cultural differences in delivering culturally responsive counseling.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.Ed. Counseling and Career Development specialization or written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 655 Brief Counseling Credits: 3 (3-0-0)
Course Description: Continued development, knowledge, and use of counseling theories and skills such as solution focus counseling/therapy and motivational interviewing techniques. Develop understanding of the change model (Transtheoretical Model) to assist in helping clients make desired changes in their lives.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Proof of professional counseling liability insurance.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 656 Counseling Assessment and Appraisal Credits: 3 (2-0-1)
Course Description: The topics include (a) history and philosophy of educational, psychological, and vocational testing; (b) introduction to the basic statistical concepts surrounding test validation, scoring and interpretation; (c) essential criteria for evaluating and selecting appropriate assessment instruments; (d) principles of standardized administration and scoring; (e) interpretation of test results and appropriate consultation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Offered as Mixed Face-to-Face.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 660 Career Development Counseling Credits: 3 (3-0-0)
Course Description: Career development programs and processes over the life span with particular attention to career choice.
Prerequisite: EDCO 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 661 Career and Life Design Counseling Credits: 3 (2-0-1)
Course Description: Career and life design counseling knowledge, skills, and practices with a focus on emerging career development and career counseling theories, concepts, and models; career programming and evaluation; and career development and counseling advocacy.
Prerequisite: EDCO 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 662 Counseling Children and Adolescents Credits: 3 (2-0-1)
Course Description: Counseling theories and interventions applied to the child and adolescent client population.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Counseling and Career Development Program.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 665 Career Development Institute Credits: 3 (1-0-2)
Course Description: Current issues related to employment, employee development, career planning, and labor market information are examined. Site visits and career development audits of local employers as well as other structured activities and assignments encourage students to consider educational and labor market trends and career development within a global society.
Prerequisite: EDCO 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Offered as Mixed Face-to-Face. This is a partial semester course. Required field trips.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 670 Introduction to Mental Health Counseling Credits: 3 (3-0-0)
Course Description: How psychopathology is experienced and displayed by the client and the key principles in diagnosing mental health disorders.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 675 Mental Health Counseling and Treatment Credits: 3 (2-0-1)
Course Description: The clinical mental health counseling (CMHC) field and counseling treatment, with a focus on emerging current trends, multicultural considerations, professional issues, and credentialing of CMHCs. Topics include clinical interviewing, case conceptualizations, and treatment and diagnosis of specialty populations.
Prerequisite: EDCO 650 and EDCO 693.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 686 Practicum-Guidance and Counseling Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCO 687 Internship-Guidance and Counseling Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCO 692 Seminar Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 693 Seminar-Guidance and Counseling Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCO 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCO 792A Seminar: Individual Counseling Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCO 792B Seminar: Group Counseling Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCO 792C Seminar: Contemplative Practice-Counseling & Education Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Instructor Option.
Special Course Fee: No.

Education - Career and Teaching (EDCT)

EDCT 300 Principles of Career and Technical Education Credits: 2 (0-0-2)
Course Description: History, purpose, administration, funding, programs, services and delivery of career and technical education within educational systems.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 387 Internship Credits: Var[1-18] (0-0-0)
Course Description: Coordinated and supervised experiences in business, industry, or agriculture selected to strengthen the intern's specialty through experience.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCT 400 Building Student Organizations/Partnerships Credits: 2 (2-0-0)
Course Description: Techniques and methods to implement and advise student leaders; establish and nurture business/industry partners and work-based experiences.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 420 Agricultural Experience and Adult Education Credits: 3 (3-0-0)
Course Description: Developing secondary agriculture experience programs. Organizing and teaching adult education classes in agriculture.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 425 Methods/Materials in Agricultural Education Credits: 4 (4-0-0)
Course Description: Methods and procedures in teaching and evaluating agricultural education in the classroom and laboratory; vocational foundations; microteaching.
Prerequisite: EDUC 350, may be taken concurrently or EDUC 450, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 431 Methods/Materials in Business Education Credits: 4 (4-0-0)
Course Description: Methods for teaching business education.
Prerequisite: EDUC 350, may be taken concurrently or EDUC 450, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 441 Methods/Materials-Vocational Marketing Education Credit: 1 (1-0-0)
Course Description: Instructional methods and resource materials development for vocational marketing education.
Prerequisite: (EDCT 431) and (EDUC 350, may be taken concurrently or EDUC 450, may be taken concurrently).
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 451 Methods-Family/Consumer Sciences Education Credits: 4 (3-2-0)
Course Description: Teaching methods, processes, and materials for family and consumer sciences education.
Prerequisite: EDUC 350, may be taken concurrently or EDUC 450, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 465 Methods and Materials in Technology Education Credits: 3 (3-0-0)
Course Description: Strategies and practices of teaching in a technical laboratory setting.
Prerequisite: EDUC 350, may be taken concurrently or EDUC 450, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 471 Orientation and Assessment of New Teachers Credits: 2 (2-0-0)
Course Description: Orientation to teaching and individual assessment of teaching skills: development and implementation of professional growth plan.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 472 Classroom Management Credit: 1 (0-0-1)
Course Description: Orientation to teaching and individual assessment of teaching skills: development and implementation of professional growth plan.
Prerequisite: EDCT 471.
Registration Information: Admission to TAP. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 473 Communication Strategies Credit: 1 (0-0-1)
Course Description: Introduction to student management techniques and program management. Teachers will create a preliminary plan for instruction.
Prerequisite: EDCT 471.
Registration Information: Admission to TAP. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 485 Student Teaching Credits: Var[1-18] (0-0-0)
Course Description: Teacher education candidates participate in an intensive and extensive on-site capstone experience within a public school setting.
Prerequisite: (EDUC 450) and (EDUC 460 or EDUC 474 or EDUC 463 or EDUC 464 or EDUC 465 or EDUC 466 or EDUC 475 or EDUC 476 or EDUC 477 or EDCT 425 or EDCT 431 or EDCT 441 or EDCT 451 or EDCT 465 or EDUC 462).
Registration Information: Appropriate special content methods courses.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

EDCT 486 Practicum Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCT 492 Seminar-Professional Relations Credits: Var[1-18] (0-0-0)
Course Description: Collegial and professional discussions, support, and assistance.
Prerequisite: EDUC 450.
Registration Information: Appropriate special content methods course.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDCT 494 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCT 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCT 520 Teaching Agricultural Education Credits: Var[1-18] (0-0-0)
Course Description: Methods of teaching recent developments in the field of agriculture and allied industries.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 571 Vocational Assessment for Special Needs Credits: 3 (0-0-3)
Course Description: Information on techniques regarding vocational assessment of special needs students including traditional and curriculum-based strategies.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 590 Workshop Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCT 612 Career and Technical Administrative Strategy Credits: 3 (0-0-3)
Course Description: Basic educational systems; the scientific method as a basis for analysis; systems as a tool for planning and decision making.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 693 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Education - General (EDUC)

EDUC 275 Schooling in the United States (GT-SS3) Credits: 3 (3-0-0)
Course Description: Historical, social, political, philosophical, cultural, and economic forces that shape the United States public school system. Current issues of educational reform, educational technology, and considerations related to becoming a teacher in the state of Colorado are explored. Special interest will be paid to the topic of diversity in the PK-12 school system.
Prerequisite: None.
Registration Information: Completion of 30 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).

EDUC 296 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 320 Educational Psychology Credits: 3 (2-0-1)
Course Description: Psychological conditions of classroom learning and teaching including understanding needs of all children in the classroom.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 331 Educational Technology and Assessment Credits: 2 (1-2-0)
Course Description: Skills and strategies for the use of appropriate technology and assessment in teacher education.
Prerequisite: EDUC 275 and EDUC 340.
Registration Information: Admission to Teacher Licensure Program. Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 340 Literacy and the Learner Credits: 3 (1-2-1)
Course Description: Understanding and supporting literacy and numeracy development. Field experiences, service learning experiences.
Prerequisite: None.
Registration Information: Required background check through CDE, CBI, FBI. 30 credits of course work completed. Must register for lecture, laboratory, and recitation.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 350 Instruction I-Individualization/Management Credits: 3 (2-2-0)
Course Description: Theory, research and practice of teaching at the junior high/middle school level; adapting instruction for individuals including learners with special needs.
Prerequisite: EDUC 275 and EDUC 340.
Registration Information: Must have concurrent registration in EDUC 386. Admission to Teacher Licensure Program. Must register for lecture and laboratory. Includes fieldwork in public schools. Site placement may change due to public school needs.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 375 Comparative Education Credits: 3 (2-0-1)
Course Description: Exploring and comparing education in various countries. Using a variety of lenses as the exploration of the relationship between education, culture and society in a global context to understand schooling around the world. Among the issues discussed will be gender, race, class, socio-political and economic structures and their relationship to the schooling process.
Prerequisite: None.
Registration Information: Sophomore standing. Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 386 Practicum-Instruction I Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: EDUC 275 and EDUC 340.
Registration Information: Must have concurrent registration in EDUC 350. Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 400 Diagnostic Teaching of Reading Credits: 3 (1-4-0)
Course Description: Development of the knowledge base, skills, and strategies for teaching reading from birth to age 8. Service learning experiences.
Prerequisite: EDUC 275 and EDUC 340 and HDFS 217 and HDFS 310.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 425 Early Childhood Education I Credits: 4 (2-6-0)
Course Description: Integrated methods; theoretical bases; teacher's role; appropriate curriculum; measurement; environments; pedagogy; instructional design and decisions.
Prerequisite: EDUC 275 and EDUC 340.
Registration Information: Admission to Teacher Licensure Program. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 426 Early Childhood Education II Credits: 4 (2-4-0)
Course Description: Integrated methods; organizing/presenting materials/activities; applying decisions; managing groups; individual instruction; assessment/evaluation.
Prerequisite: EDUC 425.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 450 Instruction II-Standards and Assessment Credits: 4 (2-4-0)
Course Description: Theory, research, and practice of standards-based instruction: assessment, literacy, and technology. Includes work in public schools.
Prerequisite: EDUC 350 and EDUC 386 and EDUC 331.
Registration Information: Must have concurrent registration in EDUC 486E. Must register for lecture and laboratory. Course must be taken semester immediately prior to student teaching semester.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 460 Methods and Materials in Teaching Science Credits: 4 (3-2-0)
Course Description: Current trends in science education, K-12; techniques of experimentation demonstrations; study of equipment, facilities, and resource materials.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 462 Methods and Assessment in Teaching Languages Credits: 4 (4-0-0)
Course Description: Objectives, methods, and resource materials for teaching languages in secondary schools.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program; oral and written competency in language endorsement area.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

EDUC 463 Methods in Teaching Language Arts Credits: 4 (4-0-0)
Course Description: Objectives, content, and methods of teaching English, speech, and journalism in secondary schools.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 464 Methods and Materials in Teaching Mathematics Credits: 4 (4-0-0)
Course Description: Problems and techniques of teaching secondary mathematics; evaluation of student achievement and teacher effectiveness.
Prerequisite: MATH 100 to 481 - at least 18 credits.
Registration Information: Admission to Teacher Licensure Program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 465 Methods and Materials in Social Studies Credits: 4 (4-0-0)
Course Description: Methods of teaching social studies; sources of information and teaching materials and literature for social studies teachers.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 466 Methods and Assessment in K-12 Art Education Credits: 4 (4-0-0)
Course Description: Objectives, methods, and resource materials for teaching art in elementary and secondary schools.
Prerequisite: EDUC 275.
Registration Information: Admission to Teacher Licensure Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 474 Elementary Music Methods I Credits: 2 (1-3-0)
Course Description: Developmentally appropriate strategies and materials for K-6 music instruction; emphasis on common methodologies, resources, standards-based teaching.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 475 Elementary Music Methods II Credits: 2 (1-3-0)
Course Description: Classroom management, motivational strategies, technology tools, assessment/evaluation of music learning and field experiences in K-6 music education.
Prerequisite: EDUC 474.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 476 Choral Methods for Secondary Schools Credits: 2 (1-3-0)
Course Description: General music classes, choral techniques and literature; current practices and trends.
Prerequisite: MU 217.
Registration Information: Admission to Teacher Licensure Program. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 477 Instrumental Methods for Secondary Schools Credits: 2 (1-3-0)
Course Description: Organization and administration of instrumental music, grades 5-12.
Prerequisite: MU 217.
Registration Information: Admission to Teacher Licensure Program. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 485A Student Teaching: Elementary Credits: Var[6-14] (0-0-0)
Course Description: Teacher education candidates participate in an intensive and extensive on-site capstone experience within a public school setting.
Prerequisite: (EDUC 450) and (EDUC 460 or EDUC 474 or EDUC 463 or EDUC 464 or EDUC 465 or EDUC 466 or EDUC 475 or EDUC 476 or EDUC 477 or EDCT 425 or EDCT 431 or EDCT 441 or EDCT 451 or EDCT 465 or EDUC 462).
Registration Information: Appropriate special methods course(s) required.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 485B Student Teaching: Secondary Credits: Var[6-14] (0-0-0)
Course Description: Teacher education candidates participate in an intensive and extensive on-site capstone experience within a public school setting.
Prerequisite: (EDUC 450) and (EDUC 460 or EDUC 474 or EDUC 463 or EDUC 464 or EDUC 465 or EDUC 466 or EDUC 475 or EDUC 476 or EDUC 477 or EDCT 425 or EDCT 431 or EDCT 441 or EDCT 451 or EDCT 465 or EDUC 462).
Registration Information: Appropriate special methods course(s) required.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

EDUC 485C Student Teaching: Early Childhood Credits: Var[6-14] (0-0-0)
Course Description: Teacher education candidates participate in an intensive and extensive on-site capstone experience within a public school setting.
Prerequisite: EDUC 426.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

EDUC 486A Practicum: K-12 Classroom Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 486B Practicum: Reading Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 486C Practicum: Mathematics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 486D Practicum: Literacy Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 486E Practicum: Instruction II Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 493A Seminar: Professional Relations Credits: Var[1-3] (0-0-0)
Course Description: Collegial and professional discussions, support, and assistance.
Prerequisite: (EDUC 426 or EDUC 450) and (EDUC 485A, may be taken concurrently or EDUC 485B, may be taken concurrently or EDUC 485C, may be taken concurrently or EDCT 485) and (EDUC 460 or EDUC 474 or EDUC 463 or EDUC 464 or EDUC 465 or EDUC 466 or EDUC 475 or EDUC 476 or EDUC 477 or EDCT 425 or EDCT 431 or EDCT 441 or EDCT 451 or EDCT 465 or EDUC 462).
Registration Information: Appropriate special methods course(s).
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 493B Seminar: Assessment of Learning Credits: Var[1-3] (0-0-0)
Course Description: Information and techniques that enable educators to use assessment results to inform planning and instructional practices.
Prerequisite: (EDUC 426 or EDUC 450) and (EDUC 485B, may be taken concurrently or EDUC 485C, may be taken concurrently or EDCT 485, may be taken concurrently or EDUC 485A, may be taken concurrently) and (EDUC 460 or EDUC 462 or EDUC 463 or EDUC 464 or EDUC 465 or EDUC 466 or EDUC 474 or EDUC 475 or EDUC 476 or EDUC 477 or EDCT 425 or EDCT 431 or EDCT 441 or EDCT 451 or EDCT 465).
Registration Information: Appropriate special methods course(s).
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 494 Independent Field Studies Credits: Var[1-18] (0-0-0)
Course Description: Specialized field study in the public schools under direction and supervision of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 502 Human Relations in Education Credits: 3 (3-0-0)
Course Description: Human relations in an individual's educational, organizational, and social activities as applied to various educational settings.
Prerequisite: EDCT 300.
Registration Information: Bachelor's degree can substitute for EDCT 300. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 525C Expert Teaching: Literacy and Numeracy Credits: 3 (0-0-3)
Course Description: Theories related to effective classroom instruction.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program; Bachelor's degree.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 526 Interdisciplinary Methods Credits: 4 (0-4-2)
Course Description: Theories related to effective classroom instruction.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program; Bachelor's degree.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 530 Technology Enhanced Learning Credits: 3 (2-2-0)
Course Description: Enhancing instruction and learning through the effective use of technology.
Prerequisite: None.
Registration Information: Bachelor's degree. Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 570 Perspectives of Special Education Credits: 3 (2-2-0)
Course Description: Historical and legal, philosophical foundations, student characteristics, and building collaborative relationships in special education.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 573 Differentiating Instruction for Diverse Needs Credits: 3 (3-0-0)
Course Description: Information techniques, and practice regarding methods for differentiating instruction.
Prerequisite: EDUC 570.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 591A Workshop: Instruction Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 591B Workshop: Community Partnerships Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 591C Workshop: Annenberg/CPB Science Instruction Credits: Var[1-3] (0-0-0)
Course Description: Science pedagogy for practicing K-12 teachers.
Prerequisite: None.
Registration Information: Offered as a telecourse only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 591D Workshop: Annenberg/CPB Mathematics Instruction Credits: Var[1-3] (0-0-0)
Course Description: Mathematics pedagogy for practicing K-12 teachers.
Prerequisite: None.
Registration Information: Offered as a telecourse or an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 591E Workshop: Annenberg/CPB Educ Theory and Issues Credits: Var[1-3] (0-0-0)
Course Description: General educational theory and current issues for practicing K-12 teachers.
Prerequisite: None.
Registration Information: Offered as telecourse only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 591F Workshop: Annenberg/CPB Humanities Instruction Credits: Var[1-3] (0-0-0)
Course Description: English, social studies, or art pedagogy for practicing K-12 teachers.
Prerequisite: None.
Registration Information: Offered as telecourse only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 610 Principles of Supervision and Evaluation Credits: 3 (2-0-1)
Course Description: Supervision and evaluation of instruction including required Colorado evaluation training.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 618 School Law Credits: 3 (3-0-0)
Course Description: Legal framework for operation and management of public and private schools emphasizing legal responsibilities for administrators and teachers.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 619 Curriculum Development Credits: 3 (3-0-0)
Course Description: Principles and procedures for school personnel in planning the public school curriculum.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 625 Contexts of Schooling Credits: 3 (3-0-0)
Course Description: History, purpose, structure, and role of schooling with relevance to current issues, U.S. and international.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to graduate program required.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 628 Models of Teaching Credits: 3 (2-0-1)
Course Description: Exploration of the theories and skills that underlie instructional effectiveness, improvement and innovation across levels and disciplines.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Offered as an online or Mixed Face-to-Face course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 629 Communication and Classrooms Credits: 3 (2-0-1)
Course Description: Exploration of pedagogical topics and growth experiences related to effective communication, classroom management, and presentation skills.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online or Mixed Face-to-Face.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 635 Educators, Systems and Change Credits: 3 (2-0-1)
Course Description: Process of change in education, focusing on the teacher's role in curriculum development and professional improvement.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online or Mixed Face-to-Face.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 645 Leadership and Ethics in Public Education Credits: 3 (3-0-0)
Course Description: Focus on leadership functions for public schools and ethical dimensions of leadership.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Administrator Licensure Program.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 646 School Resource Management Credits: 3 (3-0-0)
Course Description: School resource management including fiscal, personnel, and organization.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Administrator Licensure Program. Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 647 School Culture, Climate, and Communications Credits: 3 (3-0-0)
Course Description: Assist public school leaders in their facilitation role in enhancing human relations and communication within schools and communities.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in EDUC 645 and EDUC 646. Admission to Administrator Licensure Program.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 648A Role of the Principal: Professional Learning Community Credit: 1 (1-0-0)
Course Description: Role of the principal as a result of changes in society and in the schools.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in EDUC 687B. Admission to Administrator Licensure Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 648B Role of the Principal: Managing and Leading Change Credits: 2 (1-0-1)
Course Description: Role of the principal as a result of changes in society and in the schools.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in EDUC 687B. Admission to Administrator Licensure Program. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 651 Multicultural and Special Populations Credits: 3 (2-0-1)
Course Description: Special concerns for working with people of various cultural, ethnic, exceptional, and special interest groups.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor's degree. Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 660 Advanced Methods-Science and Math Instruction Credits: 3 (0-0-3)
Course Description: Knowledge and skills to improve the teaching of science, technology, engineering, and mathematics for in service K-12 teachers.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 670 Grant Writing Credits: 3 (1-0-3)
Course Description: Mechanics of proposal writing, including intangibles of the grant-seeker's art.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 675 Analyzing Education Literature Credits: 3 (1-0-2)
Course Description: Analyze, critique, and interpret scholarly literature in the discipline.
Prerequisite: EDRM 700 or EDRM 702 or EDRM 704.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 686A Practicum: Administration Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 686B Practicum: Urban Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 687A Internship: Administration Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 687B Internship: Principal Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 687C Internship: Guidance and Counseling Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 687D Internship: Teacher Licensure I Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate or professional standing only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 687E Internship: Teacher Licensure II Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate or professional standing only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 693A Seminar: Administrator Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 693B Seminar: Instruction Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 693C Seminar: Teacher Licensure Capstone Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate or professional standing only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 709 Leadership Development Credits: 3 (3-0-0)
Course Description: Principles, theories, attributes, and skills related to individual leadership development.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 710 Higher Education Finance Credits: 3 (0-0-3)
Course Description: Federal, state, and local revenue distribution, budget preparation and controls, accounting options, audit preparation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 713 Teaching, Learning, and Professional Growth Credits: 3 (2-0-1)
Course Description: Teaching, learning, and professional development perspectives related to educational transformation and sustainable reform, especially in the context of cases that address equity and fairness, diversity and inclusiveness, social and environmental justice.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to PhD program. Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 714 Education Policy Analysis Credits: 3 (3-0-0)
Course Description: Frameworks for analyzing, designing policy proposals, and implementing plans.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Ph.D. program.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 715 Critical Theory, Educational Equity & Praxis Credits: 3 (1-0-2)
Course Description: Systems of power and oppression in understanding how educational institutions work. Examine educational opportunity, excellence, dignity, and equity from social, cultural, and political perspectives. How critical theories inform educational practice and contribute to transformative action across educational settings.
Prerequisite: EDUC 651.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 716 Capstone: Educational Equity and Reform Credits: 3 (3-0-0)
Course Description: Applies tenets of educational leadership research and theory into a context of equity, global citizenship and environmental responsibility.
Prerequisite: EDUC 709 and EDUC 713.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 720 Human Learning, Cognition, and Motivation Credits: 3 (3-0-0)
Course Description: Theories of learning, cognition, and motivation applicable to enhancing effective and efficient learning for individuals and teams.
Prerequisite: EDUC 628 or EDUC 629.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 725 Professionalism in Education and Leadership Credits: 3 (3-0-0)
Course Description: Professional choices and ethical decision making in education and leadership, with emphasis on higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Ph.D. program.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 786 Practicum Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 787 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 792 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 793 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Education - Higher Education (EDHE)

EDHE 590A Workshop: Student Personnel-Admissions Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590B Workshop: Student Personnel-College Union Administration Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590C Workshop: Student Personnel-Housing/Auxiliary Services Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590D Workshop: Student Personnel-International Programs Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590E Workshop: Student Personnel-Career Services Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590F Workshop: Student Personnel-Service Learning Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590G Workshop: Student Personnel-Wellness Programs Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590H Workshop: Advising Student Groups Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590J Workshop: Student Personnel-Access and Opportunity in Higher Education Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Spring (odd years).
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDHE 590K Workshop: Student Personnel-Leadership and Service in Higher Education Credit: 1 (0-0-1)
Course Description: Various theories of leadership and citizenship development applied to different higher education and student affairs settings.
Prerequisite: None.
Registration Information: enrollment in the SAHE program.
Term Offered: Fall (even years).
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDHE 590L Workshop: Student Personnel-Working with Student's Parents and Families Credit: 1 (0-0-1)
Course Description: Philosophies and best practices regarding partnering with the parents and families of today's college students.
Prerequisite: None.
Registration Information: Enrollment in the SAHE program.
Term Offered: Fall (even years).
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDHE 590M Workshop: Student Personnel-Spiritual Dimensions of Student Development Credit: 1 (0-0-1)
Course Description: Intersection of faith and spirituality and the learning, growth, and development of college students.
Prerequisite: None.
Registration Information: Enrollment in the SAHE program.
Term Offered: Spring (odd years).
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDHE 640A Study Abroad – Global Perspectives: Higher Education and Student Services Credits: 3 (0-0-3)
Course Description: International field experience prepares student affairs professionals to work with culturally diverse student, staff, and faculty populations; students who study abroad and the transitional challenges of returning from international experiences; growing populations of international undergraduate and graduate students, and the increasing demands from the federal government and education institutions for internationalization of higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 650 College Opportunity Program Models Credits: 3 (2-0-1)
Course Description: Examines rationale and structure of postsecondary retention programs that support underrepresented students based on college type and program purpose.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor's degree or consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 651 Pre-College Program Models Credits: 3 (2-0-1)
Course Description: Rationale and structure of pre-college programs that support underrepresented students' successful enrollment into higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor's degree required. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 653 Precollege Access Programs Credits: 3 (3-0-0)
Course Description: Precollege access programs effective practices to support underrepresented middle-high school students to prepare for and enroll in postsecondary.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor's degree or written consent of instructor Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 655 Foundations of College Opportunity Programs Credits: 3 (2-0-1)
Course Description: Exploration of college opportunity programs for expanding access to American higher education. Understanding the implications of financial aid, opportunity support programs, achievement gaps, policies, and advocacy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only. Credit not allowed for EDHE 655 and EDHE 680A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 656 Postsecondary Opportunity Programs Practice Credits: 3 (2-0-1)
Course Description: Examines effective college opportunity program practices in context of institutional and student demographics, which support students' transition, persistence, achievement, engagement, and completion. Reviews retention literature and practices focused on low income, first generation, and other underrepresented students.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 658 Higher Education Enrollment Management Credits: 3 (3-0-0)
Course Description: Holistic understanding of enrollment management beginning with understanding factors shaping students' college choice options and decisions. Exploration of theory, policy and practice of marketing, admissions, financial aid, tuition setting, and retention as critical areas of enrollment management.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 660 Financial Management in Student Affairs Credits: 2 (1-0-1)
Course Description: Budgeting, fiscal planning, and financial administration in student affairs.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program; written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 661 Inclusive University Credits: 3 (3-0-0)
Course Description: Exploration of broad range of human differences and their impact in higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 662 Trends/Issues/Assessment in Higher Education Credits: 2 (2-0-0)
Course Description: Assessment and research involving students in collegiate settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in the SAHE program. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 670 Foundations and Trends in Student Affairs Credits: 3 (3-0-0)
Course Description: Historical and philosophical foundations, and current trends including analysis of the role of student affairs in higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program or one of the graduate certificates--Campus Crisis Management; Student Affairs Management in Auxiliary Enterprises; Student Affairs Administration. Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 671 Higher Education Administration Credits: 3 (3-0-0)
Course Description: History, purpose, structure, and role of leadership within the administration of higher education with relevance to present day higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 672 Ethical and Practical Issues-Student Affairs Credits: 2 (2-0-0)
Course Description: Ethical principles and standards used in student affairs.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in the SAHE program. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 673 Student Development Theory Credits: 3 (0-0-3)
Course Description: Strategies for application of student development theories in practice.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

EDHE 674 Campus Ecology Credits: 3 (3-0-0)
Course Description: Patterns of relationships among students and the college campus' social and physical environments.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 675 Campus Crisis Management Credits: 3 (3-0-0)
Course Description: Crisis management on college campuses.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor's degree; enrollment in SAHE program. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 676 Organizational Behavior in Student Affairs Credits: 3 (3-0-0)
Course Description: Understanding and application of basic organizational behavior principles within administration of student affairs in higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 677 Law in Student Affairs Credits: 3 (3-0-0)
Course Description: Legal issues focusing on sources and application of educational law and responsibilities of higher education administrators.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 678 Capstone in Student Affairs Credits: 2 (2-0-0)
Course Description: Capstone analyzing current issues and leadership in transition to professional roles.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program. Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 692A Seminar: Current Trends and Issues Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 692B Seminar: Working with Student Groups Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 692C Seminar: Service Learning Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 692D Seminar: International Programs Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 694 Independent Field Studies Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 771 Higher Education Leadership Credits: 3 (3-0-0)
Course Description: History, purpose, structure, culture, and role of leadership within higher education, with critical issues relevant to present day higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 773 Student Development in a Collegiate Context Credits: 3 (3-0-0)
Course Description: Theories and research related to student development and learning in a college context, including adult development and learning theory.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Education - Organizational Performance and Change (EDOD)

EDOD 506 Human Resource Development Credits: 3 (3-0-0)
Course Description: Human resource development foundational theory, research, and techniques for workplace and organizational learning and performance.
Prerequisite: None.
Registration Information: Admission to Organizational Learning, Performance and Change specialization or written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 651 On-Demand Learning–Improving Performance Credits: 3 (1-2-1)
Course Description: On-demand learning theories and tools and techniques for developing impactful digital learning objects to create learning objects for the purpose of improving performance. Utilization of learning network to accelerate understanding of course topics and objectives.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, lab, and recitation. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 652 High Impact On-Demand Solutions Credits: 3 (1-2-1)
Course Description: Design of high-impact, on-demand (HI-OD) performance solutions that drive organizational results.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, lab, and recitation. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 653 Managing Development of On-Demand Solutions Credits: 3 (1-0-2)
Course Description: Learn to conduct consultative conversations, develop value propositions, and create detailed request for service (RFS) proposals that direct the development to high impact-on demand assets. Oversee and participate in the development of HI-OD assets based on organizational opportunities.
Prerequisite: EDOD 652.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 667 Power-Politics-Influence in Organizations Credits: 3 (3-0-0)
Course Description: Creation and execution of power relationships, political engagements, and communications in organizations.
Prerequisite: EDOD 506.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Term Offered: Summer (even years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 670 Strategic Human Resource Development Credits: 3 (3-0-0)
Course Description: Examine fundamentals of strategy from a HRD perspective, utilizing management tools, recent research and contemporary theory.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Term Offered: Summer (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 671 Establish Relations, Diagnose Organizations Credits: 3 (3-0-0)
Course Description: Build relationships with clients and examine current practices to diagnose organizational learning and performance issues.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning, Performance, and Change specialization or written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 672 Change Facilitation Credits: 3 (3-0-0)
Course Description: Roles and responsibilities of change agents and the fundamentals of change: principles, practices, processes, and resistance strategies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 673 Plan and Implement Change Interventions Credits: 3 (3-0-0)
Course Description: Plan strategies and facilitate change interventions to improve organizational learning and performance.
Prerequisite: EDOD 677, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning, Performance and Change specialization or written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 674 Analyze Workplace Learning Credits: 3 (3-0-0)
Course Description: Analyze workplace learning and performance issues drawing on foundational principles.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning, Performance and Change specialization or written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 675 Design, Develop, Implement Workplace Learning Credits: 3 (3-0-0)
Course Description: Design, develop, and implement workplace learning and performance interventions drawing on foundational principles.
Prerequisite: EDOD 674.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning, Performance and Change specialization or written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 676 Evaluate Workplace Learning Credits: 3 (3-0-0)
Course Description: Evaluate workplace learning and performance interventions drawing on foundational principles. Examine satisfaction, learning, and performance results.
Prerequisite: EDOD 675, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning, Performance and Change specialization or written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 677 Action Learning and Inquiry Credits: 3 (3-0-0)
Course Description: Literature reviews and data collection methods as the basis for diagnosing organizational learning and performance issues.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning, Performance and Change specialization or written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 678 Assess Change Interventions Credits: 3 (3-0-0)
Course Description: Assess and institutionalize change interventions to improve organizational learning and performance.
Prerequisite: EDOD 500 to 799 - at least 15 credits.
Restriction: Must be a: Graduate, Professional.
Registration Information: 15 credits of EDOD 500-level or above courses or written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 687 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDOD 692A Seminar: HRD Concepts--Workplace Learning Credits: 3 (0-0-3)
Course Description:
Prerequisite: EDOD 500 to 799 - at least 6 credits.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning, Performance and Change specialization. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDOD 692B Seminar: HRD Concepts--Organizational Learning Credits: 3 (0-0-3)
Course Description:
Prerequisite: EDOD 500 to 799 - at least 6 credits.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning, Performance and Change specialization. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDOD 706 Organizational Learning, Performance, Change Credits: 3 (2-0-1)
Course Description: History, development, and current status of organizational learning, performance and change theory, research and practice (praxis).
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning, Performance and Change specialization under the Education and Human Resource Studies Ph.D. Must register for lecture and recitation. Offered as Mixed Face-to-Face.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 761 Evaluation and Assessment of Interventions Credits: 3 (2-0-1)
Course Description: Evaluation and assessment of organizational learning, performance, and change (OLPC) interventions.
Prerequisite: EDOD 706 and EDOD 768.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Offered as Mixed Face-to-Face.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 765 Strategic Planning of Education for Work Credits: 3 (3-0-0)
Course Description: Human capital as component of strategic planning of education; training and development at national, regional, and organizational levels.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 766 Scenario Planning in Organizations Credits: 3 (2-0-1)
Course Description: Theory and practice of scenario planning. Application of scenario planning in organizations.
Prerequisite: EDOD 761 and EDOD 769.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Offered as Mixed Face-to-Face.
Term Offered: Summer (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 768 Workforce Development Credits: 3 (3-0-0)
Course Description: Characteristics and elements of workforce development with special attention to the roles and responsibilities of employers and managers.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning, Performance and Change specialization under the Ph.D. in Education and Human Resource Studies. Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 769 Theory and Practice of Change Credits: 3 (3-0-0)
Course Description: Theory, history, characteristics, nature, levels, and types of change and modern conceptual and integrated models of change.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 770 Organizational Culture Credits: 3 (3-0-0)
Course Description: Theories, methods, and practices for evaluating, analyzing, and changing organizational culture.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 771 Social Foundations of the Workplace Credits: 3 (2-0-1)
Course Description: Social, cultural and political systems in organizations and their implications for employees.
Prerequisite: EDOD 761 and EDOD 769.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Offered as Mixed Face-to-Face.
Term Offered: Summer (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 772 Theory Building in Applied Disciplines Credits: 3 (2-0-1)
Course Description: Theory building in workplace environments. Develop a theory and examine and critique existing theories.
Prerequisite: EDOD 766 and EDOD 771.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as Mixed Face-to-Face.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 773 Systems Leadership Credits: 3 (2-0-1)
Course Description: A systems conceptualization and approach to leadership and leadership development.
Prerequisite: EDOD 771 and EDOD 772, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Offered as Mixed Face-to-Face.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 786 Practicum Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDOD 792 Seminar-Human Resource Development Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDOD 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description: Dissertation research, writing, and defense.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Education - Research Methods (EDRM)

EDRM 600 Introduction to Research Methods Credits: 3 (3-0-0)
Course Description: Methods of research, scientific methods, problem identification, research design, preparation and evaluation of research reports.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AGED 600 and EDRM 600.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 602 Action Research Credits: 3 (3-0-0)
Course Description: Provide educators with knowledge and skills to plan and implement school-based research to improve teaching and learning.
Prerequisite: EDRM 600.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 606 Principles: Quantitative Data Analysis Credits: 3 (3-0-0)
Course Description: Quantitative data analysis in social science research; descriptive statistics; fundamentals of inference.
Prerequisite: (EDRM 600) and (STAT 201).
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Face-to-Face or Mixed Face-to-Face. Credit not allowed for VS 562, EDRM 606 and PBHL 560.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 612 Assessing Students in Educational Settings Credits: 3 (2-0-1)
Course Description: Various ways of assessing students including traditional, authentic, and portfolio techniques for P-20 education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admissions into a Master's Program within the School of Education.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 663 Autoethnography & Reflective Practice I Credits: 2 (2-0-0)
Course Description: Introduces basic autoethnographic research skills that underpin the creation of the culminating SAHE program portfolio. Foundational research methods, the portfolio process, cultivating reflective practice, and critical analysis skills are necessary to both conduct autoethnography and develop as a practitioner-scholar.
Prerequisite: EDRM 600.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Student Affairs in Higher Education program. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 665 Qualitative Methods in Student Affairs Credits: 2 (2-0-0)
Course Description: Introduction to the epistemologies and methodologies related to qualitative frameworks used in student affairs research. How to design a basic qualitative study, including research questions, data collection and analysis, as well as findings and discussion appropriate for topics related to student affairs.
Prerequisite: EDRM 600.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Student Affairs in Higher Education program. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 666 Program Evaluation Credits: 3 (3-0-0)
Course Description: Models and practices of program evaluation in both public and private sector organizations.
Prerequisite: EDRM 600.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 692 Seminar-Research Methods/Proposal Design Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 700 Quantitative Research Methods Credits: 3 (3-0-0)
Course Description: Design, data analysis, interpretation of results, and evaluation of educational research studies.
Prerequisite: EDRM 606, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 701 Applied Linear Models-Educational Research Credits: 3 (3-0-0)
Course Description: General linear model applications in educational research emphasizing conceptual understanding and characteristics of non-experimental designs.
Prerequisite: EDRM 606.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 702 Foundations of Educational Research Credits: 3 (3-0-0)
Course Description: Philosophical, theoretical, and ethical foundations of educational research.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 703 Applied Longitudinal Data Analysis Credits: 3 (3-0-0)
Course Description: Methods and empirical applications of individual growth modeling and discrete-time event history analysis in educational research.
Prerequisite: EDRM 701.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 704 Qualitative Research Credits: 3 (3-0-0)
Course Description: Examination of qualitative research theory, methods, and applications to education and the social sciences.
Prerequisite: EDRM 600.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 705 Qualitative Data Analysis Credits: 3 (3-0-0)
Course Description: Examination of qualitative methods of data analysis, data presentation, and use of computer.
Prerequisite: EDRM 704.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 706 Analysis of Variance--Education Research Credits: 3 (3-0-0)
Course Description: Analysis of variance applications in educational research; experimental design and analysis of data from experiments.
Prerequisite: EDRM 700, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 707 Quantitative Data Collection Methods/Analysis Credits: 3 (0-0-3)
Course Description: Selection or development of questionnaires, tests, structured interviews, and observations. Reliability and validity. Reporting educational studies.
Prerequisite: EDRM 700.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 708 Narrative Inquiry Credits: 3 (3-0-0)
Course Description: Theory, methods and design of narrative approaches to research including data collection and analysis applications.
Prerequisite: EDRM 704.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 711 Ethnographic Research Credits: 3 (3-0-0)
Course Description: Theoretical underpinnings, research design, ethics and practical application of ethnographic research in a naturalistic setting.
Prerequisite: EDRM 704.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 786 Practicum Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDRM 792A Seminar: Research Methodology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 792B Seminar: Proposal Development Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 798 Research Credits: 18 (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Family + Consumer Sci - (FACS)

FACS 179 Introduction to Family and Consumer Sciences Credits: 2 (2-0-0)
Course Description: Career options in family and consumer sciences; professional leadership responsibilities.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FACS 320 Finance-Personal and Family Credits: 3 (3-0-0)
Course Description: Management of income, expenditures, credit, savings, investment, insurance, taxes, and assets considering legislation and economic conditions.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FACS 479 Colloquium-Family and Consumer Sciences Credits: 2 (0-0-2)
Course Description: Current topics and issues related to professional roles, responsibilities, and opportunities.
Prerequisite: FACS 179, may be taken concurrently.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

FACS 484 Supervised College Teaching Credits: 2 (0-0-2)
Course Description:
Prerequisite: None.
Registration Information: Sophomore standing. Written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted toward graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FACS 487A Internship: Extension Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FACS 487B Internship: Community Service Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FACS 487C Internship: Business Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FACS 494 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FACS 590 Workshop Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FACS 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Family and Consumer Sciences

Family and Consumer Sciences (FCS) is an exciting field with many career opportunities. The mission of this interdepartmental major is to prepare professionals dedicated to enhancing the well-being of individuals and families, and the communities and environments in which they function.

Students graduate with an interdisciplinary perspective about the challenges encountered by families and consumers. FCS students attain skills to assist families and consumers with quality of life decisions and challenges related to interpersonal/human relationships, consumer and financial resource management, personal development, nutrition and wellness, and balancing family and work.

This program emphasizes the management and problem-solving skills needed to be a responsible and productive individual, family member, and worker. Students take coursework in FCS, Human Development and Family Studies, Food Science and Human Nutrition, Design and Merchandising, and Health and Exercise Sciences.

Students have the option of the Family and Consumer Sciences concentration or the Family and Consumer Sciences Education

concentration. Graduates are eligible to take the exam to be certified in FCS with the American Association of Family and Consumer Sciences.

Learning Goals

Students will:

- demonstrate an understanding and comprehension of the family and consumer sciences body of knowledge
- demonstrate, at a professional level, oral and written communication and problem-solving proficiency within FCS
- demonstrate synthesis and integration of the specialized FCS body of knowledge through engaged learning experiences
- choose, examine, and assess the impact of civic engagement relevant to FCS

Potential Occupations

Graduates' career opportunities include, but are not limited to:

- Cooperative extension/agent
- Consumer information specialist
- Program development
- Consultant
- Product representative
- Consumer information specialist
- Customer service specialist
- Writer/developer of informational or educational materials
- Governmental, community, and non-profit agency worker
- Child/youth family advocacy
- Family financial officer
- Wellness director
- Peace Corps volunteer

Teaching opportunities at the middle school, junior high, high school, or post-secondary level are available upon completion of the education concentration.

The major provides a strong foundation for graduate work. Graduate degree opportunities are available in the School of Education or specific departments related to family and consumer sciences (Design and Merchandising, Food Science and Human Nutrition, Human Development and Family Studies, Social Work, Occupational Therapy, etc.).

Concentrations

- Family and Consumer Sciences Concentration
- Family and Consumer Sciences Education Concentration

Major in Family and Consumer Sciences, Family and Consumer Sciences Concentration

The Family and Consumer Sciences concentration provides students with a focus on family and consumer well-being, growth and development of family members, and the relationship of households to their environment. This concentration is interdisciplinary, bringing together coursework in human development, family studies, nutrition and foods, consumer sciences, personal finance, apparel and textiles, design and merchandising, and health and wellness.

It is highly recommended that students participate in internships, volunteer activities, or cooperative extension opportunities to enhance their experiences and development. Graduates who seek advanced degrees often attain higher-level professional positions.

The concentration includes All-University Core Curriculum courses, subject matter courses, and elective courses to enhance personal and professional development.

Requirements

Effective Spring 2012

Freshman

		AUCC	Credits
Select one from the following:			3
AM 130	Awareness and Appreciation of Design	3B	
ART 100	Introduction to the Visual Arts (GT-AH1)	3B	
Select one group from the following:			4-5
Group A:			
CHEM 103	Chemistry in Context (GT-SC2)	3A	
CHEM 104	Chemistry in Context Laboratory (GT-SC1)	3A	
Group B:			
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	
CO 150	College Composition (GT-CO2)	1A	3
DM 120	Textiles		3
FACS 179	Introduction to Family and Consumer Sciences		2
FSHN 150	Survey of Human Nutrition		3
HDFS 101	Individual and Family Development (GT-SS3)	3C	3
PSY 100	General Psychology (GT-SS3)	3C	3

Quantitative Reasoning		1B	3
Elective			2
	Total Credits		29-30

Sophomore

Select one from the following:			3-4
BZ 101	Humans and Other Animals (GT-SC2)	3A	
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
Select one from the following:			3-4
BUS 150	Business Computing Concepts and Applications		
CS 110	Personal Computing		
DM 272	Consumers in the Marketplace		3
HES 145	Health and Wellness		3
SOC 100	General Sociology (GT-SS3)	3C	3
SPCM 200	Public Speaking		3
Arts and Humanities		3B	6
Economics[1]			3
Elective			3
	Total Credits		30-32

Junior

FACS 320	Finance-Personal and Family		3
FSHN 300	Food Principles and Applications		3
FSHN 301	Food Principles and Applications Laboratory		2
Select one course from the following:			3
HDFS 310	Infant and Child Development in Context		
HDFS 311	Adolescent/Early Adult Development in Context		
HDFS 312	Adult Development-Middle Age and Aging		
INTD 200	Housing Values in America		3
SOWK 300	Research in Applied Professions		3
Advanced Writing		2	3
FSHN, FTEC, RRM Elective			3
Family and Consumer Sciences Electives[2]			3
Historical Perspectives		3D	3
	Total Credits		29

Senior

FACS 479	Colloquium-Family and Consumer Sciences	4A,4C	2
HDFS 302	Marriage and Family Relationships		3
HDFS 334	Family and Parenthood Across the Life Cycle	4B	3
HDFS 402	Couple and Family Studies		3
HDFS 403	Families in the Legal Environment		3
Diversity and Global Awareness[3]		3E	3
Family and Consumer Sciences Electives[2]			12
Support Career Objective-Electives[4]			2-3
	Total Credits		31-32
	Program Total Credits:		120-122

1 Select one course from the ECON subject code.

2 Select courses with subject codes AHS, AM, DM, FACS, FSHN, FTEC, HDFS, INTD, or RRM. Keep in mind the requirement of 42 upper-division credits when choosing these courses.

[3] AM 250 is suggested but not required.

[4] Select courses to enhance knowledge and skill in chosen career area.

Major Completion Map

Distinctive Requirements for Degree Program:
Students are encouraged to complete a Family and Consumer Sciences internship.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
Select one course from the following:					3
AM 130	Awareness and Appreciation of Design			3B	
ART 100	Introduction to the Visual Arts (GT-AH1)			3B	
CO 150	College Composition (GT-CO2)		X	1A	3
FSHN 150	Survey of Human Nutrition				3
HDFS 101	Individual and Family Development (GT-SS3)		X	3C	3
Quantitative Reasoning		X		1B	3
	Total Credits				15

Semester 2		Critical	Recommended	AUCC	Credits
Select one group from the following:					4-5
Group A:					
CHEM 103	Chemistry in Context (GT-SC2)	X		3A	
CHEM 104	Chemistry in Context Laboratory (GT-SC1)	X		3A	
Group B:					
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	X		3A	
DM 120	Textiles		X		3
FACS 179	Introduction to Family and Consumer Sciences	X			2
PSY 100	General Psychology (GT-SS3)			3C	3
Elective					2
CO 150, HDFS 101 must be completed by the end of Semester 2.		X			
	Total Credits				14-15

Sophomore

Semester 3		Critical	Recommended	AUCC	Credits
Select one course from the following:					3-4
BUS 150	Business Computing Concepts and Applications				
CS 110	Personal Computing				
Select one course from the following:					3-4
BZ 101	Humans and Other Animals (GT-SC2)			3A	
LIFE 102	Attributes of Living Systems (GT-SC1)			3A	
SOC 100	General Sociology (GT-SS3)			3C	3
Arts and Humanities				3B	3
Elective					3
	Total Credits				15-16

Semester 4		Critical	Recommended	AUCC	Credits
DM 272	Consumers in the Marketplace	X			3
HES 145	Health and Wellness				3
SPCM 200	Public Speaking				3
Arts and Humanities				3B	3
ECON *** Course					3
FSHN 150 must be completed by the end of Semester 4.		X			
	Total Credits				15

Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
FACS 320	Finance-Personal and Family				3
FSHN 300	Food Principles and Applications				3
FSHN 301	Food Principles and Applications Laboratory				2
Advanced Writing		X		2	3
Family and Consumer Science Elective					3
Historical Perspectives				3D	3
	Total Credits				17
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
HDFS 310	Infant and Child Development in Context	X			
HDFS 311	Adolescent/Early Adult Development in Context	X			
HDFS 312	Adult Development-Middle Age and Aging	X			
INTD 200	Housing Values in America				3
SOWK 300	Research in Applied Professions				3
FSHN, FTEC, RRM Elective					3
Family and Consumer Science Elective					3
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
HDFS 302	Marriage and Family Relationships				3
HDFS 334	Family and Parenthood Across the Life Cycle			4B	3
HDFS 403	Families in the Legal Environment				3
Diversity and Global Awareness				3E	3
Family and Consumer Science Elective					3
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
FACS 479	Colloquium-Family and Consumer Sciences	X		4A,4C	2
HDFS 402	Couple and Family Studies	X			3
Career Objective Elective		X			3
Family and Consumer Science Electives		X			6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				14
	Program Total Credits:				120-122

Major in Family and Consumer Sciences, Family and Consumer Sciences Education Concentration

Family and Consumer Sciences (FCS) directly addresses the needs of youth, families, and consumers. Helping to shape the future, FCS teachers impact the lives of individuals, the health of families, and the welfare of society.

The mission of the Family and Consumer Sciences Education concentration is to *teach and model best educational practices to prepare emerging teachers as learners, collaborators, and leaders*. This concentration is a licensure program that prepares students to teach family and consumer sciences subject matter in middle and high school classrooms. The program includes general education courses, subject matter courses, and teacher preparation courses.

Students apply for the licensure program in their junior year, and participate in practicum experiences working closely with classroom teachers and students in area schools. Throughout the phases of the licensure program, teacher candidates are placed in a middle school and in a high school, where they apply professional knowledge and refine their instructional skills. While student teaching, they work closely with a FCS mentor teacher(s) and a university coach.

Teacher candidates completing the program meet the requirements for the Bachelor of Science degree in FCS, a Colorado Initial Teaching License in FCS, and a FCS Career and Technical Education endorsement (1,200 hours of paid work experience related to FCS is required for the CTE endorsement).

This concentration is accredited and approved by the Colorado Department of Higher Education and the Colorado Department of Education. Nationally, it is approved by the Teacher Education Accreditation Council.

Students interested in pursuing a teaching license through CSU may refer to the School of Education (https://www.chhs.colostate.edu/soe) and the Center for Educator Preparation (CEP). (https://www.chhs.colostate.edu/soe/center-for-educator-preparation) Information is also available in the Education Building, Room 111.

Requirements

Effective Spring 2015

Freshman

		AUCC	Credits
Select one group from the following:			4-5
Group A:			
CHEM 103	Chemistry in Context (GT-SC2)	3A	
CHEM 104	Chemistry in Context Laboratory (GT-SC1)	3A	
Group B:			
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	
CO 150	College Composition (GT-CO2)	1A	3
FACS 179	Introduction to Family and Consumer Sciences		2
FSHN 150	Survey of Human Nutrition		3
HDFS 101	Individual and Family Development (GT-SS3)	3C	3
HES 145	Health and Wellness		3
PSY 100	General Psychology (GT-SS3)	3C	3
Arts and Humanities		3B	6
Quantitative Reasoning		1B	3
	Total Credits		30-31

Sophomore

AM 101	Fashion Industries		3
AM 250	Clothing, Adornment and Human Behavior (GT-SS3)	3E	3
DM 272	Consumers in the Marketplace		3
ECON *** course			3
HDFS 310	Infant and Child Development in Context		3
INTD 129	Introduction-Interior Architecture Design		3
SPCM 200	Public Speaking		3
Advanced Writing		2	3
Biological and Physical Sciences		3A	3
Historical Perspectives[1]		3D	3
	Total Credits		30

Junior

FACS 320	Finance-Personal and Family		3
EDUC 275	Schooling in the United States (GT-SS3)	3C	3
EDUC 331	Educational Technology and Assessment		2
EDUC 340	Literacy and the Learner		3
EDUC 350	Instruction I-Individualization/Management		3
EDUC 386	Practicum-Instruction I		1
FACS 479	Colloquium-Family and Consumer Sciences	4A	2
FSHN 300	Food Principles and Applications		3
FSHN 301	Food Principles and Applications Laboratory		2
HDFS 302	Marriage and Family Relationships		3
HDFS 311	Adolescent/Early Adult Development in Context		3
SOWK 300	Research in Applied Professions		3
	Total Credits		31

Senior

EDCT 451	Methods-Family/Consumer Sciences Education		4
EDCT 485	Student Teaching	4C	11
EDCT 492	Seminar-Professional Relations	4C	1
EDUC 450	Instruction II-Standards and Assessment		4
EDUC 486E	Practicum: Instruction II		1
HDFS 334	Family and Parenthood Across the Life Cycle	4B	3
HDFS 403	Families in the Legal Environment		3
Family and Consumer Sciences Electives[2]			2
	Total Credits		29
	Program Total Credits:		120-121

1 Select from Family and Consumer Sciences' list of recommended courses in category 3D in the AUCC.

2 Select courses with subject codes AHS, AM, DM, FACS, FSHN, FTEC, HDFS, INTD, or RRM.

Major Completion Map

Distinctive Requirements for Degree Program:
Student must seek admission to the Teacher Licensure program (see its specific requirements at stepp.cahs.colostate.edu for application process , GPA and other requirements). Teacher licensure includes courses (EDUC and EDCT) that must be taken in each Phase I, II, and III concurrently and prior to the next phase.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
FSHN 150	Survey of Human Nutrition				3
HDFS 101	Individual and Family Development (GT-SS3)		X	3C	3
Arts and Humanities				3B	3
Quantitative Reasoning		X		1B	3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one group from the following:					4-5
Group A:					
CHEM 103	Chemistry in Context (GT-SC2)	X		3A	
CHEM 104	Chemistry in Context Laboratory (GT-SC1)	X		3A	
Group B:					
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	X		3A	
FACS 179	Introduction to Family and Consumer Sciences	X			2
HES 145	Health and Wellness				3
PSY 100	General Psychology (GT-SS3)		X	3C	3
Arts and Humanities				3B	3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
AM 101	Fashion Industries				3
INTD 129	Introduction-Interior Architecture Design				3
ECON *** Course					3
Biological and Physical Sciences				3A	3
Historical Perspectives				3D	3
	Total Credits				15

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
AM 250	Clothing, Adornment and Human Behavior (GT-SS3)	X		3E	3
DM 272	Consumers in the Marketplace				3
HDFS 310	Infant and Child Development in Context		X		3
SPCM 200	Public Speaking				3
Advanced Writing		X		2	3
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 275	Schooling in the United States (GT-SS3)	X		3C	3
EDUC 340	Literacy and the Learner	X			3
FACS 320	Finance-Personal and Family	X			3
FSHN 300	Food Principles and Applications		X		3
FSHN 301	Food Principles and Applications Laboratory		X		2
HDFS 311	Adolescent/Early Adult Development in Context	X			3
	Total Credits				17
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 331	Educational Technology and Assessment	X			2
EDUC 350 (Concurrent registration with EDUC 386 required.)	Instruction I-Individualization/Management	X			3
EDUC 386	Practicum-Instruction I	X			1
FACS 479	Colloquium-Family and Consumer Sciences	X		4A	2
HDFS 302	Marriage and Family Relationships	X			3
SOWK 300	Research in Applied Professions				3
HDFS 310 must be completed by the end of Semester 6.		X			
	Total Credits				14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
EDCT 451	Methods-Family/Consumer Sciences Education	X			4
EDUC 450	Instruction II-Standards and Assessment	X			4
EDUC 486E	Practicum: Instruction II	X			1
HDFS 334	Family and Parenthood Across the Life Cycle			4B	3
HDFS 403	Families in the Legal Environment				3
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
EDCT 485	Student Teaching	X		4C	11
EDCT 492	Seminar-Professional Relations	X		4C	1
Family and Consumer Science Elective		X			2-3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				14
	Program Total Credits:				120

Graduate Certificate in Adult Basic Education

The graduate certificate in Adult Basic Education provides training and personal development opportunities for teachers or aspiring teachers in adult basic education (ABE) programs (i.e. literacy, numeracy, high school equivalency, etc.) and/or English language learning programs for adult learners. With a focus on foundational skills, methods, and theories for teaching adult learners, the certificate prepares and develops educators who can create effective curricula and learning environments for their adult students.

Effective Fall 2017

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Required Courses		
EDAE 520	Adult Education	3
EDAE 530	Adult Basic Education	3
EDAE 540	Teach English as Second Lang—Adult Learners	3
EDAE 620	Processes and Methods	3
Program Total Credits:		12

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Graduate Certificate in Campus Crisis Management

From natural disasters to student illness outbreaks, emergencies can happen every day. Being able to plan ahead, as well as respond when crises arise, can help minimize the impact on your students and your institution. Students finishing this certificate program will have the skills to deal directly with the crisis, the stakeholders involved, and the media through an understanding of:

- Crisis management in schools and universities, including planning, prevention, response, and recovery
- Human relations skills across various educational settings
- Law in student affairs

The Campus Crisis Management graduate certificate is a five course, 15 credit offering that introduces its students to many facets of campus crisis management, including law in student affairs, human relations in education, and more. This certificate requires a completed bachelor's degree, and a 3.000 grade point average.

Effective Fall 2016

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Required Courses		
EDHE 675	Campus Crisis Management	3
EDHE 677	Law in Student Affairs	3
EDUC 502	Human Relations in Education	3
Electives		
Select 2 courses from the following:		6
EDHE 670	Foundations and Trends in Student Affairs	
EDHE 671	Higher Education Administration	
EDHE 673	Student Development Theory	
EDHE 676	Organizational Behavior in Student Affairs	
Program Total Credits:		15

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Graduate Certificate in Facilitating Adult Learning

The Facilitating Adult Learning certificate will provide students with theoretical knowledge and practical skills to effectively design and deliver instruction for adult learners within a variety of settings (higher education, workplace training, community settings, etc.) Those who teach adults have knowledge in their area of expertise, but often have little background in how to teach that topic. Teaching adult learners requires a different skill set from teaching younger learners. Through this certificate, students will understand how adults learn and how to design and facilitate learning events for adults.

Effective Spring 2018

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Required Courses:		
EDAE 620	Processes and Methods	3
EDAE 624	Adult Teaching and Learning I	3
EDAE 639	Instructional Design	3
Choose one elective below:		3
Education-Adult Education and Training		
EDAE 629	Program Development	
EDAE 664	Assessment and Evaluation in Adult Education	
EDAE 668	Cognitive Theory and Learning Transfer	
Education-General		
EDUC 610	Principles of Supervision and Evaluation	
EDUC 651	Multicultural and Special Populations	
Education-Community Colleges		
EDCL 675	The Community College	
EDCL 702	Community College Curriculum	
Education-Organizational Learning Performance and Change		
EDOD 506	Human Resource Development	
Education-Counseling and Career Development		
EDCO 500	Career and Employment Concepts	
English		
E 526	Teaching English as a Foreign/Second Language	
Program Total Credits:		12

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Graduate Certificate in High Impact On-Demand Learning Solutions

The Graduate Certificate in High Impact On-Demand Learning Solutions introduces learning theory that supports on-demand learning. Students leverage this theoretical understanding to design and develop on-demand digital solutions to maximize learning and organizational impact.

Students will develop basic on-demand learning objects and be exposed to on-demand solutions, gaining broad experience with on-demand assets and practice engaging in learning systems.

Effective Fall 2017

Additional coursework may be required due to prerequisites.

Code	Title	Credits
EDOD 651	On-Demand Learning–Improving Performance	3
EDOD 652	High Impact On-Demand Solutions	3
EDOD 653	Managing Development of On-Demand Solutions	3
Program Total Credits:		9

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Graduate Certificate in Postsecondary Access and Success Programs

The graduate certificate in Postsecondary Access and Success Programs is a 5-course, 15-credit offering focused on working in pre-college preparation programs and/or postsecondary academic and student support services functional areas, whose participants are students traditionally underrepresented in higher education as socio-economically disadvantaged students.

Courses provide knowledge in areas of:

- Organizational behavior
- Student development theory
- Foundations of postsecondary access and success programs
- Pre-college and postsecondary program models postsecondary program practices

Effective Spring 2019

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Required Courses		
EDHE 655	Foundations of College Opportunity Programs	3
EDHE 673	Student Development Theory	3
EDHE 676	Organizational Behavior in Student Affairs	3
Students complete 6 credits in their area of choice (Precollegiate or Postsecondary)		6
Precollegiate (6 credits)		
EDHE 651	Pre-College Program Models	
EDHE 653	Precollege Access Programs	
Postsecondary (6 credits)		
EDHE 650	College Opportunity Program Models	
EDHE 656	Postsecondary Opportunity Programs Practice	
Program Total Credits:		15

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Graduate Certificate in Student Affairs Administration

The Graduate Certificate in Student Affairs Administration provides students with knowledge in the areas of financial management, student development theory, campus ecology, and the history and philosophy of student affairs, necessary for the successful operation of a student affairs department. This certificate requires a completed bachelor's degree, and a 3.000 grade point average.

Effective Fall 2016

Additional coursework may be required due to prerequisites.

Code	Title	Credits
EDHE 660	Financial Management in Student Affairs	2
EDHE 670	Foundations and Trends in Student Affairs	3
EDHE 673	Student Development Theory	3
EDHE 674	Campus Ecology	3
Program Total Credits:		11

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Graduate Certificate in Student Affairs Management of Auxiliary Enterprises

The Graduate Certificate in Student Affairs Management of Auxiliary Enterprises provides students with knowledge in the areas of financial and organizational management necessary for the successful operation of a student affairs auxiliary service department. This certificate requires a completed bachelor's degree, and a 3.000 grade point average.

Effective Fall 2018

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Required Courses		
BUS 620	Leadership and Teams	2
BUS 655	Marketing Management	2
EDHE 660	Financial Management in Student Affairs	2
EDHE 670	Foundations and Trends in Student Affairs	3
Electives		
Select one course from the following:		2
BUS 500	Business Systems and Processes	
BUS 626	Managing Human Capital	
BUS 630	Information Management	

Select one course from the following:		3
EDHE 673	Student Development Theory	
EDHE 674	Campus Ecology	
EDHE 676	Organizational Behavior in Student Affairs	
Program Total Credits:		14

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Master of Science in Student Affairs in Higher Education

The M.S. in Student Affairs in Higher Education program is designed to prepare administrative professionals for a career in student affairs through a curriculum taught by faculty who are both scholars and practitioners.

With coursework focused on learning professional competencies needed to be successful in a wide range of settings on college and university campuses, this master's degree prepares you to succeed in an administrative capacity and increase your ability to manage, communicate effectively and establish healthy and effective working relationships. The degree is offered in two formats: in-person on CSU's main campus, or through CSU Online.

Requirements Effective Fall 2006

Code	Title	Credits
Select two credits from the following:		2
EDHE 590A	Workshop: Student Personnel-Admissions	
EDHE 590B	Workshop: Student Personnel-College Union Administration	
EDHE 590C	Workshop: Student Personnel-Housing/ Auxiliary Services	
EDHE 590D	Workshop: Student Personnel-International Programs	
EDHE 590E	Workshop: Student Personnel-Career Services	
EDHE 590F	Workshop: Student Personnel-Service Learning	
EDHE 590G	Workshop: Student Personnel-Wellness Programs	
EDHE 590H	Workshop: Advising Student Groups	
EDHE 590J	Workshop: Student Personnel-Access and Opportunity in Higher Education	
EDHE 590K	Workshop: Student Personnel-Leadership and Service in Higher Education	
EDHE 590L	Workshop: Student Personnel-Working with Student's Parents and Families	
EDHE 590M	Workshop: Student Personnel-Spiritual Dimensions of Student Development	
EDHE 660	Financial Management in Student Affairs	2
EDHE 661	Inclusive University	3
EDHE 662	Trends/Issues/Assessment in Higher Education	2
EDHE 670	Foundations and Trends in Student Affairs	3
EDHE 671	Higher Education Administration	3
EDHE 672	Ethical and Practical Issues-Student Affairs	2
EDHE 673	Student Development Theory	3
EDHE 676	Organizational Behavior in Student Affairs	3
EDHE 677	Law in Student Affairs	3
EDHE 678	Capstone in Student Affairs	2
EDRM 600	Introduction to Research Methods	3
EDRM 602	Action Research	3
or EDRM 666	Program Evaluation	
EDRM 698	Research	4
EDUC 502	Human Relations in Education	3
EDUC 686A	Practicum: Administration	4
or EDUC 686B	Practicum: Urban Teaching	
Program Total Credits:		45

A minimum of 45 credits are required to complete this program.

Master of Arts in Counseling and Career Development

The Counseling and Career Development program prepares professional counselors following the Council for Accreditation of Counseling and Related Educational Programs standards. Graduates are able to help people of all ages develop the self-awareness, exploration, decision-making, and self-advocacy skills needed to live effective lives within a pluralistic society.

Graduates of the CCD program receive a world-class education through relevant, interpersonal, and technology-rich learning experiences. The CCD program offers three specializations: career counseling, clinical mental health counseling, and school counseling. All graduates of the CCD program complete a 48-credit-hour core curriculum, a 12-credit-hour specialization curriculum, a 100-hour clinical practicum, and a 600-hour internship in a setting appropriate for their specialization. Pursuit of dual specializations includes completion of specific curriculum in both specializations, as well as two complete 600-hour internships, one in each specialization. Upon graduation, all students are eligible for licensure.

Specializations

- Master of Arts in Counseling and Career Development, Plan B, Career Counseling Specialization
- Master of Arts in Counseling and Career Development, Plan B, Clinical Mental Health Counseling Specialization
- Master of Arts in Counseling and Career Development, Plan B, School Counseling Specialization

Master of Arts in Counseling and Career Development, Plan B, Career Counseling Specialization

Students who specialize as career counselors will demonstrate the professional knowledge and skills necessary to help people develop life-career plans, with a focus on the interaction of work and other life roles.

Requirements Effective Fall 2018

Code	Title	Credits
Core Requirements		
EDCO 500	Career and Employment Concepts	3
EDCO 625	Foundations of Counseling	3
EDCO 650	Theories of Counseling and Development	3
EDCO 651	Group Guidance and Counseling	3
EDCO 652	Ethics in Counseling/Career Development	3
EDCO 653	Counseling for Cultural Diversity	3
EDCO 656	Counseling Assessment and Appraisal	3
EDCO 660	Career Development Counseling	3
EDCO 686	Practicum-Guidance and Counseling	Var.
EDCO 687	Internship-Guidance and Counseling	Var.
EDCO 692	Seminar	3
EDCO 693	Seminar-Guidance and Counseling	Var.
EDCO 696	Group Study	Var.
EDRM 600	Introduction to Research Methods	3
HDFS 505	Human Development for Helping Professionals	3
Specialization Requirement		
EDCO 661	Career and Life Design Counseling	3
Electives		
Select 9 credits from the following:		9
EDAE 520	Adult Education	
EDAE 601	Philosophy/Organization of Workforce Education	
EDAE 639	Instructional Design	
EDCO 792C	Seminar: Contemplative Practice-Counseling & Education	
EDHE 673	Student Development Theory	
EDHE 674	Campus Ecology	
EDRM 606	Principles: Quantitative Data Analysis	
EDRM 666	Program Evaluation	
EDUC 670	Grant Writing	
Program Total Credits:		60

Master of Arts in Counseling and Career Development, Plan B, Clinical Mental Health Counseling Specialization

In line with the American Mental Health Counselors Association, graduates of the Clinical Mental Health Counseling specialization are prepared to enter a distinct profession with national standards for education, training and clinical practice.

Clinical mental health counselors are highly-skilled professionals who provide flexible, consumer-oriented therapy. They combine traditional psychotherapy with a practical, problem-solving approach that creates a dynamic and efficient path for change and problem resolution (AMHCA). Clinical mental health counselors typically work from a holistic approach, providing counseling services in a variety of health settings such as inpatient and outpatient hospitals, residential facilities, hospice care centers, or private practice.

Requirements Effective Fall 2018

Code	Title	Credits
Counseling and Career Development, M.A. Core Requirements		
EDCO 500	Career and Employment Concepts	3
EDCO 625	Foundations of Counseling	3
EDCO 650	Theories of Counseling and Development	3
EDCO 651	Group Guidance and Counseling	3
EDCO 652	Ethics in Counseling/Career Development	3
EDCO 653	Counseling for Cultural Diversity	3
EDCO 656	Counseling Assessment and Appraisal	3
EDCO 660	Career Development Counseling	3
EDCO 686	Practicum-Guidance and Counseling	Var.
EDCO 687	Internship-Guidance and Counseling	Var.
EDCO 692	Seminar	3
EDCO 693	Seminar-Guidance and Counseling	Var.
EDCO 696	Group Study	Var.
EDRM 600	Introduction to Research Methods	3
HDFS 505	Human Development for Helping Professionals	3
Specialization Requirements		
EDCO 675	Mental Health Counseling and Treatment	3
Clinical Mental Health Counseling Electives		
Select a minimum of 9 credits from the following:		9
EDCO 662	Counseling Children and Adolescents	
EDCO 792C	Seminar: Contemplative Practice-Counseling & Education	
HDFS 534	Marriage and Family Therapy	
HDFS 624	Skills and Techniques in Family Therapy	
HDFS 644	Foundations in Family Therapy	
PSY 360	Psychology of Drug Addiction Treatment	
PSY 410	Psychobiology of Addictions	
SOWK 550	Animal Assisted Therapy/Human-Animal Bond	
Program Total Credits:		60

Master of Arts in Counseling and Career Development, Plan B, School Counseling Specialization

Students who specialize as school counselors will demonstrate the professional knowledge and skills necessary to promote the academic, career, and personal/social development of all PK–12 students through data-informed school counseling programs.

Requirements
Effective Fall 2018

Code	Title	Credits
Core Requirements		
EDCO 500	Career and Employment Concepts	3
EDCO 625	Foundations of Counseling	3
EDCO 650	Theories of Counseling and Development	3
EDCO 651	Group Guidance and Counseling	3
EDCO 652	Ethics in Counseling/Career Development	3
EDCO 653	Counseling for Cultural Diversity	3
EDCO 656	Counseling Assessment and Appraisal	3
EDCO 660	Career Development Counseling	3
EDCO 686	Practicum-Guidance and Counseling	Var.
EDCO 687	Internship-Guidance and Counseling	Var.
EDCO 692	Seminar	3
EDCO 693	Seminar-Guidance and Counseling	Var.
EDCO 696	Group Study	Var.
EDRM 600	Introduction to Research Methods	3
HDFS 505	Human Development for Helping Professionals	3
Specialization Requirements		
EDCO 550	Professional School Counseling	3
EDCO 552	School Counseling Program Delivery/ Evaluation	3
EDCO 662	Counseling Children and Adolescents	3
Electives		
Select 3 credits from the following:		3
EDCO 792C	Seminar: Contemplative Practice-Counseling & Education	
EDUC 618	School Law	
EDUC 645	Leadership and Ethics in Public Education	
HDFS 411	Developmental Transitions in Adolescence	
HDFS 434	Risk and Resilience Across the Lifespan	
Program Total Credits:		60

Master of Education in Education and Human Resource Studies, Plan A, Adult Education and Training Specialization

The Adult Education and Training specialization is designed to prepare practitioners in planning and instructional responsibilities needed to teach adult learners in postsecondary, community, and corporate settings.

With coursework that is based in practice and grounded in current adult learning theory, this master's degree prepares you to successfully facilitate, design and implement a wide range of training and educational programs.

Students may pursue either a Plan A (research thesis) or a Plan B. The Plan B culminates in a capstone project, in which students demonstrate the integration of their academic knowledge and professional abilities.

Requirements
Effective Summer 2012

Code	Title	Credits
Required Courses		
EDAE 520	Adult Education	3
EDAE 620	Processes and Methods	3
EDAE 624	Adult Teaching and Learning I	3
EDAE 639	Instructional Design	3
EDRM 600	Introduction to Research Methods	3
EDUC 651	Multicultural and Special Populations	3
Additional Research [1]		3
Elective [2]		3
Thesis		
EDAE 699	Thesis	6
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

1. Select course in consultation with graduate advisor.
2. Select a minimum of 3 credits from department list in consultation with graduate advisor.

Master of Education in Education and Human Resource Studies, Plan B, Adult Education and Training Specialization

The Adult Education and Training specialization is designed to prepare practitioners in planning and instructional responsibilities needed to teach adult learners in postsecondary, community, and corporate settings.

With coursework that is based in practice and grounded in current adult learning theory, this master's degree prepares you to successfully facilitate, design and implement a wide range of training and educational programs.

Students may pursue either a Plan A (research thesis) or a Plan B. The Plan B culminates in a capstone project, in which students demonstrate the integration of their academic knowledge and professional abilities.

Requirements

Effective Summer 2012

Code	Title	Credits
Required Courses		
EDAE 520	Adult Education	3
EDAE 620	Processes and Methods	3
EDAE 624	Adult Teaching and Learning I	3
EDAE 639	Instructional Design	3
EDRM 600	Introduction to Research Methods	3
EDUC 651	Multicultural and Special Populations	3
Electives [1]		9
Research		

EDAE 698	Research	3
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

[1] Select a minimum of 9 credits from department list in consultation with graduate advisor.

Master of Education in Education and Human Resource Studies, Education Sciences Specialization

The Education Sciences specialization is designed to prepare educational leaders and practitioners for principal licensure and teacher licensure in the PK-12 system.

Principal licensure can be earned as a non-degree option or as a Master of Education degree. Coursework is designed to develop principal and administrator leadership skills to direct educational programs, facilitate educational renewal, and implement new innovations in education.

Teacher licensure is earned as a Master of Education degree and prepares candidates to apply for a professional teaching license. Coursework is designed to develop future educators through examination of transformative teaching practices and immediate engagement in local school settings.

Requirements
Effective Fall 2014

Instructional Sciences - Option 1

Code	Title	Credits
EDRM 600	Introduction to Research Methods	3
EDRM 612	Assessing Students in Educational Settings	3
EDUC 530	Technology Enhanced Learning	3
EDUC 619	Curriculum Development	3
EDUC 628	Models of Teaching	3
EDUC 629	Communication and Classrooms	3
EDUC 651	Multicultural and Special Populations	3
Select one of the following plans:		9
Plan A:		
EDRM 606	Principles: Quantitative Data Analysis	
EDRM 699	Thesis	
Plan B:		
EDRM 698	Research	
Electives		
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

Administration - Option 2

Code	Title	Credits
EDRM 600	Introduction to Research Methods	3
EDUC 610	Principles of Supervision and Evaluation	3
EDUC 618	School Law	3
EDUC 619	Curriculum Development	3
EDUC 645	Leadership and Ethics in Public Education	3
EDUC 646	School Resource Management	3
EDUC 647	School Culture, Climate, and Communications	3
EDUC 648A	Role of the Principal: Professional Learning Community	1
EDUC 648B	Role of the Principal: Managing and Leading Change	2
EDUC 651	Multicultural and Special Populations	3
EDUC 687B	Internship: Principal	6
Program Total Credits:		33

A minimum of 33 credits are required to complete this program.

Teacher Licensure - Option 3

Code	Title	Credits
EDRM 602	Action Research	3
EDUC 525C	Expert Teaching: Literacy and Numeracy	3
EDUC 526	Interdisciplinary Methods	4
EDUC 573	Differentiating Instruction for Diverse Needs	3
EDUC 619	Curriculum Development	3
EDUC 625	Contexts of Schooling	3
EDUC 628	Models of Teaching	3
EDUC 687D	Internship: Teacher Licensure I	3
EDUC 687E	Internship: Teacher Licensure II	12
EDUC 693B	Seminar: Instruction	2
EDUC 693C	Seminar: Teacher Licensure Capstone	2
Program Total Credits:		41

A minimum of 41 credits are required to complete this program.

Master of Education in Education and Human Resource Studies, Organizational Learning, Performance and Change Specialization

The Organizational Learning, Performance and Change specialization is designed to prepare individuals and teams to understand the processes necessary to improve their organizations.

With coursework focused on strategies to help manage organizational issues, the applied nature of the program prepares you to meet the demands of today's workplace with a unique combination of organizational development, change management, and performance management study.

Requirements
Effective Spring 2014

Code	Title	Credits
Course Requirements		
EDOD 506	Human Resource Development	3

EDOD 671	Establish Relations, Diagnose Organizations	3
EDOD 673	Plan and Implement Change Interventions	3
EDOD 674	Analyze Workplace Learning	3
EDOD 675	Design, Develop, Implement Workplace Learning	3
EDOD 676	Evaluate Workplace Learning	3
EDOD 677	Action Learning and Inquiry	3
EDOD 678	Assess Change Interventions	3
EDOD 692A	Seminar: HRD Concepts--Workplace Learning	3
EDOD 692B	Seminar: HRD Concepts--Organizational Learning	3
Research		
EDRM 698	Research	3
Program Total Credits:		33

A minimum of 33 credits are required to complete this program.

Ph.D. in Education and Human Resource Studies, Education, Equity, and Transformation Specialization

The Education, Equity, and Transformation specialization is designed for those who desire to impact educational systems through research, leadership, curriculum, and policy. The program includes the education content core with specific attention to issues of equity and transformational change, and to developing strong quantitative and qualitative research skills.

Requirements Effective Fall 2018

Code	Title	Credits
Education, Equity and Transformation Core (15 credits)		
EDUC 713	Teaching, Learning, and Professional Growth	3
EDUC 714	Education Policy Analysis	3
EDUC 715	Critical Theory, Educational Equity & Praxis	3
EDUC 720	Human Learning, Cognition, and Motivation	3
EDUC 792	Seminar	3
Research Core (9 credits)		
EDRM 700	Quantitative Research Methods	3
EDRM 702	Foundations of Educational Research	3
EDRM 704	Qualitative Research	3
Research Electives – select a minimum of 9 credits from the following:		9
EDRM 701	Applied Linear Models-Educational Research	
EDRM 703	Applied Longitudinal Data Analysis	
EDRM 705	Qualitative Data Analysis	
EDRM 706	Analysis of Variance--Education Research	
EDRM 707	Quantitative Data Collection Methods/ Analysis	
EDRM 708	Narrative Inquiry	
EDRM 711	Ethnographic Research	
EDRM 792A	Seminar: Research Methodology	
or EDRM 792B	Seminar: Proposal Development	
EDRM *** Selected Courses [1]		
Dissertation		
EDRM 799	Dissertation	12
Cognate/Electives [2]		15
Master's Degree Credit (a maximum of 30 credits may be accepted from a master's degree)		30
Program Total Credits:		90

A minimum of 90 credits are required to complete this program.

1. Select courses with approval of graduate advisor and committee.
2. Students select cognate area (i.e. teaching, learning & culture; research methods; adult education & training) with their graduate advisor and committee

Ph.D. in Education and Human Resource Studies, School Leadership Specialization

The School Leadership specialization is designed to prepare educational leaders and practitioners in the PK-12 system. The program's coursework provides a research-oriented framework of the PK-12 environment, supports practitioner experiences, and insures a commitment to the improvement of public school systems.

This Ph.D. will prepare students for a variety of PK-12 leadership roles, including:

- Principal
- Curriculum specialist
- Policymaker
- University professor
- Classroom teacher

Requirements Effective Spring 2012

First Year		Credits
EDRM 700	Quantitative Research Methods	3
EDRM 704	Qualitative Research	3
EDUC 709	Leadership Development	3
EDUC 714	Education Policy Analysis	3
EDUC 715	Critical Theory, Educational Equity Praxis	3
	Total Credits	15
Second Year		
EDOD 769	Theory and Practice of Change	3

EDRM 706	Analysis of Variance--Education Research	3
EDUC 713	Teaching, Learning, and Professional Growth	3
EDUC 716	Capstone: Educational Equity and Reform	3
EDUC 725	Professionalism in Education and Leadership	3
	Total Credits	15
Third Year		
EDOD 667	Power-Politics-Influence in Organizations	3
EDOD 670	Strategic Human Resource Development	3
EDRM 666	Program Evaluation	3
EDRM 705 or 707	Qualitative Data Analysis Quantitative Data Collection Methods/ Analysis	3
EDUC 787 or 795	Internship Independent Study	3
	Total Credits	15
Fourth Year		
EDRM 792B	Seminar: Proposal Development	3
EDRM 799	Dissertation	6
	Total Credits	9
Fifth Year		
EDRM 799	Dissertation	6
	Total Credits	6
	Program Total Credits:	60

Code	Title	Credits
Completed Ph.D. Coursework Total		60
Completed Master's Coursework Total		30
Program Total Credits:		90

A minimum of 90 credits are required to complete this program.

Ph.D. in Education and Human Resource Studies, Higher Education Leadership Specialization

The Higher Education Leadership specialization is designed to prepare higher education administrators to address critical issues impacting college and university environments.

By centering equity and justice in the program's coursework, students will gain analytical research skills, critical thinking skills, and application of knowledge to lead and transform higher education. In order to provide a supportive learning platform for students, the doctoral degree is online and offers a cohort structure utilizing video conferencing, as well as an on-campus component in July and January.

Requirements Effective Fall 2017

First Year		Credits
EDHE 771	Higher Education Leadership	3
EDHE 773	Student Development in a Collegiate Context	3
EDRM 702	Foundations of Educational Research	3
EDUC 709	Leadership Development	3
EDUC 710	Higher Education Finance	3
	Total Credits	15
Second Year		
EDCL 701	Higher Education Law	3
EDRM 704	Qualitative Research	3
EDRM 705	Qualitative Data Analysis	3
EDUC 675	Analyzing Education Literature	3
EDUC 725	Professionalism in Education and Leadership	3
	Total Credits	15
Third Year		
EDOD 769	Theory and Practice of Change	3
EDRM 700	Quantitative Research Methods	3
EDRM 707	Quantitative Data Collection Methods/ Analysis	3
EDUC 714	Education Policy Analysis	3
EDUC 715	Critical Theory, Educational Equity Praxis	3
	Total Credits	15
Fourth Year		
EDCL 750	Simulated Presidential Cabinet I	3
EDHE 799	Dissertation	9
EDRM 792B	Seminar: Proposal Development	3
	Total Credits	15
	Program Total Credits:	60

Code	Title	Credits
Completed Ph.D. Coursework Total		60
Completed Master's Coursework Total		30
Program Total Credits:		90

A minimum of 90 credits are required to complete this program.

Ph.D. in Education and Human Resource Studies, Organizational Learning, Performance, and Change Specialization

The Organizational Learning, Performance, and Change specialization is designed to help working executives, researchers, and academics develop the skills needed to improve organizational effectiveness, enhance decision-making, and develop analysis and research expertise.

The program's coursework is grounded in organizational, strategic and change management theory, focusing on a combination of sociological, systems, psychological, and economic approaches to performance improvement strategies. This doctoral degree is a cohort structure offered as face-to-face, bi-weekly Saturday meetings held in downtown Denver.

Requirements Effective Fall 2014

Code	Title	Credits
Research		
EDRM 700	Quantitative Research Methods	3
EDRM 702	Foundations of Educational Research	3
EDRM 704	Qualitative Research	3
EDRM 792B	Seminar: Proposal Development	3
Select one track from the following: [1]		6
Quantitative Track		
Select two courses from the following:		
EDRM 701	Applied Linear Models-Educational Research	
EDRM 703	Applied Longitudinal Data Analysis	
EDRM 706	Analysis of Variance--Education Research	
EDRM 707	Quantitative Data Collection Methods/ Analysis	
Qualitative Track		
Select two courses from the following:		
EDRM 705	Qualitative Data Analysis	
EDRM 708	Narrative Inquiry	
EDRM 711	Ethnographic Research	
OLPC Content Courses		
EDOD 706	Organizational Learning, Performance, Change	3
EDOD 761	Evaluation and Assessment of Interventions	3
EDOD 766	Scenario Planning in Organizations	3
EDOD 768	Workforce Development	3
EDOD 769	Theory and Practice of Change	3
EDOD 771	Social Foundations of the Workplace	3
EDOD 772	Theory Building in Applied Disciplines	3
EDOD 773	Systems Leadership	3
EDOD 792	Seminar-Human Resource Development	3
Dissertation		
EDOD 792	Seminar-Human Resource Development	6-9
EDOD 799	Dissertation	6-9
Master Degree Credit		
Master Degree Credit [2]		30
Program Total Credits:		90

A minimum of 90 credits are required to complete this program.

1 Students select the Quantitative or Qualitative track with approval of advisor and graduate committee.

2 A maximum of 30 credits may be accepted from a master's degree.

Department of Food Science and Human Nutrition

Office in Gifford Building, Room 234
(970) 491-FOOD (3663)
chhs.colostate.edu/fshn (https://www.chhs.colostate.edu/fshn)

Michael Pagliassotti, Ph.D., Department Head
Dietetic Program Director, Mary Harris, Ph.D., R.D.N.
Hospitality Management Program Coordinator, Jeff Miller, Ph.D.
Fermentation Science and Technology Coordinators, Martha Stone, Ph.D., and Jeff Callaway
Graduate Coordinator, Kimberly Cox-York, Ph.D.

Undergraduate Majors

- Major in Nutrition and Food Science
  - Dietetics and Nutrition Management Concentration
    - Accredited Didactic Program Option
    - Childhood Nutrition Option
    - Gerontology Nutrition Option
  - Food Safety and Nutrition Concentration
  - Nutrition and Fitness Concentration
  - Nutritional Sciences Concentration
- Major in Hospitality Management
- Major in Fermentation Science and Technology

Minors

- Minor in Nutrition
- Food Science/Safety Interdisciplinary Minor

Graduate

Graduate Programs in Food Science and Human Nutrition

At the graduate level, both M.S. and Ph.D. degrees are offered in Food Science and Nutrition. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Food Science and Human Nutrition (http://www.fshn.chhs.colostate.edu).

Certificate

- Nutrition Sciences

Master's Programs

- Master of Science in Food Science and Nutrition, Dietetics Option (Online)
- Master of Science in Food Science and Nutrition, Food Science Specialization, Plan A and Plan B
- Master of Science in Food Science and Nutrition, Nutrition Specialization, Plan A and Plan B

Ph.D.

- Ph.D. in Food Science and Nutrition, Food Science Specialization
- Ph.D. in Food Science and Nutrition, Nutrition Specialization

Courses

Subjects in this department include: Food Science and Human Nutrition (FSHN) and Food Technology (FTEC) and Hospitality Management (RRM).

Food Science and Human Nutrition (FSHN)

FSHN 125 Food and Nutrition in Health Credits: 2 (2-0-0)
Course Description: Nutritional quality and safety of food related to human health.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

FSHN 150 Survey of Human Nutrition Credits: 3 (3-0-0)
Course Description: Basic nutrition principles and concepts; their application to personal health and interactions with societal and environmental issues.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 192 First Year Seminar Credit: 1 (0-0-1)
Course Description: Facilitate a successful transition to college for new incoming students by emphasizing personal growth and identifying campus resources.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 300 Food Principles and Applications Credits: 3 (3-0-0)
Course Description: Application of food preparation theories to modification and evaluation of food products.
Prerequisite: (CHEM 103 or CHEM 107 or CHEM 111) and (FSHN 150).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 301 Food Principles and Applications Laboratory Credits: 2 (0-6-0)
Course Description: Techniques and manipulative skills for preparation and evaluation of standard and modified food products.
Prerequisite: FSHN 300, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

FSHN 350 Human Nutrition Credits: 3 (3-0-0)
Course Description: Metabolism of macro and micronutrients; physiologic basis underlying dietary recommendations for human health. Nutrients, dietary requirements for physical well-being; evaluation of various diets.
Prerequisite: (BMS 300, may be taken concurrently) and (CHEM 245 or CHEM 341).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 360 Nutrition Assessment Credits: 2 (2-0-0)
Course Description: Principles of anthropometric, dietary, and biochemical assessment of nutritional status.
Prerequisite: FSHN 350.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 386A Practicum: Food Service Management Credits: 2 (0-0-4)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 386B Practicum: Gerontology Credits: 3 (0-0-9)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 386C Practicum: School Nutrition Credits: 3 (0-0-9)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 392 Dietetic Practice Seminar Credit: 1 (0-0-1)
Course Description: Pre-professional skills to prepare students for the pursuit of careers in the field of dietetics.
Prerequisite: (CHEM 107 with a minimum grade of B and CHEM 108 with a minimum grade of B or CHEM 111 with a minimum grade of B and CHEM 112 with a minimum grade of B and CHEM 113 with a minimum grade of B) and (LIFE 102 with a minimum grade of B or BZ 111 with a minimum grade of B and BZ 110 with a minimum grade of B) and (BMS 300 with a minimum grade of B and BMS 302 with a minimum grade of B and FSHN 150 with a minimum grade of B and FSHN 300 with a minimum grade of B and FSHN 301 with a minimum grade of B).
Registration Information: 3.000 overall GPA.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 428 Nutrition Teaching and Counseling Techniques Credits: 3 (3-0-0)
Course Description: Objectives, principles, and organization of subject matter for nutrition education and counseling.
Prerequisite: FSHN 350.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 444 Nutrition and Aging Credit: 1 (1-0-0)
Course Description: Effect of aging on nutrient needs and impact of nutrition on successful aging and health in the elderly.
Prerequisite: BZ 101 or BZ 110 or LIFE 102.
Registration Information: Credit not allowed for both FSHN 444 and FSHN 459. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 445 Early Childhood Health, Safety, and Nutrition Credits: 3 (0-0-3)
Also Offered As: HDFS 445.
Course Description: Planning, promoting and maintaining healthy lifestyle and safe learning environment for preschool children.
Prerequisite: HDFS 310.
Registration Information: Completion of 60 credits. Offered as an online course only. Credit not allowed for both FSHN 445 and HDFS 445.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 450 Medical Nutrition Therapy Credits: 5 (4-2-0)
Course Description: Use of nutrition therapy in the treatment of acute conditions and chronic disease states.
Prerequisite: BMS 300 and FSHN 350.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

FSHN 451 Community Nutrition Credits: 3 (3-0-0)
Course Description: Influences on nutritional status, assessment of nutrition problems and needs, planning and evaluation of nutrition intervention programs.
Prerequisite: FSHN 350, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 455 Food Systems: Impact on Health/Food Security Credits: 2 (1-0-1)
Course Description: Conventional and alternative food systems and their impact on nutrition, health, food security, and the environment.
Prerequisite: FSHN 350 or FTEC 447.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 459 Nutrition in the Life Cycle Credits: 3 (3-0-0)
Course Description: Nutritional aspects associated with each phase of human life cycle including pregnancy, infancy, childhood, adolescence, and early and late adulthood.
Prerequisite: FSHN 350.
Registration Information: Credit not allowed for both FSHN 459 and FSHN 444.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 470 Integrative Nutrition and Metabolism Credits: 3 (3-0-0)
Course Description: Influence of nutrition on roles and action of hormones and gene expression on metabolism.
Prerequisite: BC 351 and FSHN 350.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 486A Practicum: Counseling Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

FSHN 486B Practicum: Nutrition Credits: Var[1-3] (0-0-0)
Course Description: Supervised off-campus experience in nutrition.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 486C Practicum: Food Service Management Credits: Var[1-3] (0-0-0)
Course Description: Supervised off-campus experience in food service management.
Prerequisite: RRM 310.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 492 Seminar in Dietetics and Nutrition Credits: 2 (0-0-2)
Course Description: Capstone seminar in nutrition and dietetics.
Prerequisite: None.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 495A Independent Study: Nutrition Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 495B Independent Study: Food Service Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 496A Group Study in Dietetics and Nutrition: Energy, Weight Management Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496B Group Study in Dietetics and Nutrition: Sustainable Food Issues Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496C Group Study in Dietetics and Nutrition: Nutrition and Chronic Disease Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496D Group Study in Dietetics and Nutrition: Nutrition for Athletes Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496E Group Study in Dietetics and Nutrition: Food Safety Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496F Group Study in Dietetics and Nutrition: Service Marketing Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496G Group Study in Dietetics and Nutrition: Food and Consumer Issues Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496H Group Study in Dietetics and Nutrition: Public Health and Policy Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496I Group Study in Dietetics and Nutrition: Special Topics Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 500 Food Systems, Nutrition, and Food Security Credits: 2 (2-0-0)
Course Description: Global and local food systems and their potential influence on nutrition and food security.
Prerequisite: FSHN 350.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 501 Research Methods in Dietetics Credits: 3 (0-0-3)
Course Description: Testing and generating theory. Methods for collecting and analyzing quantitative and qualitative data, critique of research and proposal development.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 503 Issues in Dietetics Practice Credits: 3 (0-0-3)
Course Description: Environment in which foodservice, hospitality, and healthcare organizations operate; impact of change on hospitality and healthcare organizations.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 504 Micronutrients Credits: 3 (0-0-3)
Course Description: Coordination of structure and function related to metabolic needs as a basis for evaluating micronutrient needs in normal or altered metabolic states.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 505 Nutrition and Physical Activity in Aging Credits: 3 (0-0-3)
Course Description: Physiological changes during aging and impacts on health and disease; focus on successful aging with emphasis on physical activity and nutrition.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 506 Nutrition and Human Performance Credits: 3 (0-0-3)
Course Description: Relationship of specific nutrients and optimal nutrition to physical efficiency and performance.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 507 Nutrition Education in the Community Credits: 3 (0-0-3)
Course Description: Principles and practices of teaching individuals and groups to translate nutrition knowledge into action. Emphasis on research and evaluation.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 508 International Nutrition and World Hunger Credits: 3 (0-0-3)
Course Description: Magnitude, causes, and nature of hunger and under-nurturing; programs and policies to alleviate hunger.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 509 Nutrition Counseling and Education Methods Credits: 3 (0-0-3)
Course Description: Application of learning theories and nutrition counseling with individuals and groups in the community and clinical settings.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 510 Pediatric Clinical Nutrition Credits: 3 (0-0-3)
Course Description: Physiological, biochemical and nutritional aspects of disease processes relevant to infants and children up to 18 years of age.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 511 Maternal and Child Nutrition Credits: 3 (0-0-3)
Course Description: Behavioral, physiological and public health issues impacting dietary and nutritional factors that support growth and development.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics; written permission of instructor. Offered as an online course only.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 512 Nutritional Aspects of Oncology Credits: 3 (0-0-3)
Course Description: Relationships between nutrition and cancer including the role of nutrition in specific cancers, cancer prevention and patient management.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 520 Advanced Medical Nutrition Therapy Credits: 3 (3-0-0)
Course Description: Role of nutrition in etiology and treatment of selected disorders.
Prerequisite: FSHN 550 or FSHN 551.
Registration Information: FSHN 550 or FSHN 551 or admission to GP-IDEA program in Dietetics. Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 525 Nutrition Education Theories and Practice Credits: 2 (2-0-0)
Course Description: Examination of current theories, skills, and models used in nutrition education programs as preparation for research and practice.
Prerequisite: FSHN 350.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 530 Principles of Nutrition Science & Metabolism Credits: 3 (3-0-0)
Course Description: Science of nutrition, including the ingestion and digestion of food, the absorption, transport, and metabolism of macro and micronutrients, energy balance and bodyweight regulation, and relationships to health and risk of disease. Structure, functional roles, and metabolic regulation of carbohydrates, lipids, and proteins during conditions of fasting, feeding, and exercise. The role of vitamins and minerals in cellular and whole body homeostasis.
Prerequisite: BMS 300 or CHEM 245 or LIFE 102.
Registration Information: Graduate standing. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 531 Diet, Nutrition, and Chronic Disease Credits: 3 (2-0-1)
Course Description: Principles related to the role of diet and nutrition in obesity, digestive health, type 2 diabetes, cardiovascular disease, and cancer with a focus on current evidence and best practices for prevention.
Prerequisite: FSHN 530.
Registration Information: Graduate standing. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 532 Emerging Issues in Nutrition Credits: 3 (2-0-1)
Course Description: Principles related to emerging areas of nutrition and their role in health promotion. Focus is on current research related to micronutrients and supplements, sports nutrition, food safety and technology, food systems, nutrition and aging, and nutrigenomics.
Prerequisite: FSHN 530.
Registration Information: Graduate standing. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 540 Nutrigenomics and Advanced Lipid Metabolism Credits: 3 (0-0-3)
Course Description: How nutrients regulate gene expressions (nutrigenetics) and how genotype influences an individual's nutrient requirements (nutrigenomics).
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in Dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 550 Advanced Nutritional Science I Credits: 3 (3-0-0)
Course Description: Protein, vitamin, mineral metabolism; human studies, animal models.
Prerequisite: (BC 351 or BC 403) and (FSHN 350).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 551 Advanced Nutritional Science II Credits: 3 (3-0-0)
Course Description: Carbohydrate, lipid, energy metabolism; human studies, animal models.
Prerequisite: (BC 351 or BC 403) and (FSHN 350).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 586 Practicum-Advanced Clinical Nutrition Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 587A Internship: Clinical Dietetics Credits: 6 (0-18-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 587B Internship: Community Dietetics Credits: 6 (0-18-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 587C Internship: Food Service Management Credits: 6 (0-18-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 590 Workshop Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 600 Responsible Conduct of Research Credit: 1 (1-0-0)
Course Description: Responsible conduct of research (RCR) including ethical frameworks, publication practices, human and animal research and data management. Case studies and professional codes of conduct will be used to explore conduct of ethical research in humans and animals and how to avoid and manage research misconduct.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Credit not allowed for both FSHN 580A2 and FSHN 600.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 620 Community Nutrition Planning and Evaluation Credits: 3 (2-0-1)
Course Description: Community nutrition assessment; nutrition program planning and evaluation, nutrition policy analysis.
Prerequisite: FSHN 350.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 628 Advanced Nutrition Counseling Techniques Credits: 2 (2-0-0)
Course Description: Principles, strategies and techniques for interviewing, assessing and providing nutrition counseling in community settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 630 Integrative Exercise and Nutrition Metabolism Credits: 3 (3-0-0)
Also Offered As: HES 630.
Course Description: Advances in integrative human metabolism under conditions of changing energy flux.
Prerequisite: HES 610 and FSHN 551.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both FSHN 630 and HES 630.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 640 Selected Topics in Nutritional Epidemiology Credits: 2 (2-0-0)
Course Description: Overview of topics in nutritional epidemiology; study design, interpretation of findings, linkage of data to action.
Prerequisite: (FSHN 350) and (STAT 301 or STAT 307 or ERHS 307).
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 650A Recent Developments in Human Nutrition: Protein, Vitamins, and Minerals Credits: 2 (2-0-0)
Course Description: Appraisal of literature on human nutritional status.
Prerequisite: FSHN 550.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 650B Recent Developments in Human Nutrition: Carbohydrates, Lipids, and Energy Credits: 2 (2-0-0)
Course Description: Appraisal of literature on human nutritional status.
Prerequisite: FSHN 551.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 650C Recent Developments in Human Nutrition: Genomic, Proteomics, and Metabolomics Credits: 2 (2-0-0)
Course Description: Appraisal of literature on human nutritional status.
Prerequisite: FSHN 551.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 660 Women's Issues in Lifecycle Nutrition Credits: 2 (2-0-0)
Course Description: Current nutritional issues related to selected stages of the lifecycle compared to normal adult nutritional needs.
Prerequisite: FSHN 459.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 661 International Nutrition Credits: 2 (2-0-0)
Course Description: Roles of technological programs and international agencies in meeting nutritional needs.
Prerequisite: FSHN 350.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 675 Regulation of Energy Intake Credits: 3 (3-0-0)
Course Description: Central and peripheral mechanisms controlling energy intake with emphasis on humans. Current theories, experimental approaches, and new research.
Prerequisite: FSHN 350 and PSY 454.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 686A Practicum: Counseling Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: FSHN 520.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

FSHN 686B Practicum: Nutrition Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 686C Practicum: Food Services Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 692 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 695A Independent Study: Food Science Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 695B Independent Study: Nutrition Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 695C Independent Study: Food Service Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 696A Group Study: Food Science Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 696B Group Study: Nutrition Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 696C Group Study: Dietetics Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 696D Group Study: Exercise and Nutrition Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 698A Research: Dietetics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the GP-IDEA program in Dietetics. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 698B Research: Nutrition Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 698C Research: Food Service Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 699B Thesis: Nutrition Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 699C Thesis: Food Service Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 700 Cellular Nutrition Credits: 2 (2-0-0)
Course Description: Essential nutrient requirements of cells and organs.
Prerequisite: FSHN 550 and FSHN 551 or BC 403 and BMS 501.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 750 Nutritional Basis of Chronic Disease Credits: 2 (2-0-0)
Course Description: Role of nutrition in the pathogenesis and prevention of specific chronic diseases.
Prerequisite: FSHN 550 and FSHN 551.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 792 Seminar-Research Topics in Nutrition Credit: 1 (0-0-1)
Course Description: Ph.D. seminar in literature review.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 796 Group Study Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 799 Dissertation-Nutrition Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Food Technology (FTEC)

FTEC 110 Food-From Farm to Table Credits: 3 (3-0-0)
Course Description: Commercial food processing, related to preservation and enhancing of food quality, safety, and value.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

FTEC 210 Science of Food Fermentation Credits: 3 (2-2-0)
Course Description: Science, history, culture, gastronomy, safety, health, and nutrition aspects of fermented foods and beverages.
Prerequisite: (CHEM 107 or CHEM 111) and (LIFE 102 or BZ 111 and BZ 110).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

FTEC 350 Fermentation Microbiology Credits: 2 (2-0-0)
Course Description: Integration of fermentation science, microbiology, and chemistry.
Prerequisite: BC 351, may be taken concurrently and MIP 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 351 Fermentation Microbiology Laboratory Credits: 2 (0-4-0)
Course Description: Introduction to fermentation microbiological practices with relevance to production, quality control, and food safety in the food and beverage industry.
Prerequisite: (FTEC 210) and (LIFE 205, may be taken concurrently or MIP 300).
Restriction: Must be a: Undergraduate.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

FTEC 360 Brewing Processes Credits: 4 (3-0-1)
Course Description: Influence of raw material selection, malting, mashing, boiling, and fermentation on quality of beverages.
Prerequisite: CHEM 245 and FTEC 210, may be taken concurrently.
Registration Information: Must register for lecture and recitation. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 375 Introduction to Fermentation Unit Operations Credits: 4 (3-0-1)
Course Description: Principles related to processes and equipment design in fermented food and beverage industries. Survey of unit operations.
Prerequisite: (FTEC 360) and (PH 121 or PH 141).
Registration Information: Must register for lecture and recitation. Required field trips. Credit not allowed for both FTEC 375 and FTEC 480A2.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 400 Food Safety Credits: 3 (3-0-0)
Course Description: Safety of human food emphasizing safe production, processing, marketing, preparation, consumption, and regulations.
Prerequisite: CHEM 107 or CHEM 111.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

FTEC 422 Brewing Science I Credits: 4 (3-3-0)
Course Description: Assessment, quantification, and control of various aspects of commercial beer production.
Prerequisite: FTEC 360.
Registration Information: Must register for lecture and laboratory. Required field trips. 21 years of age.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

FTEC 430 Sensory Evaluation of Fermented Products Credits: 2 (1-2-0)
Course Description: Application of sensory evaluation techniques to the study of fermented foods.
Prerequisite: FSHN 301 or FTEC 210.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

FTEC 440 Packaging Technology Credits: 2 (2-0-0)
Course Description: Science, technology, and management of packaging.
Prerequisite: FTEC 360.
Registration Information: Required field trips.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 447 Food Chemistry Credits: 2 (2-0-0)
Also Offered As: ANEQ 447.
Course Description: Chemistry of food constituents as related to food quality and stability.
Prerequisite: CHEM 241 or CHEM 245 or CHEM 345.
Registration Information: Credit not allowed for both ANEQ 447 and FTEC 447.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 460 Brewing Science II Credits: 4 (3-3-0)
Course Description: Applications of scientific and technical aspects of malting, brewing, fermenting, finishing, packaging, and evaluating of fermented beverages.
Prerequisite: FTEC 422.
Registration Information: Must register for lecture and laboratory. Required field trips. 21 years of age.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

FTEC 465 Food Production Operations Credits: 3 (3-0-0)
Course Description: Production, operation, and management techniques used in the food industry at company, local and international levels.
Prerequisite: FTEC 210.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 478 Phytochemicals and Probiotics for Health Credits: 2 (2-0-0)
Course Description: Examination of phytochemistry and probiotic organisms important in human health.
Prerequisite: BC 351.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 487 Internship Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FTEC 492 Seminar: Fermentation Science and Food Safety Credits: 2 (1-0-1)
Course Description: Capstone seminar in fermentation science and food safety.
Prerequisite: None.
Registration Information: Senior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FTEC 496A Group Study Fermentation Science: Current Issues Credit: 1 (0-0-1)
Course Description:
Prerequisite: FSHN 350 or FTEC 360.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 496B Group Study Fermentation Science: Functional Foods in Health Credit: 1 (0-0-1)
Course Description:
Prerequisite: FSHN 350 or FTEC 360.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 570 Food Product Development Credits: 2 (2-0-0)
Course Description: Food product concepts, feasibility, and evaluation.
Prerequisite: FTEC 447.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 572 Food Biotechnology Credits: 2 (2-0-0)
Course Description: Interrelationships among microorganisms, food processing methods, advances in biotechnology and food quality, spoilage, shelf-life and safety.
Prerequisite: MIP 334.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 574 Current Issues in Food Safety Credits: 2 (2-0-0)
Course Description: Current food safety issues from field to table; microbiological, consumer, processing, and agricultural issues.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 576 Cereal Science Credits: 2 (2-0-0)
Course Description: Chemistry and functionality of cereal grain components and their importance in human nutrition.
Prerequisite: FTEC 447.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 578 Phytochemicals and Probiotics for Health Credits: 3 (2-0-1)
Also Offered As: HORT 578.
Course Description: Examination of phytochemicals and probiotic organisms important in human health.
Prerequisite: BC 351.
Registration Information: Senior standing. Must register for lecture and recitation. Credit not allowed for both FTEC 578 and HORT 578.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FTEC 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FTEC 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Hospitality Management-RRM (RRM)

RRM 101 Hospitality Industry Credits: 3 (3-0-0)
Course Description: Food service, lodging, and tourism industries; exploration of various industry segments and career opportunities.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 200 Hotel Operations Credits: 3 (3-0-0)
Course Description: Front office and room management as related to resorts and hotels. Computer application, financial controls, employee and guest relations.
Prerequisite: RRM 101.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 310 Food Service Systems-Operations Credits: 3 (3-0-0)
Course Description: Technical operations: menu planning, evaluation, recipe standardization, forecasting, food cost, sanitation, hospital food distribution systems.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 311 Food Service Systems-Production and Purchasing Credits: 3 (3-0-0)
Course Description: Quantity food production principles, purchasing specifications, market channels.
Prerequisite: RRM 310.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 312 Hospitality Human Resource Management Credits: 3 (2-0-1)
Course Description: Principles and practices of employee management in the hospitality industry including employment process, training, legal aspects, performance.
Prerequisite: RRM 310.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 330 Alcohol Beverage Control and Management Credits: 2 (2-0-0)
Course Description: Classification, production, and service of controlled beverages; management of facilities and people; safe service training; financial controls.
Prerequisite: CHEM 103, may be taken concurrently or CHEM 107, may be taken concurrently or CHEM 111, may be taken concurrently.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

RRM 340 Restaurant Operations Credits: 5 (0-10-0)
Course Description: Principles, practices, philosophies, systems for daily operation of casual or fine dining restaurant; focus on developing solutions to problems.
Prerequisite: RRM 101, may be taken concurrently.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 345 Food, Beverage, and Labor Cost Control Credits: 3 (3-0-0)
Course Description: Cost control for food, beverage, and labor in the hospitality industry.
Prerequisite: ACT 205.
Registration Information: Sophomore standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 350 Hospitality Marketing Credits: 3 (3-0-0)
Course Description: Operations marketing, including consumer behaviors, marketing strategies, and marketing plans in the hospitality industry.
Prerequisite: RRM 101.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 386 Practicum Credits: 3 (0-0-9)
Course Description: Practicum in Hospitality Management.
Prerequisite: RRM 101.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

RRM 400 Food and Society Credits: 3 (2-0-1)
Course Description: Exploration of the influence of food, dining, and nutrition on cultural aspects of the human experience.
Prerequisite: SOC 100 or PSY 100.
Registration Information: Completion of AUCC 3D and AUCC 3E requirements. Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 410 Food Safety Management Credits: 2 (2-0-0)
Course Description: Management and practical applications of safe food service including sanitation, food borne illness, worker hygiene, proper food temperatures and handling, hazard analysis critical control points, local/state/federal health rules and regulations. ServSafe® Manager Certification.
Prerequisite: (CHEM 103 or CHEM 107 or CHEM 111) and (RRM 310).
Registration Information: Junior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 415 Catering Techniques and Culinary Arts Credits: 3 (0-6-0)
Course Description: Management of advanced techniques in culinary technique; catering of food and beverages for special functions.
Prerequisite: RRM 311.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

RRM 450 Leadership in the Hospitality Industry Credits: 3 (3-0-0)
Course Description: Exploration of leadership skills, their relationship to ethics through self-analysis, and leading change in the hospitality industry.
Prerequisite: RRM 310 and MGT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 460 Event and Conference Planning Credits: 3 (2-0-1)
Course Description: Overview of event planning and management. Explores key concepts critical to the success of any event and current trends in the industry.
Prerequisite: NRRT 270 or RRM 101.
Registration Information: Junior standing. Must register for lecture and recitation. Required field trips. Credit not allowed for both RRM 460 and NRRT 460.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

RRM 487 Internship in Hospitality Management Credits: 5 (0-0-25)
Course Description: Supervised off-campus experience in food and beverage, lodging, or event planning focusing on management tasks and responsibilities.
Prerequisite: RRM 101 and RRM 310, may be taken concurrently.
Registration Information: Sophomore standing. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

RRM 492 Seminar on Hospitality Management Credits: 3 (0-0-3)
Course Description: Applying and synthesizing service knowledge and management functions; project discussions, benchmark presentations, execution of a capstone project.
Prerequisite: MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

RRM 500 Understanding Food Credits: 3 (3-0-0)
Course Description: Role of food in the creation of identity, as a driver of technology, and the prominent role food plays in the media.
Prerequisite: RRM 400.
Registration Information: RRM 400 or admission to GPIdea program in Dietetics. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 510 Foodservice Management Credits: 2 (1-0-1)
Course Description: Analysis of a wide variety of foodservice operations, including procurement, forecasting, operational design, and menu planning.
Prerequisite: NRRT 442 or NRRT 471.
Registration Information: Must register for lecture and recitation. This is a partial semester course. Offered as Mixed Face-to-Face only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 520 Lodging Management Credits: 2 (1-0-1)
Course Description: Operating standards and practices essential to the profitability of a hotel, lodging, and accommodation enterprise.
Prerequisite: NRRT 442 or NRRT 471.
Registration Information: Must register for lecture and recitation. This is a partial-semester course. Offered as Mixed Face-to-Face only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 686 Practicum-Food Service Management Credit: 1 (0-4-0)
Course Description: Food production, menu planning, nutritional analysis and food costing.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Major in Fermentation Science and Technology

Fermentation Science and Technology (https://www.chhs.colostate.edu/fshn/programs-and-degrees/b-s-in-fermentation-science-and-technology) is a multidisciplinary major focusing on the science of fermented foods and beverages. The curriculum focuses on the science of the processes and methods involved with using microorganisms in the commercial production of fermented products. Courses in the major also emphasize the safety, culinary, and nutritional aspects of fermented foods and beverages. This major prepares students for employment in the fermented food and beverage industries in such roles as product development, processing, quality assurance and control, sensory evaluation, packaging, distribution, and plant management. Students enrolled in this major have the opportunity to participate in industry activities and professional organizations to increase their practical understanding of fermented food and beverage production, processing methods, and specific techniques.

Learning Outcomes

Students will demonstrate:

- Ability to integrate biological and chemical processes to quality and stability of fermented foods, and to critique and effectively communicate the relationships among processing of fermented foods, nutrition, and food safety.
- Discipline specific knowledge of the skills and competencies needed in fermentation science and technology. Examples include knowledge of food chemistry, sensory evaluation of fermented products, brewing processes, refining and packaging technology, food production management, and fermentation microbiology.
- Understanding of classification, production, financial aspects, consumption, and service of controlled beverages, including effective management of facilities and people with emphasis on safe service training and management.
- Competent application of science, history, culture, safety, health, and nutrition dimensions of fermented foods and beverages.

Potential Occupations

Partnerships with industry help provide field experience and internships for majors in Fermentation Science and Technology. The food industry is the largest in the world and fermentation science is a rapidly emerging area, so the future is promising. Examples of careers include fermentation scientist, food scientist, food technologist, food health inspector, food safety specialist, brewer, biotechnologist, quality control analyst, sensory analyst, food microbiologist, or entrepreneur.

Learn more about the Fermentation Science and Technology major on the Department of Food Science and Human Nutrition website (https://www.chhs.colostate.edu/fshn/programs-and-degrees/b-s-in-fermentation-science-and-technology).

Requirements

Effective Fall 2019

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
FSHN 150	Survey of Human Nutrition		3
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
MATH 125	Numerical Trigonometry (GT-MA1)	1B	1
SOC 100	General Sociology (GT-SS3)	3C	3
Select one group from the following:			4
Group A:			
BZ 110	Principles of Animal Biology (GT-SC2)	3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	3A	
Group B:			
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
Select one group from the following:			5-8
Group A:			
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	
Group B:			
CHEM 111	General Chemistry I (GT-SC2)	3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	
CHEM 113	General Chemistry II		
Foundations and Perspectives		3B, 3D, 3E	6
	Total Credits		28-31

Sophomore

CHEM 245	Fundamentals of Organic Chemistry		4
CHEM 246	Fundamentals of Organic Chemistry Laboratory		1
FTEC 210	Science of Food Fermentation		3
MIP 300	General Microbiology		3
MIP 302	General Microbiology Laboratory		2
PH 121	General Physics I (GT-SC1)	3A	5
SPCM 200	Public Speaking		3
Select one course from the following:			3-4
BUS 150	Business Computing Concepts and Applications		
CS 110	Personal Computing		
Foundations and Perspectives		3B, 3D, 3E	6
	Total Credits		30-31

Junior

BC 351	Principles of Biochemistry		4
FTEC 350	Fermentation Microbiology	4B	2
FTEC 360	Brewing Processes	4A	4
FTEC 447/ANEQ 447	Food Chemistry		2
MIP 334	Food Microbiology		3
RRM 330	Alcohol Beverage Control and Management		2
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
Select one course from the following:			3
STAT 201	General Statistics		
STAT 204	Statistics for Business Students		
Electives (See list below)[1]			5-9
	Total Credits		28-32

Senior

FTEC 400	Food Safety		3
FTEC 422	Brewing Science I		4
FTEC 460	Brewing Science II		4
FTEC 465	Food Production Operations		3
FTEC 492	Seminar: Fermentation Science and Food Safety	4C	2
FTEC 496A	Group Study Fermentation Science: Current Issues		1
FTEC 496B	Group Study Fermentation Science: Functional Foods in Health		1
Electives (See list below)[1]			12
	Total Credits		30
	Program Total Credits:		120

Department Elective Possibilities

Code	Title	AUCC	Credits
FTEC 110	Food-From Farm to Table		3
FTEC 351	Fermentation Microbiology Laboratory		2

FTEC 375	Introduction to Fermentation Unit Operations		4
FTEC 430	Sensory Evaluation of Fermented Products		2
FTEC 440	Packaging Technology		2
FTEC 487	Internship		3
FTEC 495	Independent Study		1-6
MATH 126	Analytic Trigonometry (GT-MA1)	1B	1
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3-4
or MATH 155	Calculus for Biological Scientists I (GT-MA1)		
MGT 305	Fundamentals of Management		3
MGT 430	Leadership and Social Responsibility		3
MIP 335	Food Microbiology Laboratory		2
RRM 400	Food and Society		3

[1] Students may select from Department Elective Possibilities or may select any course as a free elective. Select enough elective credits to bring the program total to 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
FSHN 150	Survey of Human Nutrition	X			3
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	X		1B	1
Select one group from the following:					4
Group A:					
BZ 110	Principles of Animal Biology (GT-SC2)	X		3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	X		3A	
Group B:					
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	
Select one group from the following:					5
Group A:					
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	X		3A	
Group B:					
CHEM 111	General Chemistry I (GT-SC2)	X		3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	
	Total Credits				15

Semester 2		Critical	Recommended	AUCC	Credits
CO 150	College Composition (GT-CO2)	X		1A	3
MATH 125	Numerical Trigonometry (GT-MA1)	X		1B	1
SOC 100	General Sociology (GT-SS3)			3C	3
Select Group B if Group B selected first semester.					0-3
Group B:					
CHEM 113	General Chemistry II	X			
Foundations and Perspectives				3B, 3D, 3E	6
	Total Credits				13-16

Sophomore

Semester 3		Critical	Recommended	AUCC	Credits
CHEM 245	Fundamentals of Organic Chemistry	X			4

CHEM 246	Fundamentals of Organic Chemistry Laboratory	X			1
FTEC 210	Science of Food Fermentation	X			3
Select one course from the following:					3-4
BUS 150	Business Computing Concepts and Applications				
CS 110	Personal Computing				
Foundations and Perspectives				3B, 3D, 3E	3
	Total Credits				14-15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
MIP 300	General Microbiology				3
MIP 302	General Microbiology Laboratory				2
PH 121	General Physics I (GT-SC1)	X		3A	5
SPCM 200	Public Speaking				3
Foundations and Perspectives				3B, 3D, 3E	3
	Total Credits				16
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 351	Principles of Biochemistry	X			4
FTEC 360	Brewing Processes	X		4A	4
FTEC 447/ ANEQ 447	Food Chemistry				2
RRM 330	Alcohol Beverage Control and Management				2
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
FTEC 350	Fermentation Microbiology	X		4B	2
MIP 334	Food Microbiology				3
Select one course from the following:			X		3
STAT 201	General Statistics				
STAT 204	Statistics for Business Students				
Electives					5-9
	Total Credits				13-17
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
FTEC 400	Food Safety				3
FTEC 422	Brewing Science I				4
FTEC 465	Food Production Operations	X			3
FTEC 496A	Group Study Fermentation Science: Current Issues				1
FTEC 496B	Group Study Fermentation Science: Functional Foods in Health				1
Electives		X			3
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
FTEC 460	Brewing Science II	X			4
FTEC 492	Seminar: Fermentation Science and Food Safety	X		4C	2
Electives		X			9

The benchmark courses for the 8th semester are the remaining courses in the entire program of study	X	
Total Credits		15
Program Total Credits:		120

Major in Hospitality Management

The Hospitality Management major combines courses in food service, lodging, event planning, nutrition, and business to provide students with a strong skill set for entry into hospitality management professions. Elective credits allow students to take courses in areas of interest to enhance their education. The curriculum has a strong emphasis on management skills required for success in the hospitality industry.

The Hospitality Management program maintains strong ties with the food service, lodging, and event planning industries locally, statewide, and nationally to connect graduates with a wide variety of employment opportunities in the expanding commercial and non-commercial segments of hospitality management. The hospitality industry is the second largest employer in Colorado and the United States. The department oversees internships in the industry and aids in job placement upon graduation.

Learning Outcomes

Students will demonstrate:

- A conceptual understanding and systems approach to the business of hospitality management.
- The ability to make logical decisions by organizing, analyzing, and interpreting information and formulating rational solutions in a hospitality business environment.
- The knowledge and skills to successfully manage a hospitality operation, including allocating resources such as time, labor, and material inputs to achieve customer satisfaction.
- An understanding of the managerial functions of planning, organizing, directing, staffing, controlling, and budgeting in various hospitality environments.
- The behaviors of effective, ethical leaders by demonstrating the fundamental principles of leadership in a hospitality business environment.

Potential Occupations

Participation in the experiential learning laboratory, The Aspen Grille, is required and internship and practicum opportunities are highly recommended to enhance practical training and development. The hospitality industry encompasses careers in restaurants, hotels, resorts, spas, event venues, catering, breweries and wineries, bed and breakfast inns, ski areas, business and industry dining venues, hospitals, correctional facilities, and military facilities in the United States and around the world.

Examples of career positions include, but are not limited to: restaurant managers, caterers, event planners, wedding planners, banquet managers, hotel sales and marketing, hotel guest operations, hospitality real estate acquisition, hotel managers, food writing and media, brewery hospitality operations, commercial wine and liquor sales, chefs, purchasing agents, conference coordinators, guest service agents, tourist attraction managers, spa operations managers, housekeeping managers, time share sales and marketing, bed & breakfast owner/managers, travel agents, school food service managers, hospitality food and equipment sales representatives, health inspectors, hospital food service managers, food importers, and country club managers.

Learn more about the Hospitality Management major on the Department of Food Science and Human Nutrition website (https://www.chhs.colostate.edu/fshn/programs-and-degrees/b-s-in-hospitality-management).

Requirements

Effective Fall 2018

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
FSHN 150	Survey of Human Nutrition		3
MATH 101	Math in the Social Sciences (GT-MA1)	1B	3
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
NRRT 270	Principles of Natural Resource Tourism		3
RRM 101	Hospitality Industry		3
Select one group from the following:			4
Group A:			
BZ 110	Principles of Animal Biology (GT-SC2)	3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	3A	
Group B:			
BZ 120	Principles of Plant Biology (GT-SC1)	3A	
Select one course from the following:			3
PSY 100	General Psychology (GT-SS3)	3C	

SOC 100	General Sociology (GT-SS3)	3C	
Foundations and Perspectives[1]		3B, 3D, 3E	3
	Total Credits		29
Sophomore			
ACT 205	Fundamentals of Accounting		3
BUS 205	Legal and Ethical Issues in Business		3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
RRM 200	Hotel Operations		3
RRM 310	Food Service Systems-Operations		3
RRM 340	Restaurant Operations		5
SPCM 200	Public Speaking		3
Select one course from the following:			3-4
CHEM 103	Chemistry in Context (GT-SC2)	3A	
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	
Foundations and Perspectives[1]		3B, 3D, 3E	3
Elective			2
	Total Credits		31
Junior			
FSHN 300	Food Principles and Applications		3
FSHN 301	Food Principles and Applications Laboratory	4A	2
MGT 305	Fundamentals of Management		3
MGT 310 or RRM 312	Human Resource Management Hospitality Human Resource Management		3
MKT 305	Fundamentals of Marketing		3
RRM 311	Food Service Systems-Production and Purchasing		3
RRM 330	Alcohol Beverage Control and Management		2
RRM 345	Food, Beverage, and Labor Cost Control		3
Select one course from the following:			3
JTC 300	Professional and Technical Communication (GT-CO3)	2	
LB 300	Specialized Professional Writing	2	
Foundation and Perspectives[1]		3B, 3D, 3E	6
	Total Credits		31
Senior			
FIN 305	Fundamentals of Finance		3
RRM 400	Food and Society	4B	3
RRM 410	Food Safety Management		2
RRM 492	Seminar on Hospitality Management	4C	3
Electives[2]			18
	Total Credits		29
	Program Total Credits:		120

1 Select one course each from the list in category 3D and 3E and two courses from category 3B of the All-University Core Curriculum (AUCC). A total of 12 credits must be selected.

2 Select enough elective credits to bring the program total to 120, of which a minimum of 42 credits must be upper-division (300- to 400-level). At least 3 elective credits must be upper-division.

Major Completion Map

Distinctive Requirements for Degree Program:

Students should maintain 2.500 GPA by the end of Sophomore year. Hospitality Management students may also take RRM 487 Hospitality Internship, or RRM 386 Work Practicum which requires attendance at an internship meeting by end of Sophomore year.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)	X		1A	3
FSHN 150	Survey of Human Nutrition	X			3
MATH 101	Math in the Social Sciences (GT-MA1)			1B	3
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
NRRT 270	Principles of Natural Resource Tourism				3
RRM 101	Hospitality Industry	X			3
	Total Credits				16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
Select one group from the following:					4
Group A:					
BZ 110	Principles of Animal Biology (GT-SC2)	X		3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	X		3A	
Group B:					
BZ 120	Principles of Plant Biology (GT-SC1)	X		3A	
Select one course from the following:					3
PSY 100	General Psychology (GT-SS3)			3C	
SOC 100	General Sociology (GT-SS3)			3C	
Foundations and Perspectives				3B, 3D, 3E	3
	Total Credits				13

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 205	Legal and Ethical Issues in Business				3
ECON 204	Principles of Macroeconomics (GT-SS1)	X		3C	3
RRM 200	Hotel Operations		X		3
SPCM 200	Public Speaking				3
Select one course from the following:					3-4
CHEM 103	Chemistry in Context (GT-SC2)			3A	
CHEM 107	Fundamentals of Chemistry (GT-SC2)			3A	
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 205	Fundamentals of Accounting	X			3
RRM 310	Food Service Systems-Operations	X			3
RRM 340	Restaurant Operations				5
Foundations and Perspectives				3B, 3D, 3E	3
Elective					2
	Total Credits				16

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
FSHN 300	Food Principles and Applications		X		3
FSHN 301	Food Principles and Applications Laboratory		X	4A	2
RRM 311	Food Service Systems-Production and Purchasing				3
RRM 330	Alcohol Beverage Control and Management	X			2
RRM 345	Food, Beverage, and Labor Cost Control				3
Foundations and Perspectives				3B, 3D, 3E	3
	Total Credits				16

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
MGT 305	Fundamentals of Management	X			3
MKT 305	Fundamentals of Marketing	X			3
Select one course from the following:		X			3
JTC 300	Professional and Technical Communication (GT-CO3)			2	
LB 300	Specialized Professional Writing			2	
Select one course from the following:					3
MGT 310	Human Resource Management		X		
RRM 312	Hospitality Human Resource Management		X		
Foundations and Perspectives		X		3B, 3D, 3E	3
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
RRM 400	Food and Society	X		4B	3
RRM 410	Food Safety Management				2
Electives					9
	Total Credits				14
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
FIN 305	Fundamentals of Finance	X			3
RRM 492	Seminar on Hospitality Management	X		4C	3
Electives		X			9
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Nutrition and Food Science

Public interest regarding the importance of nutrition to health and fitness is at a high level and increasing. The Major in Nutrition and Food Science involves integration of the biological, medical, and social sciences and their application to the improvement of human nutrition and fitness, prevention of chronic disease, and improved quality of life. The major is both science- and human service-oriented.

Nutrition and Food Science graduates gain a scientific understanding of the principles of human nutrition, the role of nutrition in the prevention and management of disease, delivery of nutritional care, and the principles of nutrition assessment and food preparation. Additionally, graduates know the techniques of interviewing, counseling, information management, and effective communication.

Four concentrations are currently available in this major: Dietetics and Nutrition Management, Nutrition and Fitness, Nutritional Sciences (Pre-Health), and Food Safety and Nutrition.

Learning Outcomes

Students will demonstrate:

- Ability to identify nutrition-related public health problems, integrate information from basic nutrition sciences, critically analyze data, and develop appropriate conclusions
- Discipline-specific knowledge, skills, and competencies needed in the field of dietetics and nutrition. Examples include knowledge of medical nutrition therapy; nutrition and metabolism; program planning, monitoring, and evaluation; management in school nutrition programs and long-term care; food safety; and the role of food in the promotion of health
- Competent application of nutrition knowledge and skills in a work environment, including an ability to calculate and/or define diets for various health/disease conditions, screen individuals for nutritional risk, determine nutrient requirements across the lifespan, and calculate enteral and parental nutrition formulations; determine costs of services/ operations, interpret financial data, and prepare a budget

(See the department's website for the Dietetics and Nutrition Management concentration (https://www.chhs.colostate.edu/fshn/programs-and-degrees/b-s-in-nutrition-and-food-science/dietetics-and-nutrition-management-concentration) for specific learning outcomes for the ACEND Accredited Dietetics Program).

Potential Occupations

Participation in community outreach, internships, volunteer activities, or cooperative education opportunities is highly recommended to enhance career planning, skills, and development. Graduates who go on for advanced studies can attain more responsible leadership positions with the possibility of rising to top professional levels.

Some examples of career opportunities include, but are not limited to: dietitian or nutritionist in health care, hospitals, long-term care, schools, state or county health agencies, health clubs, corporate wellness programs, grocery stores/food chains, or private practice; community nutritionist; biomedical scientist; restaurant manager; caterer; quality assurance specialist; food scientist; food inspector; food technologist, food plant manager; food service manager in hospitals, schools, or long-

term care. As of February 2019, the median salary for registered dietitians is $60,999, and the salary range is $55,525-$67,029.

Students interested in *teaching* nutrition and/or food science content at the secondary education level should explore the interdepartmental concentration in Family and Consumer Sciences Education at the beginning of this college section. The Family and Consumer Sciences Education concentration allows students to combine their interests in nutrition, wellness/health, food science, culinary arts, and/or catering with teaching. Family and Consumer Sciences Education students take course work in the Departments of Food Science and Human Nutrition, Design and Merchandising, and Human Development and Family Studies. They also complete an education sequence which qualifies them for a secondary teaching license. The demand for secondary Family and Consumer Sciences teachers exceeds the supply in Colorado as well as nationally. Therefore, job placement is extremely high, with starting salaries in the $34,000-$37,000 range for a nine-month teaching position.

Students may choose from among four concentrations under the Nutrition and Food Science major.

Concentrations and Options

- Dietetics and Nutrition Management Concentration
  - Accredited Didactic Program Option
  - Childhood Nutrition Option
  - Gerontology Nutrition Option
- Food Safety and Nutrition Concentration
- Nutrition and Fitness Concentration
- Nutritional Sciences Concentration

Learn more about the Nutrition and Food Science major on the Department of Food Science and Human Nutrition website (https://www.chhs.colostate.edu/fshn/programs-and-degrees/b-s-in-nutrition-and-food-science).

Major in Nutrition and Food Science, Dietetics and Nutrition Management Concentration

The Dietetics and Nutrition Management concentration provides a broad background in clinical nutrition, health promotion, and food service management. The science-based curriculum includes nutritional assessment, application of food theory, and course work focusing on nutritional counseling and medical nutrition therapy. The concentration is designed to prepare students for a dietetic internship and a professional career in medical nutrition therapy or community-based nutrition programs. The Accredited Didactic Program option of the Dietetics and Nutrition Management concentration is accredited by the Accreditation Council for Education in Nutrition and Dietetics (ACEND) of the Academy of Nutrition and Dietetics (AND). This concentration is open to all students interested in becoming registered dietitians. However, students must qualify to continue in the Accredited Didactic Program option by meeting the prerequisites for the Dietetic Practice Seminar (FSHN 392) in their junior year. These prerequisites are an overall GPA of 3.000 and grades of "B" or better in FSHN 150, FSHN 300/ FSHN 301, and basic sciences (CHEM 107/CHEM 108, or CHEM 111, CHEM 112, CHEM 113; CHEM 245, CHEM 246; LIFE 102 or BZ 110, BZ 111; BMS 300, BMS 302; FSHN 150; FSHN 300, FSHN 301). Students who do not meet these requirements are encouraged to exercise their repeat/delete options in those courses which are lower than a "B" grade if they wish to be considered for the Accredited Didactic Program option. The Childhood Nutrition option prepares students for supervisory positions in the school nutrition program. The Gerontology Nutrition option prepares students for supervisory positions in food service management for long-term care and rehabilitation, or for working with community programs providing nutrition services to older individuals.

Options

- Accredited Didactic Program Option
- Childhood Nutrition Option
- Gerontology Nutrition Option

Learn more about the Dietetics and Nutrition Management concentration on the Department of Food Science and Human Nutrition website (https://www.chhs.colostate.edu/fshn/programs-and-degrees/b-s-in-nutrition-and-food-science/dietetics-and-nutrition-management-concentration).

Major in Nutrition and Food Science, Dietetics and Nutrition Management Concentration, Accredited Didactic Program Option

Requirements

Effective Fall 2015

Admission to the Accredited Didactic Program requires a minimum 3.0 GPA and grades of B or better in LIFE 102, CHEM 107 and CHEM 108, or CHEM 111, CHEM 112, and CHEM 113; CHEM 245, CHEM 246, BMS 300, BMS 302, FSHN 150, FSHN 300, and FSHN 301.[1]

Freshman

		AUCC	Credits
Select one group from the following:			4
Group A:			
BZ 110	Principles of Animal Biology (GT-SC2)	3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	3A	
Group B:			
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
Select one group from the following:			5-8

Group A:			
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	
Group B:			
CHEM 111	General Chemistry I (GT-SC2)	3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	
CHEM 113	General Chemistry II		
CO 150	College Composition (GT-CO2)	1A	3
BUS 150 or CS 110	Business Computing Concepts and Applications Personal Computing		3-4
FSHN 150	Survey of Human Nutrition		3
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
PSY 100	General Psychology (GT-SS3)	3C	3
SOC 100	General Sociology (GT-SS3)	3C	3
Foundations and Perspectives[2]		3B, 3D, 3E	3
	Total Credits		30-34

Sophomore

BMS 300	Principles of Human Physiology		4
BMS 302	Laboratory in Principles of Physiology		2
CHEM 245	Fundamentals of Organic Chemistry		4
CHEM 246	Fundamentals of Organic Chemistry Laboratory		1
FSHN 300	Food Principles and Applications		3
FSHN 301	Food Principles and Applications Laboratory		2
OT 215	Medical Terminology		1
SPCM 200	Public Speaking		3
Foundations and Perspectives[2]		3B, 3D, 3E	9
Electives			3
	Total Credits		32

Junior

BC 351	Principles of Biochemistry		4
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
FSHN 350	Human Nutrition	4C	3
FSHN 360	Nutrition Assessment		2
FSHN 386A	Practicum: Food Service Management		2
FSHN 392	Dietetic Practice Seminar		1
LIFE 205	Microbial Biology		3
LIFE 206	Microbial Biology Laboratory		2
MGT 305	Fundamentals of Management		3
RRM 310	Food Service Systems-Operations		3
RRM 311	Food Service Systems-Production and Purchasing		3
STAT 201 or 204	General Statistics Statistics for Business Students		3
	Total Credits		32

Senior

FSHN 428	Nutrition Teaching and Counseling Techniques		3
FSHN 450	Medical Nutrition Therapy	4B	5
FSHN 451	Community Nutrition	4A	3
FSHN 455	Food Systems: Impact on Health/Food Security		2
FSHN 459	Nutrition in the Life Cycle		3
FSHN 470	Integrative Nutrition and Metabolism		3
FSHN 492	Seminar in Dietetics and Nutrition	4C	2
Electives[3]			1-5
	Total Credits		22-26
	Program Total Credits:		120

1 This program is accredited by ACEND and prepares students to be eligible to apply for dietetic internships. Application to the program is made in the summer preceding the last four semesters of the program.

2 Select one course each from the lists in categories 3D and 3E, and two courses from category 3B of the All-University Core Curriculum (AUCC), for a total of 12 credits.

3 Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
Admission to the Accredited Didactic Program requires a minimum 3.000 GPA and grades of B or better in LIFE 102, CHEM 107 and CHEM 108, or CHEM 111, CHEM 112, and CHEM 113; CHEM 245, CHEM 246, BMS 300, BMS 302, FSHN 150, FSHN 300, and FSHN 301. Students must also have 2.800 cumulative GPA by 60 credits to remain in Dietetics.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3-4
BUS 150	Business Computing Concepts and Applications				
CS 110	Personal Computing				
Select one group from the following:					4
Group A:					
BZ 110	Principles of Animal Biology (GT-SC2)	X		3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	X		3A	
Group B:					
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	
FSHN 150	Survey of Human Nutrition				3
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	X		1B	1
PSY 100	General Psychology (GT-SS3)			3C	3
If taking CHEM 111, CHEM 112, CHEM 113 sequence					5
CHEM 111	General Chemistry I (GT-SC2)	X		3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	
	Total Credits				16

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)	X		1A	3
Select one group from the following:					3-5
Group A:					
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	X		3A	
Group B:					

CHEM 113	General Chemistry II	X			
SOC 100	General Sociology (GT-SS3)			3C	3
Foundations and Perspectives				3B, 3D, 3E	3
	Total Credits				14
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 245	Fundamentals of Organic Chemistry	X			4
CHEM 246	Fundamentals of Organic Chemistry Laboratory	X			1
FSHN 300	Food Principles and Applications				3
FSHN 301	Food Principles and Applications Laboratory				2
OT 215	Medical Terminology				1
Foundations and Perspectives				3B, 3D, 3E	6
	Total Credits				17
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
BMS 300	Principles of Human Physiology	X			4
BMS 302	Laboratory in Principles of Physiology	X			2
SPCM 200	Public Speaking				3
Foundations and Perspectives				3B, 3D, 3E	3
Elective					3
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 351	Principles of Biochemistry				4
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
FSHN 350	Human Nutrition	X		4C	3
FSHN 386A	Practicum: Food Service Management				2
FSHN 392	Dietetic Practice Seminar	X			1
RRM 310	Food Service Systems-Operations	X			3
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
FSHN 360	Nutrition Assessment	X			2
LIFE 205	Microbial Biology		X		3
LIFE 206	Microbial Biology Laboratory		X		2
MGT 305	Fundamentals of Management				3
RRM 311	Food Service Systems-Production and Purchasing				3
Select one course from the following:					3
STAT 201	General Statistics				
STAT 204	Statistics for Business Students				
BC 351 must be completed by the end of Semester 6.		X			
	Total Credits				16
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
FSHN 450	Medical Nutrition Therapy	X		4B	5
FSHN 451	Community Nutrition	X		4A	3
FSHN 455	Food Systems: Impact on Health/Food Security	X			2
FSHN 459	Nutrition in the Life Cycle	X			3
Elective					2
	Total Credits				15

Semester 8		Critical	Recommended	AUCC	Credits
FSHN 428	Nutrition Teaching and Counseling Techniques	X			3
FSHN 470	Integrative Nutrition and Metabolism	X			3
FSHN 492	Seminar in Dietetics and Nutrition	X		4C	2
Elective		X			3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				11
	Program Total Credits:				120

Major in Nutrition and Food Science, Dietetics and Nutrition Management Concentration, Childhood Nutrition Option

Requirements

Effective Fall 2014

Freshman

		AUCC	Credits
Select one group from the following:			4
Group A:			
BZ 110	Principles of Animal Biology (GT-SC2)	3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	3A	
Group B:			
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
Select one group from the following:			5-8
Group A:			
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	
Group B:			
CHEM 111	General Chemistry I (GT-SC2)	3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	
CHEM 113	General Chemistry II		
CO 150	College Composition (GT-CO2)	1A	3
BUS 150 or CS 110	Business Computing Concepts and Applications Personal Computing		3-4
FSHN 150	Survey of Human Nutrition		3
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
PSY 100	General Psychology (GT-SS3)	3C	3
SOC 100	General Sociology (GT-SS3)	3C	3
Foundations and Perspectives[1]		3B, 3D, 3E	3
	Total Credits		30-34

Sophomore

BMS 300	Principles of Human Physiology		4
BMS 302	Laboratory in Principles of Physiology		2
CHEM 245	Fundamentals of Organic Chemistry		4

CHEM 246	Fundamentals of Organic Chemistry Laboratory		1
FSHN 300	Food Principles and Applications		3
FSHN 301	Food Principles and Applications Laboratory		2
OT 215	Medical Terminology		1
SPCM 200	Public Speaking		3
STAT 201 or 204	General Statistics Statistics for Business Students		3
Foundations and Perspectives[1]		3B, 3D, 3E	9
	Total Credits		32

Junior

BC 351	Principles of Biochemistry		4
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
FSHN 350	Human Nutrition	4C	3
FSHN 360	Nutrition Assessment		2
HDFS 310	Infant and Child Development in Context		3
LIFE 205	Microbial Biology		3
LIFE 206	Microbial Biology Laboratory		2
MGT 305	Fundamentals of Management		3
RRM 310	Food Service Systems-Operations		3
RRM 311	Food Service Systems-Production and Purchasing		3
	Total Credits		29

Senior

FSHN 386C	Practicum: School Nutrition		3
FSHN 428	Nutrition Teaching and Counseling Techniques		3
FSHN 450	Medical Nutrition Therapy	4B	5
FSHN 451	Community Nutrition	4A	3
FSHN 459	Nutrition in the Life Cycle		3
FSHN 470	Integrative Nutrition and Metabolism		3
FSHN 492	Seminar in Dietetics and Nutrition	4C	2
HDFS 311	Adolescent/Early Adult Development in Context		3
Electives[2]			0-4
	Total Credits		25-29
	Program Total Credits:		120

1 Select one course each from the lists of courses in categories 3D and 3E, and two courses from category 3B of the All-University Core Curriculum (AUCC), for a total of 12 credits. Only 3 of the 6 credits required for Arts and Humanities may come from intermediate (L*** 200 and L*** 201) foreign language courses.

2 Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3-4
BUS 150	Business Computing Concepts and Applications				
CS 110	Personal Computing				

Select one group from the following:					4
Group A:					
BZ 110	Principles of Animal Biology (GT-SC2)	X		3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	X		3A	
Group B:					
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	
FSHN 150	Survey of Human Nutrition	X			3
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	X		1B	1
PSY 100	General Psychology (GT-SS3)			3C	3
If taking CHEM 111, CHEM 112, CHEM 113 sequence					5
CHEM 111	General Chemistry I (GT-SC2)	X		3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	
	Total Credits				16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)	X		1A	3
Select one group from the following:					3-5
Group A:					
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	X		3A	
Group B:					
CHEM 113	General Chemistry II	X			
SOC 100	General Sociology (GT-SS3)			3C	3
Foundations and Perspectives				3B, 3D, 3E	3
	Total Credits				14
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 245	Fundamentals of Organic Chemistry	X			4
CHEM 246	Fundamentals of Organic Chemistry Laboratory	X			1
FSHN 300	Food Principles and Applications		X		3
FSHN 301	Food Principles and Applications Laboratory		X		2
OT 215	Medical Terminology				1
Foundations and Perspectives				3B, 3D, 3E	6
	Total Credits				17
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
BMS 300	Principles of Human Physiology	X			4
BMS 302	Laboratory in Principles of Physiology	X			2
SPCM 200	Public Speaking				3
Select one course from the following:					3
STAT 201	General Statistics				
STAT 204	Statistics for Business Students				
Foundations and Perspectives				3B, 3D, 3E	3
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 351	Principles of Biochemistry		X		4
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	

FSHN 350	Human Nutrition	X		4C	3
RRM 310	Food Service Systems-Operations	X			3
PSY 100 must be completed by the end of Semester 5.		X			
	Total Credits				13
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
FSHN 360	Nutrition Assessment	X			2
HDFS 310	Infant and Child Development in Context				3
LIFE 205	Microbial Biology		X		3
LIFE 206	Microbial Biology Laboratory		X		2
MGT 305	Fundamentals of Management				3
RRM 311	Food Service Systems-Production and Purchasing				3
	Total Credits				16
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
FSHN 450	Medical Nutrition Therapy	X		4B	5
FSHN 451	Community Nutrition	X		4A	3
FSHN 459	Nutrition in the Life Cycle	X			3
HDFS 311	Adolescent/Early Adult Development in Context				3
BC 351 must be completed by the end of Semester 7.		X			
	Total Credits				14
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
FSHN 386C	Practicum: School Nutrition	X			3
FSHN 428	Nutrition Teaching and Counseling Techniques	X			3
FSHN 470	Integrative Nutrition and Metabolism	X			3
FSHN 492	Seminar in Dietetics and Nutrition	X		4C	2
Electives		X			4
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Nutrition and Food Science, Dietetics and Nutrition Management Concentration, Gerontology Nutrition Option

Requirements

Effective Fall 2019

Freshman

		AUCC	**Credits**
CO 150	College Composition (GT-CO2)	1A	3
FSHN 150	Survey of Human Nutrition		3
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
PSY 100	General Psychology (GT-SS3)	3C	3
SOC 100	General Sociology (GT-SS3)	3C	3
Select one course from the following:			3-4
BUS 150	Business Computing Concepts and Applications		

CS 110	Personal Computing		
Select one group from the following:			4
Group A:			
BZ 110	Principles of Animal Biology (GT-SC2)	3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	3A	
Group B:			
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
Select one group from the following:			5-8
Group A:			
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	
Group B:			
CHEM 111	General Chemistry I (GT-SC2)	3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	
CHEM 113	General Chemistry II		
Foundations and Perspectives		3B, 3D, 3E	3
	Total Credits		30-34

Sophomore

BMS 300	Principles of Human Physiology		4
BMS 302	Laboratory in Principles of Physiology		2
CHEM 245	Fundamentals of Organic Chemistry		4
CHEM 246	Fundamentals of Organic Chemistry Laboratory		1
FSHN 300	Food Principles and Applications		3
FSHN 301	Food Principles and Applications Laboratory		2
OT 215	Medical Terminology		1
SPCM 200	Public Speaking		3
Select one course from the following:			3
STAT 201	General Statistics		
STAT 204	Statistics for Business Students		
Foundations and Perspectives		3B, 3D, 3E	9
	Total Credits		32

Junior

BC 351	Principles of Biochemistry		4
FSHN 350	Human Nutrition	4C	3
FSHN 360	Nutrition Assessment		2
HDFS 201	Perspectives in Gerontology		3
LIFE 205	Microbial Biology		3
LIFE 206	Microbial Biology Laboratory		2
MGT 305	Fundamentals of Management		3
RRM 310	Food Service Systems-Operations		3
RRM 311	Food Service Systems-Production and Purchasing		3
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
	Total Credits		29

Senior

FSHN 386B	Practicum: Gerontology		3

FSHN 428	Nutrition Teaching and Counseling Techniques		3
FSHN 450	Medical Nutrition Therapy	4B	5
FSHN 451	Community Nutrition	4A	3
FSHN 459	Nutrition in the Life Cycle		3
FSHN 470	Integrative Nutrition and Metabolism		3
FSHN 492	Seminar in Dietetics and Nutrition	4C	2
HDFS 312	Adult Development-Middle Age and Aging		3
HES 434	Physical Activity Throughout the Lifespan		3
Elective[1]			1
	Total Credits		29
	Program Total Credits:		120

[1] Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Students may complete this major/option at 120 credits by selecting CHEM 107, CHEM 108, and BUS 150 in the freshman year. Students wishing to complete the Gerontology Interdisciplinary Minor should consult with advisors about course selection. Completion of the major/option and the minor will exceed the 120 credit total.

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
FSHN 150	Survey of Human Nutrition	X			3
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	X		1B	1
PSY 100	General Psychology (GT-SS3)			3C	3
Select one course from the following:					3-4
BUS 150	Business Computing Concepts and Applications				
CS 110	Personal Computing				
Select one group from the following:					4
Group A:					
BZ 110	Principles of Animal Biology (GT-SC2)	X		3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	X		3A	
Group B:					
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	
If taking CHEM 111, CHEM 112, CHEM 113 sequence					5
CHEM 111	General Chemistry I (GT-SC2)	X		3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	
	Total Credits				16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)	X		1A	3
SOC 100	General Sociology (GT-SS3)			3C	3
Select one group from the following:					3-5
Group A:					
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	X		3A	
Group B:					
CHEM 113	General Chemistry II	X			
Foundations and Perspectives				3B, 3D, 3E	3
	Total Credits				14

Sophomore

Semester 3		Critical	Recommended	AUCC	Credits
CHEM 245	Fundamentals of Organic Chemistry	X			4
CHEM 246	Fundamentals of Organic Chemistry Laboratory	X			1
FSHN 300	Food Principles and Applications		X		3
FSHN 301	Food Principles and Applications Laboratory		X		2
OT 215	Medical Terminology				1
Foundations and Perspectives				3B, 3D, 3E	6
	Total Credits				17

Semester 4		Critical	Recommended	AUCC	Credits
BMS 300	Principles of Human Physiology	X			4
BMS 302	Laboratory in Principles of Physiology	X			2
SPCM 200	Public Speaking				3
Select one course from the following:					3
STAT 201	General Statistics				
STAT 204	Statistics for Business Students				
Foundations and Perspectives				3B, 3D, 3E	3
	Total Credits				15

Junior

Semester 5		Critical	Recommended	AUCC	Credits
BC 351	Principles of Biochemistry		X		4
FSHN 350	Human Nutrition	X		4C	3
RRM 310	Food Service Systems-Operations	X			3
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
PSY 100 must be completed by the end of Semester 5.		X			
	Total Credits				13

Semester 6		Critical	Recommended	AUCC	Credits
HDFS 201	Perspectives in Gerontology				3
FSHN 360	Nutrition Assessment	X			2
LIFE 205	Microbial Biology		X		3
LIFE 206	Microbial Biology Laboratory		X		2
MGT 305	Fundamentals of Management				3
RRM 311	Food Service Systems-Production and Purchasing				3
	Total Credits				16

Senior

Semester 7		Critical	Recommended	AUCC	Credits
FSHN 450	Medical Nutrition Therapy	X		4B	5
FSHN 451	Community Nutrition	X		4A	3
FSHN 459	Nutrition in the Life Cycle	X			3
HES 434	Physical Activity Throughout the Lifespan	X			3
BC 351 must be completed by the end of Semester 7.		X			
	Total Credits				14

Semester 8		Critical	Recommended	AUCC	Credits
FSHN 386B	Practicum: Gerontology	X			3
FSHN 428	Nutrition Teaching and Counseling Techniques	X			3
FSHN 470	Integrative Nutrition and Metabolism	X			3
FSHN 492	Seminar in Dietetics and Nutrition	X		4C	2
HDFS 312	Adult Development-Middle Age and Aging	X			3

Elective	X	1
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X	
Total Credits		15
Program Total Credits:		120

Major in Nutrition and Food Science, Food Safety and Nutrition Concentration

The Food Safety and Nutrition concentration (https://www.chhs.colostate.edu/fshn/programs-and-degrees/b-s-in-nutrition-and-food-science/food-safety-and-nutrition-concentration) blends a strong science base with courses in food science, food safety, food microbiology, and nutrition. The curriculum prepares students for employment in the food industry or in government in such areas as quality assurance, product development, research, food inspection, sensory evaluation, and consumer education. The concentration also provides an excellent background for a graduate program. Students in the concentration are encouraged to participate in the Food Science/Safety Interdisciplinary Minor to further their understanding of the continuum of responsibility shared through the food system in ensuring that food is safe and healthful. By addition of several elective courses, students can also meet the Accreditation Council for Education in Nutrition and Dietetics (ACEND) (https://www.eatrightpro.org/acend) course requirements.

Learn more about the Food Safety and Nutrition concentration on the Department of Food Science and Human Nutrition website (https://www.chhs.colostate.edu/fshn/programs-and-degrees/b-s-in-nutrition-and-food-science/food-safety-and-nutrition-concentration).

Requirements

Effective Fall 2019

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
FSHN 125 or 150	Food and Nutrition in Health Survey of Human Nutrition		2-3
FTEC 110	Food-From Farm to Table		3
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
SOC 100	General Sociology (GT-SS3)	3C	3
Select one group from the following:			4
Group A:			
BZ 110	Principles of Animal Biology (GT-SC2)	3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	3A	
Group B:			
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
Select one group from the following:			5-8
Group A:			
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	
Group B:			
CHEM 111	General Chemistry I (GT-SC2)	3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	
CHEM 113	General Chemistry II		
Foundations and Perspectives[1]		3B, 3D, 3E	6
	Total Credits		29-33

Sophomore

BMS 300	Principles of Human Physiology	4
CHEM 245	Fundamentals of Organic Chemistry	4
CHEM 246	Fundamentals of Organic Chemistry Laboratory	1
FSHN 300	Food Principles and Applications	3

FSHN 301	Food Principles and Applications Laboratory		2
SPCM 200	Public Speaking		3
Select one course from the following:			3-4
BUS 150	Business Computing Concepts and Applications		
CS 110	Personal Computing		
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
Foundations and Perspectives[1]		3B, 3D, 3E	6
	Total Credits		29-30

Junior

FSHN 350	Human Nutrition		3
FTEC 447/ANEQ 447	Food Chemistry	4B	2
LIFE 205	Microbial Biology		3
LIFE 206	Microbial Biology Laboratory		2
Upper-Division FSHN/RRM courses			9
Advanced Courses (see list below)			8
Electives			3
	Total Credits		30

Senior

FTEC 400	Food Safety		3
FTEC 430	Sensory Evaluation of Fermented Products	4A	2
FTEC 460	Brewing Science II		4
FTEC 492	Seminar: Fermentation Science and Food Safety	4C	2
MIP 334	Food Microbiology		3
MIP 335	Food Microbiology Laboratory		2
Select one course from the following:			3
STAT 201	General Statistics		
STAT 204	Statistics for Business Students		
Upper-Division FSHN/RRM courses			3
Advanced Courses (see list below)			4
Electives[2]			1-6
	Total Credits		27-32
	Program Total Credits:		120

Advanced Courses

Code	Title	Credits
Select a minimum of 12 credits from the following:		
ACT 205	Fundamentals of Accounting	3
ANEQ 360	Principles of Meat Science	3
ANEQ 460	Meat Safety	2
BC 351	Principles of Biochemistry	4
BTEC 306/BIOM 306	Bioprocess Engineering	4
ERHS 220	Environmental Health	3
ERHS 332	Principles of Epidemiology	3
MATH 125	Numerical Trigonometry (GT-MA1)	1
MATH 126	Analytic Trigonometry (GT-MA1)	1
MATH 141	Calculus in Management Sciences (GT-MA1)	3

or MATH 155	Calculus for Biological Scientists I (GT-MA1)	
MGT 305	Fundamentals of Management	3
PH 121	General Physics I (GT-SC1)	5
RRM 330	Alcohol Beverage Control and Management	2
RRM 400	Food and Society	3
SOCR 330	Principles of Genetics	3
SOCR 430	Applications of Plant Biotechnology	3

1 Select one course each from the list in category 3D, and 3E and two courses from category 3B of the All-University Core Curriculum (AUCC).

2 Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	X		1B	1
Select one group from the following:					4
Group A:					
BZ 110	Principles of Animal Biology (GT-SC2)	X		3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	X		3A	
Group B:					
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	
Select one course from the following:					2-3
FSHN 125	Food and Nutrition in Health	X			
FSHN 150	Survey of Human Nutrition	X			
If taking CHEM 111, CHEM 112, CHEM 113 sequence					5
CHEM 111	General Chemistry I (GT-SC2)	X		3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	
Foundations and Perspectives				3B, 3D,3E	3
	Total Credits				12-18

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)	X		1A	3
FTEC 110	Food-From Farm to Table				3
SOC 100	General Sociology (GT-SS3)			3C	3
Select one group from the following:					3-5
Group A:					
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	X		3A	
Group B:					
CHEM 113	General Chemistry II	X			
Foundations and Perspectives[1]				3B, 3D, 3E	3
	Total Credits				15-17

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 245	Fundamentals of Organic Chemistry	X			4
CHEM 246	Fundamentals of Organic Chemistry Laboratory	X			1
FSHN 300	Food Principles and Applications	X			3
FSHN 301	Food Principles and Applications Laboratory	X			2
Select one course from the following:					3-4

BUS 150	Business Computing Concepts and Applications				
CS 110	Personal Computing				
Foundations and Perspectives				3B, 3D, 3E	3
	Total Credits				16-17
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
BMS 300	Principles of Human Physiology	X			4
SPCM 200	Public Speaking				3
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
Foundations and Perspectives				3B, 3D, 3E	3
	Total Credits				13
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
FSHN 350	Human Nutrition	X			3
Upper-Division FSHN/RRM courses		X			9
Advanced Courses (See List on Concentration Requirements Tab)					4
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
FTEC 447/ ANEQ 447	Food Chemistry	X		4B	2
LIFE 205	Microbial Biology	X			3
LIFE 206	Microbial Biology Laboratory	X			2
Advanced Courses (See List on Concentration Requirements Tab)					4
Elective					3
	Total Credits				14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
FTEC 400	Food Safety	X			3
FTEC 460 (Must be 21 yrs old)	Brewing Science II				4
MIP 334	Food Microbiology				3
MIP 335	Food Microbiology Laboratory				2
Advanced Courses (See List on Concentration Requirements Tab)					4
	Total Credits				16
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
FTEC 430	Sensory Evaluation of Fermented Products	X		4A	2
FTEC 492	Seminar: Fermentation Science and Food Safety	X		4C	2
Select one course from the following:					3
STAT 201	General Statistics	X			
STAT 204	Statistics for Business Students	X			
Upper-Division FSHN/RRM Course		X			3
Electives		X			1-6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12-16
	Program Total Credits:				120

Major in Nutrition and Food Science, Nutrition and Fitness Concentration

The Nutrition and Fitness concentration prepares students for employment as nutrition and fitness counselors and personal lifestyle coaches in health care settings, commercial establishments, public health settings, or private practice. The curriculum blends a strong science base with course work in exercise science, nutrition, teaching, and counseling. The concentration also provides an excellent background for a graduate program. By the addition of several elective courses, students can meet the Accreditation Council for Education in Nutrition and Dietetics (ACEND) (https://www.eatrightpro.org/acend) didactic course requirements if they meet requirements for FSHN 392.

Learn more about the Nutrition and Fitness concentration on the Department of Food Science and Human Nutrition website (https://www.chhs.colostate.edu/fshn/programs-and-degrees/b-s-in-nutrition-and-food-science/nutrition-and-fitness-concentration).

Requirements

Effective Summer 2017

Freshman

		AUCC	Credits
Select one group from the following:			4
Group A:			
BZ 110	Principles of Animal Biology (GT-SC2)	3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	3A	
Group B:			
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
Select one group from the following:			5-8
Group A:			
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	
Group B:			
CHEM 111	General Chemistry I (GT-SC2)	3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	
CHEM 113	General Chemistry II		
CO 150	College Composition (GT-CO2)	1A	3
BUS 150 or CS 110	Business Computing Concepts and Applications Personal Computing		3-4
FSHN 150	Survey of Human Nutrition		3
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 125	Numerical Trigonometry (GT-MA1)	1B	1
PSY 100	General Psychology (GT-SS3)	3C	3
SOC 100	General Sociology (GT-SS3)	3C	3
Foundations and Perspectives[1]		3B, 3D, 3E	3
	Total Credits		30

Sophomore

BMS 300	Principles of Human Physiology		4
BMS 302	Laboratory in Principles of Physiology		2
CHEM 245	Fundamentals of Organic Chemistry		4
CHEM 246	Fundamentals of Organic Chemistry Laboratory		1
FSHN 300	Food Principles and Applications		3
FSHN 301	Food Principles and Applications Laboratory		2
HES 145	Health and Wellness		3
OT 215	Medical Terminology		1
SPCM 200	Public Speaking		3
Foundations and Perspectives[1]		3B, 3D, 3E	9
	Total Credits		32

Junior

BC 351	Principles of Biochemistry		4
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
FSHN 350	Human Nutrition		3
HES 207	Anatomical Kinesiology		3
HES 232	Techniques of Teaching Group Exercise		1
HES 403	Physiology of Exercise		4
LIFE 205	Microbial Biology		3
LIFE 206	Microbial Biology Laboratory		2
STAT 201 or 204	General Statistics Statistics for Business Students		3
Elective			3
	Total Credits		29

Senior

FSHN 360	Nutrition Assessment		2
FSHN 428	Nutrition Teaching and Counseling Techniques		3
FSHN 450	Medical Nutrition Therapy	4B	5
FSHN 451	Community Nutrition	4A	3
FSHN 459	Nutrition in the Life Cycle		3
FSHN 470	Integrative Nutrition and Metabolism		3
FSHN 492	Seminar in Dietetics and Nutrition	4C	2
HES 340	Exercise Prescription		3
HES 434	Physical Activity Throughout the Lifespan		3
Electives[2]			2
	Total Credits		29
	Program Total Credits:		120

1 Select one course each from the list in category 3D and 3E and two courses from category 3B of the All-University Core Curriculum (AUCC).

2 Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3-4
BUS 150	Business Computing Concepts and Applications				
CS 110	Personal Computing				
Select one group from the following:					4
Group A:					
BZ 110	Principles of Animal Biology (GT-SC2)	X		3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	X		3A	
Group B:					
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	
FSHN 150	Survey of Human Nutrition	X			3
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1

MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 125	Numerical Trigonometry (GT-MA1)			1B	1
PSY 100	General Psychology (GT-SS3)			3C	3
If taking CHEM 111, CHEM 112, CHEM 113 sequence					5
CHEM 111	General Chemistry I (GT-SC2)	X		3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	
	Total Credits				16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)	X		1A	3
Select one group from the following:					3-5
Group A:					
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	X		3A	
Group B:					
CHEM 113	General Chemistry II	X			
SOC 100	General Sociology (GT-SS3)			3C	3
Foundations and Perspectives				3B, 3D, 3E	3
	Total Credits				14
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 245	Fundamentals of Organic Chemistry	X			4
CHEM 246	Fundamentals of Organic Chemistry Laboratory	X			1
FSHN 300	Food Principles and Applications		X		3
FSHN 301	Food Principles and Applications Laboratory		X		2
OT 215	Medical Terminology				1
Foundations and Perspectives				3B, 3D, 3E	6
	Total Credits				17
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
BMS 300	Principles of Human Physiology	X			4
BMS 302	Laboratory in Principles of Physiology	X			2
HES 145	Health and Wellness				3
SPCM 200	Public Speaking				3
Foundations and Perspectives				3B, 3D, 3E	3
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 351	Principles of Biochemistry	X			4
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
FSHN 350	Human Nutrition	X			3
HES 207	Anatomical Kinesiology				3
	Total Credits				13
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
HES 232	Techniques of Teaching Group Exercise				1
HES 403	Physiology of Exercise	X			4
LIFE 205	Microbial Biology		X		3
LIFE 206	Microbial Biology Laboratory		X		2
Select one course from the following:					3
STAT 201	General Statistics				

STAT 204	Statistics for Business Students				
Elective					3
	Total Credits				16
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
FSHN 450	Medical Nutrition Therapy	X		4B	5
FSHN 451	Community Nutrition	X		4A	3
FSHN 459	Nutrition in the Life Cycle	X			3
HES 434	Physical Activity Throughout the Lifespan				3
	Total Credits				14
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
FSHN 360	Nutrition Assessment	X			2
FSHN 428	Nutrition Teaching and Counseling Techniques	X			3
FSHN 470	Integrative Nutrition and Metabolism	X			3
FSHN 492	Seminar in Dietetics and Nutrition	X		4C	2
HES 340	Exercise Prescription				3
Electives		X			2
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Nutrition and Food Science, Nutritional Sciences Concentration

The Nutritional Sciences concentration provides a strong background in natural and biomedical sciences and nutrition, making it an appropriate preparation for graduate study, medical school, or a career in nutritional research, biomedical research, or college teaching. This concentration is an excellent pre-health professions curriculum. By addition of several elective courses, students can meet the Accreditation Council for Education in Nutrition and Dietetics (ACEND) (https://www.eatrightpro.org/acend) course requirements if they meet requirements for FSHN 392.

Learn more about the Nutritional Sciences concentration on the Department of Food Science and Human Nutrition website (https://www.chhs.colostate.edu/fshn/programs-and-degrees/b-s-in-nutrition-and-food-science/nutritional-sciences-concentration).

Requirements

Effective Spring 2014

Freshman

		AUCC	**Credits**
Select one group from the following:			4
Group A:			
BZ 110	Principles of Animal Biology (GT-SC2)	3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	3A	
Group B:			
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
BZ 120 or LIFE 103	Principles of Plant Biology (GT-SC1) Biology of Organisms-Animals and Plants	3A	4
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CO 150	College Composition (GT-CO2)	1A	3
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
MATH 125	Numerical Trigonometry (GT-MA1)	1B	1

PSY 100	General Psychology (GT-SS3)	3C	3
SOC 100	General Sociology (GT-SS3)	3C	3
	Total Credits		30

Sophomore

BMS 300	Principles of Human Physiology		4
BMS 302	Laboratory in Principles of Physiology		2
CHEM 341	Modern Organic Chemistry I		3
CHEM 343	Modern Organic Chemistry II		3
CHEM 344	Modern Organic Chemistry Laboratory		2
FSHN 150	Survey of Human Nutrition		3
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	4
MIP 300	General Microbiology		3
MIP 302	General Microbiology Laboratory		2
OT 215	Medical Terminology		1
Foundations and Perspectives[1]		3B, 3D, 3E	6
	Total Credits		33

Junior

BC 351	Principles of Biochemistry		4
BZ 310 or LIFE 210	Cell Biology Introductory Eukaryotic Cell Biology		3-4
BUS 150 or CS 110	Business Computing Concepts and Applications Personal Computing		3-4
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
FSHN 350	Human Nutrition		3
PH 121	General Physics I (GT-SC1)	3A	5
PH 122	General Physics II (GT-SC1)	3A	5
Foundations and Perspectives[1]		3B, 3D, 3E	6
	Total Credits		32-34

Senior

FSHN 360	Nutrition Assessment		2
FSHN 428	Nutrition Teaching and Counseling Techniques		3
FSHN 450	Medical Nutrition Therapy	4B	5
FSHN 451	Community Nutrition	4A	3
FSHN 459	Nutrition in the Life Cycle		3
FSHN 470	Integrative Nutrition and Metabolism		3
FSHN 492	Seminar in Dietetics and Nutrition	4C	2
Select two credits from the following:			2
FSHN 496A	Group Study in Dietetics and Nutrition: Energy, Weight Management		
FSHN 496B	Group Study in Dietetics and Nutrition: Sustainable Food Issues		
FSHN 496C	Group Study in Dietetics and Nutrition: Nutrition and Chronic Disease		
FSHN 496D	Group Study in Dietetics and Nutrition: Nutrition for Athletes		
FSHN 496E	Group Study in Dietetics and Nutrition: Food Safety		
FSHN 496F	Group Study in Dietetics and Nutrition: Service Marketing		
FSHN 496G	Group Study in Dietetics and Nutrition: Food and Consumer Issues		
FSHN 496H	Group Study in Dietetics and Nutrition: Public Health and Policy		

FSHN 496I	Group Study in Dietetics and Nutrition: Special Topics	
STAT 201 or 204	General Statistics Statistics for Business Students	3
	Total Credits	26
	Program Total Credits:	121-123

[1] Select one course each from the list in category 3D and 3E and two courses from category 3B of the All-University Core Curriculum (AUCC).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one group from the following:					4
Group A:					
BZ 110	Principles of Animal Biology (GT-SC2)	X		3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	X		3A	
Group B:					
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	X		1B	1
PSY 100	General Psychology (GT-SS3)			3C	3
	Total Credits				15

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					4
BZ 120	Principles of Plant Biology (GT-SC1)	X		3A	
LIFE 103	Biology of Organisms-Animals and Plants	X			
CO 150	College Composition (GT-CO2)	X		1A	3
CHEM 113	General Chemistry II	X			3
CHEM 114	General Chemistry Lab II	X			1
MATH 125	Numerical Trigonometry (GT-MA1)	X		1B	1
SOC 100	General Sociology (GT-SS3)			3C	3
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
BMS 300	Principles of Human Physiology	X			4
BMS 302	Laboratory in Principles of Physiology	X			2
CHEM 341	Modern Organic Chemistry I	X			3
FSHN 150	Survey of Human Nutrition		X		3
OT 215	Medical Terminology				1
Foundations and Perspectives				3B, 3D, 3E	3
	Total Credits				16

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 343	Modern Organic Chemistry II	X			3
CHEM 344	Modern Organic Chemistry Laboratory	X			2
MATH 155	Calculus for Biological Scientists I (GT-MA1)	X		1B	4
MIP 300	General Microbiology	X			3
MIP 302	General Microbiology Laboratory	X			2
Foundations and Perspectives				3B, 3D, 3E	3

FSHN 150 must be completed by the end of Semester 4		X			
	Total Credits				17
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 351	Principles of Biochemistry	X			4
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
FSHN 350	Human Nutrition	X			3
PH 121	General Physics I (GT-SC1)	X		3A	5
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3-4
BUS 150	Business Computing Concepts and Applications				
CS 110	Personal Computing				
Select one course from the following:					3-4
BZ 310	Cell Biology	X			
LIFE 210	Introductory Eukaryotic Cell Biology	X			
PH 122	General Physics II (GT-SC1)	X		3A	5
Foundations and Perspectives				3B, 3D, 3E	6
	Total Credits				17-19
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
FSHN 450	Medical Nutrition Therapy	X		4B	5
FSHN 451	Community Nutrition	X		4A	3
FSHN 459	Nutrition in the Life Cycle	X			3
Select one course from the following:					1
FSHN 496A	Group Study in Dietetics and Nutrition: Energy, Weight Management	X			
FSHN 496B	Group Study in Dietetics and Nutrition: Sustainable Food Issues	X			
FSHN 496C	Group Study in Dietetics and Nutrition: Nutrition and Chronic Disease	X			
FSHN 496D	Group Study in Dietetics and Nutrition: Nutrition for Athletes	X			
FSHN 496E	Group Study in Dietetics and Nutrition: Food Safety	X			
FSHN 496F	Group Study in Dietetics and Nutrition: Service Marketing	X			
FSHN 496G	Group Study in Dietetics and Nutrition: Food and Consumer Issues	X			
FSHN 496H	Group Study in Dietetics and Nutrition: Public Health and Policy	X			
FSHN 496I	Group Study in Dietetics and Nutrition: Special Topics	X			
Select one course from the following:					3
STAT 201	General Statistics		X		
STAT 204	Statistics for Business Students		X		
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
FSHN 360	Nutrition Assessment	X			2
FSHN 428	Nutrition Teaching and Counseling Techniques	X			3
FSHN 470	Integrative Nutrition and Metabolism	X			3

FSHN 492 (Final semester only.)	Seminar in Dietetics and Nutrition	X	4C	2
Select one course from the following:				1
FSHN 496A	Group Study in Dietetics and Nutrition: Energy, Weight Management	X		
FSHN 496B	Group Study in Dietetics and Nutrition: Sustainable Food Issues	X		
FSHN 496C	Group Study in Dietetics and Nutrition: Nutrition and Chronic Disease	X		
FSHN 496D	Group Study in Dietetics and Nutrition: Nutrition for Athletes	X		
FSHN 496E	Group Study in Dietetics and Nutrition: Food Safety	X		
FSHN 496F	Group Study in Dietetics and Nutrition: Service Marketing	X		
FSHN 496G	Group Study in Dietetics and Nutrition: Food and Consumer Issues	X		
FSHN 496H	Group Study in Dietetics and Nutrition: Public Health and Policy	X		
FSHN 496I	Group Study in Dietetics and Nutrition: Special Topics	X		
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X		
	Total Credits			11
	Program Total Credits:			121-123

Graduate Certificate in Nutrition Sciences

The Graduate Certificate in Nutrition Sciences is offered for students with a personal or professional interest in nutrition, health promotion, or disease prevention. Courses address the fundamentals of nutrition science and how they are involved in nutrient metabolism, obesity, chronic disease prevention, and other current or controversial areas in nutrition. Each course allows students to develop skills in locating credible sources of nutrition information, analyzing research, and debating contradictory information, all of which will support ongoing professional development. Online only.

Effective Fall 2017

Additional coursework may be required due to prerequisites.

Code	Title	Credits
FSHN 530	Principles of Nutrition Science & Metabolism	3
FSHN 531	Diet, Nutrition, and Chronic Disease	3
FSHN 532	Emerging Issues in Nutrition	3
Program Total Credits:		9

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Learn more about the Online Graduate Certificate in Nutrition Sciences on the Food Science and Human Nutrition website (https://www.chhs.colostate.edu/fshn/programs-and-degrees/graduate-certificate-in-nutrition-sciences-online).

Master of Science in Food Science and Nutrition, Dietetics Option (online)

GPIdea Online Master's Program Designed for Registered Dietitian Nutritionists

The GPIdea (Great Plains Interactive Distance Education Alliance) program offers a fully online M.S. in Food Science and Nutrition for Registered Dietitian Nutritionists working in the field. The program is offered through a partnership of 8 different Universities (Colorado State University, Kansas State University, Kansas University Medical Center, University of Nebraska, Oklahoma State, Iowa State, South Dakota State and North Dakota State). The collaboration provides a rich offering of courses provided by expert faculty from each institution while earning a degree from CSU.

Programs of study are designed to allow students the flexibility to individualize coursework and research to their specialty, interests and career focus. The GPIdea program objectives are to:

- Develop research skills, stimulate independent thought, and provide up-to-date knowledge in foods, nutrition, and food service and business management.
- Promote health and disease management through food and nutrition programs and make a difference in the lives of others by advancing the level of practice of registered dietitian nutritionists.

It is important to note that the program is open to those who are registered dietitian nutritionists (RD, RDNs) only. This program is not a didactic program in dietetics.

Learn more about the GPIdea Online Master's Program Designed for Registered Dietitian Nutritionists on the Department of Food Science and Human Nutrition website. (https://www.chhs.colostate.edu/fshn/

programs-and-degrees/m-s-in-food-science-and-nutrition-dietetics-option-online)

Requirements Effective Fall 2013

Code	Title	Credits
Required Core		
EDRM 600	Introduction to Research Methods	3
or FSHN 501	Research Methods in Dietetics	
Select one from the following:		3
EDRM 606	Principles: Quantitative Data Analysis	
Advanced Statistics [1]		
FSHN 503	Issues in Dietetics Practice	3
FSHN 504	Micronutrients	3
FSHN 540	Nutrigenomics and Advanced Lipid Metabolism	3
FSHN 696C	Group Study: Dietetics	1
Selected Courses		
Select 15 credits from the following:		15
FSHN 505	Nutrition and Physical Activity in Aging	
FSHN 506	Nutrition and Human Performance	
FSHN 507	Nutrition Education in the Community	
FSHN 508	International Nutrition and World Hunger	
FSHN 510	Pediatric Clinical Nutrition	
FSHN 511	Maternal and Child Nutrition	
FSHN 512	Nutritional Aspects of Oncology	
FSHN 520	Advanced Medical Nutrition Therapy	
FTEC 578	Phytochemicals and Probiotics for Health	
FSHN 698A	Research: Dietetics	6
Program Total Credits:		37

A minimum of 37 credits are required to complete this program.

[1] 500-level or higher statistics course approved by advisor and graduate committee.

Master of Science in Food Science and Nutrition, Food Science Specialization

The Master of Science in Food Science and Nutrition, Food Science specialization includes advanced studies oriented toward food science, food microbiology, food preservation and safety, and health properties of foods and food components. The program provides students with training for doctoral studies and professional degrees, as well as careers in government agencies and industry. A minimum of 35 credits is required for the M.S. degree.

Learn more about the Master's in Food Science and Nutrition, Food Science specialization on the Department of Food Science and Human Nutrition website. (https://www.chhs.colostate.edu/fshn/programs-and-degrees/m-s-in-food-science-and-nutrition-food-science-specialization)

Plan A Effective Fall 2019

Code	Title	Credits
Required Courses		
FSHN 692	Seminar	1
FTEC 570	Food Product Development	2
FTEC 572	Food Biotechnology	2
FTEC 574	Current Issues in Food Safety	2
FTEC 576	Cereal Science	2
FTEC 578	Phytochemicals and Probiotics for Health	3
Thesis		
FTEC 699	Thesis	10
Required Statistics/Research Methods – Select one course from the following:		3-4
EDRM 600	Introduction to Research Methods	
EDRM 606	Principles: Quantitative Data Analysis	
EDRM 704	Qualitative Research	
EDRM 705	Qualitative Data Analysis	
PSY 652	Methods of Research in Psychology I	
PSY 653	Methods of Research in Psychology II	
STAT 511A	Design and Data Analysis for Researchers I: R Software	
or STAT 511B	Design and Data Analysis for Researchers I: SAS Software	
Electives		9-10
Select a minimum of 9 credits not taken elsewhere in the program in consultation with the graduate committee (see Example Elective Courses list below)		
Program Total Credits:		35

Example Elective Courses

Code	Title	Credits
ANEQ 565	Interpreting Animal Science Research	3
ANEQ 567	HACCP Meat Safety	2
ANEQ 660	Topics in Meat Safety	1
BC 463	Molecular Genetics	3
BC 513	Enzymology	1
BC 517	Metabolism	2
BC 565	Molecular Regulation of Cell Function	4
BC 665A	Advanced Topics in Cell Regulation: Microscopic Methods	2
BC 665B	Advanced Topics in Cell Regulation: Modern Methods	2
BC 701	Grant Proposal Writing and Reviewing	1
BMS 500	Mammalian Physiology I	4
BMS 501	Mammalian Physiology II	4
CBE 504	Fundamentals of Biochemical Engineering	3
CHEM 431	Instrumental Analysis	4
CM 502	Techniques in Molecular & Cellular Biology	2
EDRM 600	Introduction to Research Methods	3
EDRM 606	Principles: Quantitative Data Analysis	3
EDRM 704	Qualitative Research	3

EDRM 705	Qualitative Data Analysis	3
ERHS 510/VS 510	Cancer Biology	3
ERHS 611	Cancer Genetics	2
FSHN 500	Food Systems, Nutrition, and Food Security	2
FSHN 540	Nutrigenomics and Advanced Lipid Metabolism	3
FSHN 550	Advanced Nutritional Science I	3
FSHN 551	Advanced Nutritional Science II	3
FSHN 600	Responsible Conduct of Research	1
FSHN 640	Selected Topics in Nutritional Epidemiology	2
FSHN 650A	Recent Developments in Human Nutrition: Protein, Vitamins, and Minerals	2
FSHN 650B	Recent Developments in Human Nutrition: Carbohydrates, Lipids, and Energy	2
FSHN 650C	Recent Developments in Human Nutrition: Genomic, Proteomics, and Metabolomics	2
FSHN 661	International Nutrition	2
FSHN 695A	Independent Study: Food Science	1-3
FSHN 696A	Group Study: Food Science	1-3
HORT 401	Medicinal and Value-Added Uses of Plants	3
HORT 675	Plant Stress Physiology	3
JTC 662	Communicating Science and Technology	3
MIP 334	Food Microbiology	3
MIP 335	Food Microbiology Laboratory	2
MIP 443	Microbial Physiology	4
MIP 450	Microbial Genetics	3
MIP 533	Epidemiology of Infectious Diseases/ Zoonoses	3
MIP 555	Principles and Mechanisms of Disease	3
MIP 624	Advanced Topics in Microbial Ecology	2
MIP 651	Immunobiology	3
PSY 652	Methods of Research in Psychology I	4
PSY 653	Methods of Research in Psychology II	4
SOCR 755	Advanced Soil Microbiology	3
STAT 511A	Design and Data Analysis for Researchers I: R Software	4
STAT 511B	Design and Data Analysis for Researchers I: SAS Software	4
STAT 512	Design and Data Analysis for Researchers II	4
VS 562	Applied Data Analysis	3

A minimum of 35 credits are required to complete this program.

Plan B
Effective Fall 2019

Code	Title	Credits
Required Courses		12
FSHN 692	Seminar	
FTEC 570	Food Product Development	
FTEC 572	Food Biotechnology	
FTEC 574	Current Issues in Food Safety	
FTEC 576	Cereal Science	
FTEC 578/ HORT 578	Phytochemicals and Probiotics for Health	
Research Project		4
FTEC 698	Research	
Required Statistics/Research Methods Courses – Select one course from the following:		3-4
EDRM 600	Introduction to Research Methods	
EDRM 606	Principles: Quantitative Data Analysis	
EDRM 704	Qualitative Research	
EDRM 705	Qualitative Data Analysis	
PSY 652	Methods of Research in Psychology I	
PSY 653	Methods of Research in Psychology II	
STAT 511A	Design and Data Analysis for Researchers I: R Software	
or STAT 511B	Design and Data Analysis for Researchers I: SAS Software	
STAT 512	Design and Data Analysis for Researchers II	
Electives		15-16
Select a minimum of 15 credits not taken elsewhere in the program in consultation with the graduate committee (see Example Elective Courses list below)		
Program Total Credits:		35

Example Electives Courses

Code	Title	Credits
ANEQ 565	Interpreting Animal Science Research	3
ANEQ 567	HACCP Meat Safety	2
ANEQ 660	Topics in Meat Safety	1
BC 463	Molecular Genetics	3
BC 513	Enzymology	1
BC 517	Metabolism	2
BC 565	Molecular Regulation of Cell Function	4
BC 665A	Advanced Topics in Cell Regulation: Microscopic Methods	2
BC 665B	Advanced Topics in Cell Regulation: Modern Methods	2
BC 701	Grant Proposal Writing and Reviewing	1
BMS 500	Mammalian Physiology I	4
BMS 501	Mammalian Physiology II	4
CBE 504/BIOM 504	Fundamentals of Biochemical Engineering	3
CHEM 431	Instrumental Analysis	4
CM 502/NB 502	Techniques in Molecular & Cellular Biology	2
EDRM 600	Introduction to Research Methods	3
EDRM 606	Principles: Quantitative Data Analysis	3
EDRM 704	Qualitative Research	3
EDRM 705	Qualitative Data Analysis	3
ERHS 510/VS 510	Cancer Biology	3
ERHS 611	Cancer Genetics	2
FSHN 500	Food Systems, Nutrition, and Food Security	2
FSHN 540	Nutrigenomics and Advanced Lipid Metabolism	3
FSHN 550	Advanced Nutritional Science I	3
FSHN 551	Advanced Nutritional Science II	3

FSHN 600	Responsible Conduct of Research	1
FSHN 640	Selected Topics in Nutritional Epidemiology	2
FSHN 650A	Recent Developments in Human Nutrition: Protein, Vitamins, and Minerals	2
FSHN 650B	Recent Developments in Human Nutrition: Carbohydrates, Lipids, and Energy	2
FSHN 650C	Recent Developments in Human Nutrition: Genomic, Proteomics, and Metabolomics	2
FSHN 661	International Nutrition	2
FSHN 695A	Independent Study: Food Science	1-3
FSHN 696A	Group Study: Food Science	1-3
HORT 401	Medicinal and Value-Added Uses of Plants	3
HORT 675	Plant Stress Physiology	3
JTC 662	Communicating Science and Technology	3
MIP 334	Food Microbiology	3
MIP 335	Food Microbiology Laboratory	2
MIP 443	Microbial Physiology	4
MIP 450	Microbial Genetics	3
MIP 533/VS 533	Epidemiology of Infectious Diseases/ Zoonoses	3
MIP 555	Principles and Mechanisms of Disease	3
MIP 624	Advanced Topics in Microbial Ecology	2
MIP 651	Immunobiology	3
PSY 652	Methods of Research in Psychology I	4
PSY 653	Methods of Research in Psychology II	4
SOCR 755	Advanced Soil Microbiology	3
STAT 511A	Design and Data Analysis for Researchers I: R Software	4
STAT 511B	Design and Data Analysis for Researchers I: SAS Software	4
STAT 512	Design and Data Analysis for Researchers II	4
VS 562	Applied Data Analysis	3

A minimum of 35 credits are required to complete this program.

Ph.D. in Food Science and Nutrition, Food Science Specialization

The Ph.D. in Food Science and Nutrition, Food Science specialization includes advanced studies oriented toward food science, food microbiology, food preservation and safety, and health properties of foods and food components.

Most students entering this Ph.D. program will bring in 30 credits from a Master's program in a related field. The curriculum represents a total of 42 credits beyond the Master's level. If a prospective student has less than 30 credits toward the program, an individualized curriculum plan will be developed by working with a primary advisor to cover possible deficiencies.

Learn more about the Ph.D. in Food Science and Nutrition, Food Science specialization on the Department of Food Science and Human Nutrition website (https://www.chhs.colostate.edu/fshn/programs-and-degrees/ph-d-in-food-science-and-nutrition-food-science-specialization).

Requirements Effective Fall 2019

Code	Title	Credits
Required Courses		
FTEC 570	Food Product Development	2
FTEC 572	Food Biotechnology	2
FTEC 574	Current Issues in Food Safety	2
FTEC 576	Cereal Science	2
FTEC 578/HORT 578	Phytochemicals and Probiotics for Health	3
FSHN 600	Responsible Conduct of Research	1
FSHN 692	Seminar	2
Dissertation (minimum of 10 credits)		
FTEC 799	Dissertation	10
Required Statistics/Research Methods – Select two courses from the following:		6-8
EDRM 600	Introduction to Research Methods	
EDRM 606	Principles: Quantitative Data Analysis	
EDRM 704	Qualitative Research	
EDRM 705	Qualitative Data Analysis	
PSY 652	Methods of Research in Psychology I	
PSY 653	Methods of Research in Psychology II	
STAT 511A	Design and Data Analysis for Researchers I: R Software	
or STAT 511B	Design and Data Analysis for Researchers I: SAS Software	
STAT 512	Design and Data Analysis for Researchers II	
Electives		10-12
Select a minimum of 10 credits not take elsewhere in the program in consultation with the graduate committee (see example Elective Courses list below)		
Master's Degree Credit (a maximum of 30 credits may be accepted from a master's degree)		30

Example Elective Courses

Code	Title	Credits
ANEQ 565	Interpreting Animal Science Research	3
ANEQ 567	HACCP Meat Safety	2
ANEQ 660	Topics in Meat Safety	1
BC 463	Molecular Genetics	3
BC 513	Enzymology	1
BC 517	Metabolism	2
BC 565	Molecular Regulation of Cell Function	4
BC 665A	Advanced Topics in Cell Regulation: Microscopic Methods	2
BC 665B	Advanced Topics in Cell Regulation: Modern Methods	2
BC 701	Grant Proposal Writing and Reviewing	1
BMS 500	Mammalian Physiology I	4
BMS 501	Mammalian Physiology II	4
CBE 504/BIOM 504	Fundamentals of Biochemical Engineering	3
CHEM 431	Instrumental Analysis	4
CM 502/NB 502	Techniques in Molecular & Cellular Biology	2

EDRM 600	Introduction to Research Methods	3
EDRM 606	Principles: Quantitative Data Analysis	3
EDRM 704	Qualitative Research	3
EDRM 705	Qualitative Data Analysis	3
ERHS 510/VS 510	Cancer Biology	3
ERHS 611	Cancer Genetics	2
FSHN 500	Food Systems, Nutrition, and Food Security	2
FSHN 540	Nutrigenomics and Advanced Lipid Metabolism	3
FSHN 550	Advanced Nutritional Science I	3
FSHN 551	Advanced Nutritional Science II	3
FSHN 640	Selected Topics in Nutritional Epidemiology	2
FSHN 650A	Recent Developments in Human Nutrition: Protein, Vitamins, and Minerals	2
FSHN 650B	Recent Developments in Human Nutrition: Carbohydrates, Lipids, and Energy	2
FSHN 650C	Recent Developments in Human Nutrition: Genomic, Proteomics, and Metabolomics	2
FSHN 661	International Nutrition	2
FSHN 695A	Independent Study: Food Science	1-3
FSHN 696A	Group Study: Food Science	1-3
FSHN 792	Seminar-Research Topics in Nutrition	1
HORT 401	Medicinal and Value-Added Uses of Plants	3
HORT 675	Plant Stress Physiology	3
JTC 662	Communicating Science and Technology	3
MIP 443	Microbial Physiology	4
MIP 450	Microbial Genetics	3
MIP 533/VS 533	Epidemiology of Infectious Diseases/ Zoonoses	3
MIP 555	Principles and Mechanisms of Disease	3
MIP 624	Advanced Topics in Microbial Ecology	2
MIP 651	Immunobiology	3
PSY 652	Methods of Research in Psychology I	4
PSY 653	Methods of Research in Psychology II	4
SOCR 755	Advanced Soil Microbiology	3
STAT 511A	Design and Data Analysis for Researchers I: R Software	4
or STAT 511B	Design and Data Analysis for Researchers I: SAS Software	
STAT 512	Design and Data Analysis for Researchers II	4
VS 562	Applied Data Analysis	3

Most students entering this Ph.D. program will bring in 30 credits from a Master's program in a related field. The above curriculum represents a total of 42 credits beyond the Master's level. If a prospective student has less than 30 credits toward the program, an individualized curriculum plan will be developed by working with a primary advisor to cover possible deficiencies.

Ph.D. in Food Science and Nutrition, Nutrition Specialization

The Ph.D. in Food Science and Nutrition, Nutrition specialization includes work in advanced nutrition science, supporting basic and applied sciences and the communication of nutrition principles in the community. Ultimately this area focuses on the relationship between nutrition and health.

Most students entering this Ph.D. program will bring in 30 credits from a master's program in a related field. The above curriculum represents a total of 42 credits beyond the master's level. If a prospective student has less than 30 credits toward the program, an individualized curriculum plan will be developed by working with a primary advisor to cover possible deficiencies.

Learn more about the Ph.D. in Food Science and Nutrition, Nutrition Specialization on the Department of Food Science and Human Nutrition website (https://www.chhs.colostate.edu/fshn/programs-and-degrees/ph-d-in-food-science-and-nutrition-nutrition-specialization).

Requirements Effective Fall 2018

Code	Title	Credits
Required Courses		
FSHN 550	Advanced Nutritional Science I	3
FSHN 551	Advanced Nutritional Science II	3
FSHN 600	Responsible Conduct of Research	1
FSHN 640	Selected Topics in Nutritional Epidemiology	2
FSHN 692	Seminar	2
Select one course from the following:		2
FSHN 650A	Recent Developments in Human Nutrition: Protein, Vitamins, and Minerals	
FSHN 650B	Recent Developments in Human Nutrition: Carbohydrates, Lipids, and Energy	
FSHN 650C	Recent Developments in Human Nutrition: Genomic, Proteomics, and Metabolomics	
Statistics/Research Methods – Select two courses from the following:		6-8
EDRM 600	Introduction to Research Methods	
EDRM 606	Principles: Quantitative Data Analysis	
EDRM 704	Qualitative Research	
EDRM 705	Qualitative Data Analysis	
PSY 652	Methods of Research in Psychology I	
PSY 653	Methods of Research in Psychology II	
STAT 511A	Design and Data Analysis for Researchers I: R Software	
or STAT 511B	Design and Data Analysis for Researchers I: SAS Software	
STAT 512	Design and Data Analysis for Researchers II	
Dissertation (minimum 10 credits)		
FSHN 799	Dissertation-Nutrition	10
Electives		11-13
Select a minimum of 11 credits not taken elsewhere in the program in consultation with the graduate committee (see example Elective Courses list below)		
Master's Degree Credit (a maximum of 30 credits may be accepted from a master's degree)		30

Example Elective Courses

Code	Title	Credits
BC 401	Comprehensive Biochemistry I	3
BC 403	Comprehensive Biochemistry II	3
BC 465	Molecular Regulation of Cell Function	3
BC 517	Metabolism	2
BC 565	Molecular Regulation of Cell Function	4
BC 663	Gene Expression	2
BIOM 526/ECE 526	Biological Physics	3
BMS 430	Endocrinology	3
BMS 500	Mammalian Physiology I	4
BMS 501	Mammalian Physiology II	4
BMS 505/NB 505	Neuronal Circuits, Systems and Behavior	3
BMS 610A	Managing a Career in Science: Survival Skills for Coursework (M.S.)	1
BMS 631	Mechanisms of Hormone Action	2
BMS 632	Metabolic Endocrinology	2
BZ 455	Human Heredity and Birth Defects	3
EDRM 600	Introduction to Research Methods	3
EDRM 606	Principles: Quantitative Data Analysis	3
EDRM 704	Qualitative Research	3
EDRM 705	Qualitative Data Analysis	3
ERHS 542	Biostatistical Methods for Qualitative Data	3
ERHS 544/STAT 544	Biostatistical Methods for Quantitative Data	3
ERHS 567	Cell and Molecular Toxicology Techniques	3
ERHS 611	Cancer Genetics	2
FSHN 445/HDFS 445	Early Childhood Health, Safety, and Nutrition	3
FSHN 496A	Group Study in Dietetics and Nutrition: Energy, Weight Management	1
FSHN 496B	Group Study in Dietetics and Nutrition: Sustainable Food Issues	1
FSHN 496C	Group Study in Dietetics and Nutrition: Nutrition and Chronic Disease	1
FSHN 496D	Group Study in Dietetics and Nutrition: Nutrition for Athletes	1
FSHN 496E	Group Study in Dietetics and Nutrition: Food Safety	1
FSHN 496F	Group Study in Dietetics and Nutrition: Service Marketing	1
FSHN 496G	Group Study in Dietetics and Nutrition: Food and Consumer Issues	1
FSHN 496H	Group Study in Dietetics and Nutrition: Public Health and Policy	1
FSHN 496I	Group Study in Dietetics and Nutrition: Special Topics	1
FSHN 500	Food Systems, Nutrition, and Food Security	2
FSHN 520	Advanced Medical Nutrition Therapy	3
FSHN 525	Nutrition Education Theories and Practice	2
FSHN 540	Nutrigenomics and Advanced Lipid Metabolism	3
FSHN 620	Community Nutrition Planning and Evaluation	3
FSHN 628	Advanced Nutrition Counseling Techniques	2
FSHN 630/HES 630	Integrative Exercise and Nutrition Metabolism	3
FSHN 650A	Recent Developments in Human Nutrition: Protein, Vitamins, and Minerals	2
FSHN 650B	Recent Developments in Human Nutrition: Carbohydrates, Lipids, and Energy	2
FSHN 650C	Recent Developments in Human Nutrition: Genomic, Proteomics, and Metabolomics	2
FSHN 660	Women's Issues in Lifecycle Nutrition	2
FSHN 661	International Nutrition	2
FSHN 686A	Practicum: Counseling	1-3
FSHN 686B	Practicum: Nutrition	1-3
FSHN 695B	Independent Study: Nutrition	1-3
FSHN 700	Cellular Nutrition	2
FSHN 750	Nutritional Basis of Chronic Disease	2
FSHN 792	Seminar-Research Topics in Nutrition	1
FSHN 795	Independent Study	1-4
FTEC 570	Food Product Development	2
FTEC 578/HORT 578	Phytochemicals and Probiotics for Health	3
GRAD 792	Seminar on College Teaching	2
HDFS 608	Program Planning and Implementation	3
HES 603	Advanced Topics in Exercise Physiology	3
HES 610	Exercise Bioenergetics	3
JTC 614	Public Communication Campaigns	3
JTC 630	Health Communication	3
JTC 661	Information Design	3
JTC 662	Communicating Science and Technology	3
MIP 540	Biosafety in Research Laboratories	2
MIP 555	Principles and Mechanisms of Disease	3
MIP 612	Applied Immunology	3
MIP 614	Medical Microbiology	3
PSY 652	Methods of Research in Psychology I	4
PSY 653	Methods of Research in Psychology II	4
STAT 511A	Design and Data Analysis for Researchers I: R Software	4
or STAT 511B	Design and Data Analysis for Researchers I: SAS Software	
STAT 511B	Design and Data Analysis for Researchers I: SAS Software	4
STAT 512	Design and Data Analysis for Researchers II	4
VS 562	Applied Data Analysis	3

Most students entering this Ph.D. program will bring in 30 credits from a Master's program in a related field. The above curriculum represents a total of 42 credits beyond the Master's level. If a prospective student has less than 30 credits toward the program, an individualized curriculum plan will be developed by working with a primary advisor to cover possible deficiencies.

Minor in Nutrition

This minor provides an opportunity for a non-major to gain a significant orientation to a food, nutrition, and health-related field. The courses in the Nutrition minor have a significant number of prerequisites that should

be examined carefully before selecting the minor. Although open to any interested student, the Nutrition minor would be most easily taken by students majoring in a life science discipline such as biology or health and exercise science.

Learn more about the Nutrition minor on the Department of Food Science and Human Nutrition website (https://www.chhs.colostate.edu/fshn/programs-and-degrees/minor-in-nutrition).

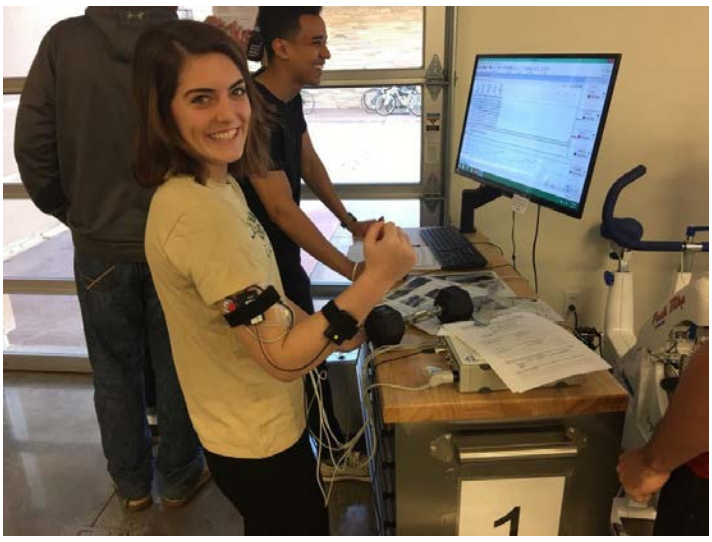
Requirements
Effective Fall 2004

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Upper Division		
BC 351	Principles of Biochemistry	4
BMS 300	Principles of Human Physiology	4
FSHN 350	Human Nutrition	3
FSHN 360	Nutrition Assessment	2
FSHN 451	Community Nutrition	3
FSHN 459	Nutrition in the Life Cycle	3
FSHN 470	Integrative Nutrition and Metabolism	3
Program Total Credits:		22

Department of Health and Exercise Science



Office in Health and Exercise Science Complex, B220 Moby
(970) 491-5081
www.chhs.colostate.edu/hes (https://www.chhs.colostate.edu/hes)

Professor Barry Braun, Department Head

Undergraduate
Majors

- Major in Health and Exercise Science
  - Health Promotion Concentration
  - Sports Medicine Concentration

Graduate
Graduate Programs in Health and Exercise Science

The department offers two graduate degrees: the Master of Science in Health and Exercise Science, and the Doctor of Philosophy in Human Bioenergetics. Students interested in a Master's degree in Public Health with a focus in Health and Exercise Science can refer to the School of Public Health (http://publichealth.colostate.edu). Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Health and Exercise Science (http://hes.chhs.colostate.edu).

Master's Programs

- Master of Science in Health and Exercise Science, Plan A

Ph.D.

- Ph.D. in Human Bioenergetics

Courses
Health and Exercise Science (HES)

HES 100A Beginning Physical Education: Aerobic Exercise Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HES 100J Beginning Physical Education: Volleyball Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100M Beginning Physical Education: Basketball Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100N Beginning Physical Education: Racquetball Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100O Beginning Physical Education: Weight Training Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 102C Physical Education Activities: Special Activities Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HES 102F Physical Education Activities: Conditioning and Fitness Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 102G Physical Education Activities: Athletics Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HES 120 Introduction to Health and Exercise Science Credit: 1 (1-0-0)
Course Description: Health and Exercise Science major, career options, campus resources, tools for academic success, various health-related topics.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 145 Health and Wellness Credits: 3 (3-0-0)
Course Description: Personal health behaviors and personal choice in response to wellness.
Prerequisite: None.
Registration Information: Credit not allowed for both HES 145 and HES 143. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 207 Anatomical Kinesiology Credits: 3 (2-2-0)
Course Description: Anatomical, physiological, and mechanical fundamentals of human movement.
Prerequisite: MATH 125, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 232 Techniques of Teaching Group Exercise Credit: 1 (0-2-0)
Course Description: Learn practical skills for the instruction of various group fitness activities. Emphasis is on physiological principles related to group fitness, as well as choreography, safety, and modifications for diverse populations and current trends.
Prerequisite: HES 207.
Registration Information: Credit allowed for only one of the following: HES 232, HES 232B, or HES 332H.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 232A Techniques of Teaching Physical Activity: Weight Training Credit: 1 (0-2-0)
Course Description: Practical and theoretical aspects of teaching individual sports with special emphasis on materials, teaching techniques, and analyzing skills.
Prerequisite: None.
Registration Information: Credit not allowed for both HES 232A and HES 332F.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 240 First Aid and Emergency Care Credits: 2 (1-2-0)
Course Description: Principles, applied techniques emphasizing emergency rescue and care. Meets requirements for Red Cross Advanced First Aid and Emergency Care Credential.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 303 Biomechanics and Neurophysiology Credits: 3 (3-0-0)
Course Description: Study and elementary analysis of human motion based on anatomical, neurophysiological, and mechanical principles.
Prerequisite: HES 207.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 307 Biomechanical Principles of Human Movement Credits: 4 (3-2-0)
Course Description: Study and elementary analysis of human motion based on anatomical and mechanical principles.
Prerequisite: (HES 207 or BMS 301) and (PH 121 or PH 141).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 309 Methods of Coaching Credits: 2 (2-0-0)
Course Description: Preparation to coach in an interscholastic athletic situation.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 319 Neuromuscular Aspects of Human Movement Credits: 4 (3-2-0)
Course Description: Neuromuscular anatomy and physiology of human movement. Applied/integrated topics: aging, muscle fatigue, training, force control, and neuromuscular disease.
Prerequisite: BMS 300 and HES 207.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 340 Exercise Prescription Credits: 3 (2-2-0)
Course Description: Theory and practice of exercise prescription for healthy individuals, cardiac patients, and other special populations according to the American College of Sports Medicine (ACSM) guidelines. Includes the practice of proper lifting and spotting techniques, manipulation of training variables, and design of safe, effective, and efficient individual workout programs.
Prerequisite: BMS 300 with a minimum grade of C and FSHN 150 with a minimum grade of C and HES 145 with a minimum grade of C and HES 207 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 345 Population Health and Disease Prevention Credits: 3 (3-0-0)
Course Description: Causes of disease throughout the lifespan and interventions designed to prevent disease.
Prerequisite: HES 145.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 354 Theory of Health Behavior Credits: 3 (3-0-0)
Course Description: Health behavior (HB) theories and their application to health promotion (HP) programs. Multi-level factors that interactively impact human HBs, theoretical foundations for these factors, and the relationship between HBs & selected health outcomes. Discuss application of HB theories, and examine HP programs that have applied these theories in different settings and high risk populations.
Prerequisite: HES 145 or PSY 100.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 355 Integration of Health Behaviors Credits: 3 (3-0-0)
Course Description: Designed to guide students in applying their knowledge of health behavior change to individuals with various health challenges. Explores a variety of health topics including understanding stress and coping and managing stress, behavioral factors in chronic disease, and behavioral health.
Prerequisite: HES 340 and HES 354.
Registration Information: Completion of 60 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 379 Psychology and Sport Credits: 3 (3-0-0)
Course Description: Psychological and social implications involved in teaching physical education and coaching athletics.
Prerequisite: PSY 100 and HES 145 with a minimum grade of C and HES 207 with a minimum grade of C and BMS 300 with a minimum grade of C.
Registration Information: Must have taken the following courses and maintained a minimum GPA of 2.500 in them: HES 145; HES 207; BMS 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 386 Practicum—Adult Fitness Credits: 2 (1-2-0)
Course Description: Adult fitness.
Prerequisite: HES 232 and HES 340 with a minimum grade of C.
Registration Information: Must have earned a cumulative 2.750 GPA in: BMS 300, FSHN 150, HES 145, and HES 207. Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 403 Physiology of Exercise Credits: 4 (3-2-0)
Course Description: Effects of exercise on tissues, organs, and systems of the body.
Prerequisite: BMS 300 or BMS 360.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 410 Bioethics: Concepts and Controversies Credits: 3 (2-0-1)
Course Description: Origins of bioethics and analysis of cases/controversies in contemporary bioethics.
Prerequisite: PHIL 205.
Registration Information: PHIL 205 or 7 credits of AUCC-science category 3A.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 420 Electrocardiography and Exercise Management Credits: 3 (2-2-0)
Course Description: Interpretation of 12-lead ECG tracings, administering exercise tests, and prescribing exercise program for healthy individuals and special populations.
Prerequisite: BMS 300.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 434 Physical Activity Throughout the Lifespan Credits: 3 (3-0-0)
Course Description: Impact of physical activity on biology and physiology of human development and aging processes.
Prerequisite: BMS 300 or HDFS 201.
Registration Information: Junior standing. Sections may be offered: Online. Credit not allowed for both HES 434 and HES 444.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 444 Successful Aging: Role of Physical Activity Credits: 2 (2-0-0)
Course Description: Biology and physiology of healthy aging and impact of disease and physical activity on aging processes.
Prerequisite: LIFE 102 or BZ 110.
Registration Information: Sections may be offered: Online. Credit not allowed for both HES 434 and HES 444.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 455 Health Promotion Programming Credits: 3 (3-0-0)
Course Description: Investigation of established health promotion programs with special emphasis on design, implementation, and evaluation of programming models.
Prerequisite: HES 355 and HES 386 and HES 403.
Registration Information: Senior standing. Credit not allowed for both HES 455 and HES 456. A student taking HES 355 and HES 386 in Spring, taking HES 486 in the Summer and HES 487 in the Fall may request instructor approval to take HES 355 concurrently with HES 455.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 476 Exercise and Chronic Disease Credits: 3 (3-0-0)
Course Description: Interaction of physical activity with pathophysiology and treatment of chronic diseases and conditions.
Prerequisite: BC 351 and FSHN 350 and HES 403.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 478A Sports Medicine Capstone: Seminar Credits: 3 (0-0-3)
Course Description: Integration and reflection on health and exercise science disciplinary knowledge.
Prerequisite: (HES 307 or HES 319) and (HES 340 and HES 403).
Registration Information: Senior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 478B Sports Medicine Capstone: Research Credits: 3 (0-6-0)
Course Description: A capstone experience that provides an opportunity to be involved with research in health and exercise science.
Prerequisite: (HES 307 or HES 319) and (HES 340 and HES 403).
Registration Information: Senior standing. Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 478C Sports Medicine Capstone: Teaching Credits: 3 (0-6-0)
Course Description: A capstone course that provides an opportunity to be involved with instruction of a course in Health and Exercise Science.
Prerequisite: (HES 307 or HES 319) and (HES 340 and HES 403).
Registration Information: Senior Standing. Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 478D Sports Medicine Capstone: Service Learning Credits: 3 (0-6-0)
Course Description: A capstone experience that provides an opportunity to be involved with a service-learning project in the community that applies knowledge of Health and Exercise Science.
Prerequisite: (HES 307 or HES 319) and (HES 340 and HES 403).
Registration Information: Senior Standing. Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 484 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 10 credits allowed in course. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 486 Practicum—Wellness Program Management Credits: 3 (1-4-0)
Course Description:
Prerequisite: HES 386.
Registration Information: Junior standing. Must register for lecture and laboratory. Credit not allowed for both HES 486 and HES 486B.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 487 Internship Credits: 12 (0-0-36)
Course Description: Practical application of knowledge, skills, and leadership in a professional situation.
Prerequisite: None.
Registration Information: Senior standing. Consent of department.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 492 Health and Exercise Science Seminar Credits: 3 (0-0-3)
Course Description: Integration and reflection on health and exercise science disciplinary knowledge.
Prerequisite: HES 307 and HES 319 and HES 340 and HES 403.
Registration Information: Senior standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 495A Independent Study: Health Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 495B Independent Study: Biomechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 495C Independent Study: Exercise Science Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 495D Independent Study: Neuromuscular Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 495E Independent Study: Honors Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 496A Group Study: Health Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 496B Group Study: Athletics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 496C Group Study: Biomechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 496D Group Study: Exercise Science Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 496E Group Study: Neuromuscular Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 520 Advanced Exercise Testing and Prescription Credits: 3 (2-2-0)
Course Description: Theory and practice of exercise testing and prescription in apparently healthy and diseased populations.
Prerequisite: HES 403.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 530 Clinical Biomechanics Credits: 3 (3-0-0)
Course Description: Effect of external loads on internal tissues; concern for injury, injury prevention, and rehabilitation.
Prerequisite: BMS 301 and HES 307.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 531 Muscle and Joint Mechanics Credits: 3 (3-0-0)
Course Description: Integrate muscle, tendon, and location of bone attachment into a comprehensive understanding of human movement at the single- and multi-joint level.
Prerequisite: BMS 301 and HES 307.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HES 545 Evolutionary Basis for Health and Fitness Credits: 3 (3-0-0)
Course Description: Evolutionary basis for human health and fitness based upon dietary and exercise patterns for pre-agricultural humans.
Prerequisite: HES 403 and FSHN 350.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 556 Wellness and Health Promotion Concepts Credits: 3 (3-0-0)
Course Description: Discussion of theory and application of health promotion in various settings.
Prerequisite: None.
Registration Information: Credit not allowed for both HES 556 and PBHL 550.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 600 Research Design in Health/Exercise Science Credits: 3 (3-0-0)
Course Description: The research process including design, implementation, proposal synthesis and statistical considerations applied to health and exercise science.
Prerequisite: STAT 100 to 481 - at least 1 course.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 602 Advanced Physiology of Exercise Credits: 3 (3-0-0)
Course Description: Integrative exercise physiology covering metabolism, cardiovascular physiology, pulmonary physiology, and neuromuscular physiology in humans.
Prerequisite: HES 403.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 603 Advanced Topics in Exercise Physiology Credits: 3 (3-0-0)
Course Description: Advanced principles of theoretical and applied exercise physiology at molecular, cellular, and systemic levels.
Prerequisite: HES 403.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 610 Exercise Bioenergetics Credits: 3 (3-0-0)
Course Description: Biology of energy transfer reactions related to human locomotion and exercise performance in both healthy individuals and disease states.
Prerequisite: HES 403.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 619 Advanced Neural Control of Movement Credits: 3 (3-0-0)
Course Description: Neuroanatomical, neurophysiological, and applied topics on the control of force and human movement.
Prerequisite: BMS 300 and BMS 301 and HES 403.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HES 630 Integrative Exercise and Nutrition Metabolism Credits: 3 (3-0-0)
Also Offered As: FSHN 630.
Course Description: Advances in integrative human metabolism under conditions of changing energy flux.
Prerequisite: FSHN 551 and HES 610.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both FSHN 630 and HES 630.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 645 Epidemiology of Health and Physical Activity Credits: 3 (3-0-0)
Course Description: Foundation in chronic disease epidemiology that will enable students to evaluate the current epidemiologic literature.
Prerequisite: HES 600.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 650 Health Promotion Programming Credits: 3 (3-0-0)
Course Description: Development of skills in health promotion program design, implementation and evaluation.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 656 Comprehensive Stress Management Credits: 3 (3-0-0)
Course Description: Relationship between stress and illness emphasizing methods to impact its detrimental effects.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 686A Practicum: Adult Fitness-Human Performance Clinical/ Research Laboratory Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Current CPR certification.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 686B Practicum: Wellness Management Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Current CPR certification.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 686C Practicum: Youth Fitness and Skill Development Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Current CPR certification.
Terms Offered: Fall, Spring, Summer.
Grade Modes: Instructor Option, Traditional.
Special Course Fee: No.

HES 686D Practicum: Health and Exercise Science Research Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Current CPR certification.
Terms Offered: Fall, Spring, Summer.
Grade Modes: Instructor Option, Traditional.
Special Course Fee: No.

HES 686E Practicum: Applied Health and Exercise Science Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Current CPR certification.
Terms Offered: Fall, Spring, Summer.
Grade Modes: Instructor Option, Traditional.
Special Course Fee: No.

HES 687 Internship Credits: Var[3-9] (0-0-0)
Course Description: Practical application of knowledge and skills in a professional situation.
Prerequisite: HES 686A to 686E - at least 1 course.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 692 Seminar Credit: 1 (0-0-1)
Course Description: Consideration of graduate education in health and exercise science.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 693 Seminar Credit: 1 (0-0-1)
Course Description: Current topics and issues in health and exercise science.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 2 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 695A Independent Study: Health Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 695B Independent Study: Exercise Science Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 695C Independent Study: Biomechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 695D Independent Study: Neuromuscular Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional, Undergraduate.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 696A Group Study: Health Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 696B Group Study: Exercise and Nutrition Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 696C Group Study: Exercise Science Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 696D Group Study: Biomechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 696E Group Study: Neuromuscular Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 698 Research Credits: Var[1-18] (0-0-0)
Course Description: Non-thesis research in health and exercise science.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 700 Professional Skills in Bioenergetics Credits: 3 (2-0-1)
Course Description: Grant writing, authorship, peer review process, responsible conduct of science, research ethics, professional conduct, career opportunities.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to doctoral program, or admission to M.S. program and written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 704A Advanced Topics in Bioenergetics: Movement Credits: 3 (3-0-0)
Course Description: Advanced topics in physiology, biochemistry, biomechanics, and neural control exploring pathogenesis and treatment of chronic disease.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Maximum of 6 credits allowed in course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 704B Advanced Topics in Bioenergetics: Physiology Credits: 3 (3-0-0)
Course Description: Advanced topics in physiology, biochemistry, biomechanics, and neural control exploring pathogenesis and treatment of chronic disease.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Maximum of 6 credits allowed in course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 710 Exercise in Disease Prevention Credits: 3 (3-0-0)
Course Description: Role of exercise/physical activity in the prevention, pathophysiology and treatment of chronic diseases.
Prerequisite: HES 403 and HES 520.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HES 735 Human Cardiovascular Control Credits: 3 (2-0-1)
Course Description: Dynamics of cardiovascular control in human health and disease.
Prerequisite: HES 403.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HES 784 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 786 Practicum Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 793 Bioenergetics Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HES 795 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 796 Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 798 Research Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Health and Exercise Science

Students may choose from two concentrations offered in the Major in Health and Exercise Science: Health Promotion or Sports Medicine.

Learning Outcomes

Students will demonstrate:

- Practical knowledge and skills (stress/fitness testing, leadership, administrative, teaching/communication, customer service, and professional attitude) in exercise science and health promotion through laboratory and/or practicum and internship experiences
- Ability to synthesize, integrate, apply, and communicate health and exercise science disciplinary knowledge through structured written assignments and oral presentations

- Skills and knowledge required to successfully compete for employment within the discipline or compete for graduate or professional school placement

Potential Occupations

The United States and other developed countries are struggling with an aging and increasingly unhealthy population. Understanding the role of physical activity in preventing and treating disease and maintaining optimal health at any age is critical. Graduates trained in the foundations of human movement such as anatomy, physiology, exercise prescription and health behavior change AND the ability to apply this knowledge to enhance the health, well-being and functional performance of the public, will be in high demand.

We take pride in training students in Health and Exercise Science to be strong critical thinkers who can express themselves clearly in written and oral form, view the world from multiple perspectives and are models of professional behavior and citizenship: qualities that will serve them well in any career they choose to pursue. Graduates who choose the Health Promotion concentration also acquire theoretical and hands-on training that makes them competitive for career opportunities in a wide variety of areas including, but not limited to: corporate fitness/wellness, community health/wellness, public health, health behavior change, exercise technicians, cardiac rehabilitation, personal trainers, group exercise/fitness instructors, fitness/ medical equipment sales, and recreation directors. In the Sports Medicine concentration, graduates acquire additional course work in areas such as biomechanics, neurophysiology and human nutrition. This training provides excellent preparation for graduate studies in allied health areas and a variety of medical professions.

Concentrations

- Health Promotion Concentration
- Sports Medicine Concentration

Learn more about the Health and Exercise Science major on the Department of Health and Exercise Science website.

Major in Health and Exercise Science, Health Promotion Concentration

The Health Promotion concentration provides academic content and experience in promoting positive health behaviors such as physical activity, weight management, stress management, identification of risk factors associated with chronic disease (cardiovascular rehabilitation, cancer rehabilitation, pulmonary rehabilitation) and exercise prescription. The curriculum focuses on exercise science, behavior change, health promotion program development, business administration, and practical field experiences. This concentration prepares students for careers in a wide variety of allied health fields. Graduates of this concentration have pursued careers working in clinical rehabilitative settings, corporate health and wellness programs, fitness facilities, non-profit organizations, health/wellness areas, as well as continued formal education with graduate school.

Learn more about the Health Promotion concentration on the Department of Health and Exercise Science website (https://www.chhs.colostate.edu/hes/programs-and-degrees/b-s-in-health-and-exercise-science/health-promotion-concentration).

Requirements Effective Fall 2018

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
FSHN 150	Survey of Human Nutrition		3
HES 145	Health and Wellness		3
MATH 118[1]	College Algebra in Context II (GT-MA1)	1B	1
MATH 124[1]	Logarithmic and Exponential Functions (GT-MA1)	1B	1
MATH 125[1]	Numerical Trigonometry (GT-MA1)	1B	1
PSY 100	General Psychology (GT-SS3)	3C	3
Biology - Select one group from the following:			4
Group A:			
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
Group B:			
BZ 110	Principles of Animal Biology (GT-SC2)	3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	3A	
Chemistry - Select one group from the following:[2]			5
Group A			
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	
Group B			
CHEM 111	General Chemistry I (GT-SC2)	3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	

Arts and Humanities		3B	6
	Total Credits		30
Sophomore			
BMS 300	Principles of Human Physiology		4
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
HES 207	Anatomical Kinesiology		3
HES 303[3]	Biomechanics and Neurophysiology		3
SPCM 200	Public Speaking		3
Statistics - Choose one course from the following:			3
STAT 201	General Statistics		
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Electives			6
	Total Credits		31
Junior			
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	3
HES 232	Techniques of Teaching Group Exercise		1
HES 340	Exercise Prescription		3
HES 354	Theory of Health Behavior		3
HES 355	Integration of Health Behaviors		3
HES 386	Practicum–Adult Fitness		2
HES 403	Physiology of Exercise	4B	4
MKT 305	Fundamentals of Marketing		3
MKT 320	Integrated Marketing Communications		3
Health Promotion Guided Electives: Select a minimum of 6 credits from the guided electives list below.			6
	Total Credits		31
Senior			
HES 345	Population Health and Disease Prevention		3
HES 434	Physical Activity Throughout the Lifespan		3
HES 455	Health Promotion Programming	4A,4C	3
HES 486	Practicum–Wellness Program Management		3
HES 487	Internship		12
Electives[4]			4
	Total Credits		28
	Program Total Credits:		120

Health Promotion Guided Electives List

Code	Title	AUCC	Credits
ACT 205	Fundamentals of Accounting		3
ANTH 340	Medical Anthropology		3
or ANTH 379	Evolutionary Medicine and Human Health		
BMS 301	Human Gross Anatomy		5
BMS 420	Cardiopulmonary Physiology		3
BUS 205	Legal and Ethical Issues in Business		3
or BUS 220	Ethics in Contemporary Organizations (GT-AH3)		
CHEM 320	Chemistry of Addictions		3

ECON 325	Health Economics		3
HDFS 101	Individual and Family Development (GT-SS3)	3C	3
or HDFS 201	Perspectives in Gerontology		
HES*** Upper-division course(s) not required elsewhere			3-6
PSY 252	Mind, Brain, and Behavior		3
PSY 260	Child Psychology		3
PSY 300	Positive Psychology		3
PSY 315	Social Psychology		3
PSY 320	Abnormal Psychology		3

Cardiac Care Internship Requirements

Students enrolling in internships in cardiac care must take HES 420 prior to the internship. Students may use elective credits in the sophomore, junior, or senior year to do so. A minimum grade of B (3.000) is required in HES 420 prior to internship placement.

Code	Title	Credits
HES 420	Electrocardiography and Exercise Management	3
It is recommended, but not required, that students enrolling in cardiac care internships take the following courses using elective credit:		
BMS 420	Cardiopulmonary Physiology	3
BMS 450	Pharmacology	3

1 MATH 155 or MATH 160 can be substituted for MATH 118, MATH 124 and MATH 125.

2 CHEM 111/CHEM 112 can be substituted for CHEM 107/ CHEM 108, and should be seriously considered by students who want to go on to graduate studies.

3 Students may substitute HES 307 and HES 319 for HES 303.

4 Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
CO 150	College Composition (GT-CO2)		X	1A	3
HES 145	Health and Wellness		X		3
MATH 118	College Algebra in Context II (GT-MA1)		X	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)		X	1B	1
Biology - Select one group from the following:			X		4
Group A					
LIFE 102	Attributes of Living Systems (GT-SC1)			3A	
Group B					
BZ 110	Principles of Animal Biology (GT-SC2)			3A	
BZ 111	Animal Biology Laboratory (GT-SC1)			3A	
Arts and Humanities				3B	3
	Total Credits				15

Semester 2		Critical	Recommended	AUCC	Credits
FSHN 150	Survey of Human Nutrition		X		3
MATH 125	Numerical Trigonometry (GT-MA1)	X		1B	1
PSY 100	General Psychology (GT-SS3)		X	3C	3
Chemistry - Select one group from the following:			X		5
Group A					
CHEM 107	Fundamentals of Chemistry (GT-SC2)		X	3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)		X	3A	
Group B					
CHEM 111	General Chemistry I (GT-SC2)		X	3A	

CHEM 112	General Chemistry Lab I (GT-SC1)		X	3A	
Arts and Humanities			X	3B	3
AUCC 1B (Quantitative Reasoning) and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
HES 207	Anatomical Kinesiology		X		3
SPCM 200	Public Speaking		X		3
Statistics - select one of the following courses:			X		3
STAT 201	General Statistics				
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
Diversity and Global Awareness			X	3E	3
Historical Perspectives			X	3D	3
CHEM 107/CHEM 108 or CHEM 111/CHEM 112 and LIFE 102 or BZ 110/BZ 111 must be completed by the end of Semester 3.		X			
	Total Credits				15

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
BMS 300	Principles of Human Physiology	X			4
ECON 202	Principles of Microeconomics (GT-SS1)			3C	3
HES 303	Biomechanics and Neurophysiology		X		3
Electives					6
BMS 300, FSHN 150, HES 145, and HES 207 must be completed by the end of semester 4.		X			
	Total Credits				16

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)		X	2	3
HES 232	Techniques of Teaching Group Exercise	X			1
HES 340	Exercise Prescription	X			3
HES 354	Theory of Health Behavior		X		3
MKT 305	Fundamentals of Marketing		X		3
Health Promotion Guided Electives (See course list below)			X		3
	Total Credits				16

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
HES 355	Integration of Health Behaviors	X			3
HES 386	Practicum–Adult Fitness				2
HES 403	Physiology of Exercise	X		4B	4
MKT 320	Integrated Marketing Communications		X		3
Health Promotion Guided Elective (see course list below)			X		3
	Total Credits				15

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
HES 345	Population Health and Disease Prevention	X			3
HES 434	Physical Activity Throughout the Lifespan	X			3
HES 455	Health Promotion Programming	X		4A,4C	3
HES 486	Practicum–Wellness Program Management	X			3
Electives		X			4
The benchmark courses for the 7th semester are the remaining courses in the entire program of study (except for HES 487).		X			
	Total Credits				16

Semester 8		Critical	Recommended	AUCC	Credits
HES 487	Internship	X			12
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12
	Program Total Credits:				120

Code	Title	Credits
Health Promotion - Guided Electives		
Select a minimum of 6 credits		
ACT 205	Fundamentals of Accounting	3
ANTH 340	Medical Anthropology	3
or ANTH 379	Evolutionary Medicine and Human Health	
BMS 301	Human Gross Anatomy	5
BMS 420	Cardiopulmonary Physiology	3
BUS 205	Legal and Ethical Issues in Business	3
or BUS 220	Ethics in Contemporary Organizations (GT-AH3)	
CHEM 320	Chemistry of Addictions	3
ECON 325	Health Economics	3
HDFS 101	Individual and Family Development (GT-SS3)	3
or HDFS 201	Perspectives in Gerontology	
HES *** Upper-division course(s) not required elsewhere		3-6
PSY 252	Mind, Brain, and Behavior	3
PSY 260	Child Psychology	3
PSY 300	Positive Psychology	3
PSY 315	Social Psychology	3
PSY 320	Abnormal Psychology	3

Major in Health and Exercise Science, Sports Medicine Concentration

The Sports Medicine concentration provides a strong science background and a solid grounding in the foundations of human movement. This track is dedicated to preparing students both professionally and academically for their future careers. The Sports Medicine concentration provides excellent preparation for those students seeking pre-professional preparation in medical fields, physical therapy or other allied health fields or students planning on pursuing an advanced degree (Master's and/or Ph.D.) in exercise science or a related field.

Some of the courses required for this concentration include chemistry, biology, physics, anatomy, kinesiology, exercise physiology, biomechanical principles and neuromuscular aspects of human movement, and human nutrition. This concentration provides a comprehensive understanding of health and exercise science while preparing students for post-graduate programs.

Learn more about the Sports Medicine concentration on the Department of Health and Exercise Science website (https://www.chhs.colostate.edu/hes/programs-and-degrees/b-s-in-health-and-exercise-science/sports-medicine-concentration).

Requirements

Effective Fall 2019

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
FSHN 150	Survey of Human Nutrition		3
HES 145	Health and Wellness		3
MATH 118[1]	College Algebra in Context II (GT-MA1)	1B	1
MATH 124[1]	Logarithmic and Exponential Functions (GT-MA1)	1B	1
MATH 125[1]	Numerical Trigonometry (GT-MA1)	1B	1
PSY 100	General Psychology (GT-SS3)	3C	3
Biology - Select one group from the following:			4
Group A			
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
Group B			
BZ 110	Principles of Animal Biology (GT-SC2)	3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	3A	
Chemistry - Select one group from the following:[2]			5
Group A			
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	
Group B			
CHEM 111	General Chemistry I (GT-SC2)	3A	

CHEM 112	General Chemistry Lab I (GT-SC1)	3A	
Arts and Humanities		3B	6
	Total Credits		30

Sophomore

BMS 300	Principles of Human Physiology		4
BMS 302	Laboratory in Principles of Physiology		2
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
HES 207	Anatomical Kinesiology		3
SPCM 200	Public Speaking		3
Statistics - Select one course from the following:			3
STAT 201	General Statistics		
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Electives			6
	Total Credits		31

Junior

CHEM 245[3]	Fundamentals of Organic Chemistry		4
CHEM 246[3]	Fundamentals of Organic Chemistry Laboratory		1
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	3
FSHN 350	Human Nutrition		3
HES 307	Biomechanical Principles of Human Movement		4
HES 340	Exercise Prescription		3
HES 354	Theory of Health Behavior		3
HES 403	Physiology of Exercise	4B	4
PH 121	General Physics I (GT-SC1)	3A	5
	Total Credits		30

Senior

BMS 301	Human Gross Anatomy		5
HES 319	Neuromuscular Aspects of Human Movement		4
HES 345	Population Health and Disease Prevention		3
Sports Medicine Capstone - select one course from the following:[4]			3
HES 478A	Sports Medicine Capstone: Seminar	4A,4C	
HES 478B	Sports Medicine Capstone: Research	4A,4C	
HES 478C	Sports Medicine Capstone: Teaching	4A,4C	
HES 478D	Sports Medicine Capstone: Service Learning	4A,4C	
Sports Medicine Guided Electives - Select 10 credits from the list below:			10
Electives[5]			4
	Total Credits		29
	Program Total Credits:		120

Sports Medicine Guided Electives List:

Code	Title	AUCC	Credits
Select a minimum of 10 credits from the list.			
BC 351	Principles of Biochemistry		4
BMS *** Upper-Division course(s) not required elsewhere			3-5

BZ 310	Cell Biology		4
BZ 350	Molecular and General Genetics		4
FSHN 470	Integrative Nutrition and Metabolism		3
HES *** Upper division course(s) not required elsewhere			2-10
LIFE *** 3-5 credits from Life Sciences (not including LIFE 102)			3-5
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	4
or MATH 160	Calculus for Physical Scientists I (GT-MA1)		
MIP 300	General Microbiology		3
MIP 315	Pathology of Human and Animal Disease		3
OT 215	Medical Terminology		1
PH 122	General Physics II (GT-SC1)	3A	5
or PH 142	Physics for Scientists and Engineers II (GT-SC1)		
PSY 260	Child Psychology		3
or PSY *** Upper-Division course			
SOCR 330	Principles of Genetics		3
SOCR 331	Genetics Laboratory		1

1 MATH 155 or MATH 160 may be substituted for MATH 118, MATH 124 and MATH 125. You may not count MATH 155 or MATH 160 for a Sports Medicine Guided Elective if you have substituted one of these courses for MATH 118, MATH 124 & MATH 125.

2 CHEM 111/CHEM 112 can be substituted for CHEM 107/CHEM 108 and should be seriously considered by students who want to go on to graduate studies. Students should select CHEM 111/CHEM 112 as it better prepares students for CHEM 113/CHEM 114.

3 CHEM 341/CHEM 343/CHEM 344 may be substituted for CHEM 245/CHEM 246 provided that all three courses are completed.

4 Students taking the capstone will initially enroll in HES 478A, but have the option of applying for HES 478B/HES 478C/HES 478D, those selected will be re-enrolled in the appropriate course and section.

5 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
HES 145	Health and Wellness		X		3
MATH 118	College Algebra in Context II (GT-MA1)		X	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)		X	1B	1
Biology - Select one group from the following			X		4
Group A					
LIFE 102	Attributes of Living Systems (GT-SC1)			3A	
Group B					
BZ 110	Principles of Animal Biology (GT-SC2)			3A	
BZ 111	Animal Biology Laboratory (GT-SC1)			3A	
Arts and Humanities			X	3B	3
	Total Credits				15

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
FSHN 150	Survey of Human Nutrition		X		3
MATH 125	Numerical Trigonometry (GT-MA1)	X		1B	1
PSY 100	General Psychology (GT-SS3)		X	3C	3
Chemistry - Select one group from the following:			X		5
Group A					
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	X		3A	

Group B					
CHEM 111	General Chemistry I (GT-SC2)	X		3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	
Arts and Humanities			X	3B	3
AUCC 1B (Quantitative Reasoning) and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
HES 207	Anatomical Kinesiology		X		3
SPCM 200	Public Speaking		X		3
Statistics - Select one course from the following:			X		3
STAT 201	General Statistics				
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
Diversity and Global Awareness			X	3E	3
Historical Perspectives				3D	3
CHEM 107/CHEM 108 or CHEM 111 /CHEM 112 and LIFE 102 or BZ 110/ BZ 111 must be completed by the end of Semester 3.		X			
	Total Credits				15

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
BMS 300	Principles of Human Physiology	X			4
BMS 302	Laboratory in Principles of Physiology		X		2
CHEM 113	General Chemistry II		X		3
CHEM 114	General Chemistry Lab II		X		1
Electives					6
BMS 300, FSHN 150, HES 145, and HES 207 must be completed by the end of semester 4.		X			
	Total Credits				16

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 245	Fundamentals of Organic Chemistry				4
CHEM 246	Fundamentals of Organic Chemistry Laboratory				1
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)		X	2	3
HES 340	Exercise Prescription		X		3
PH 121	General Physics I (GT-SC1)			3A	5
	Total Credits				16

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
FSHN 350	Human Nutrition		X		3
HES 307	Biomechanical Principles of Human Movement		X		4
HES 354	Theory of Health Behavior				3
HES 403	Physiology of Exercise		X	4B	4
	Total Credits				14

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
BMS 301	Human Gross Anatomy		X		5
HES 319	Neuromuscular Aspects of Human Movement	X			4
HES 345	Population Health and Disease Prevention		X		3
Guided Elective (See List on Concentration Requirements Tab)					3
(HES 307 or HES 319), HES 340, and HES 403 must be completed by the end of semester 7.		X			
	Total Credits				15

Semester 8		Critical	Recommended	AUCC	Credits
Sports Medicine Capstone - Select one course from the following:					3
HES 478A	Sports Medicine Capstone: Seminar			4A,4C	
HES 478B	Sports Medicine Capstone: Research			4A,4C	
HES 478C	Sports Medicine Capstone: Teaching			4A,4C	
HES 478D	Sports Medicine Capstone: Service Learning			4A,4C	
Guided Elective (See List on Concentration Requirements Tab)		X			7
Electives		X			4
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				14
	Program Total Credits:				120

Master of Science in Health and Exercise Science, Plan A

The Master of Science in Health and Exercise Science, Plan A offers students a health-oriented, science-based curriculum and research experience. The program is a scientifically rigorous, research focused program that prepares students for further education and/or careers in health and exercise science related fields. The program is structured to prepare students for further education that includes doctoral study, physical and occupational therapy, and medicine (e.g., physicians/physician assistant and nursing). Graduates are represented by careers in: health related research and development and medical and allied health professions.

Learn more about the Master's in Health and Exercise Science on the Department of Health and Exercise Science website (https://www.chhs.colostate.edu/hes/programs-and-degrees/m-s-in-health-and-exercise-science).

Requirements Effective Fall 2014

Code	Title	Credits
Core Courses		
HES 600	Research Design in Health/Exercise Science	3
HES 602	Advanced Physiology of Exercise	3
HES 610	Exercise Bioenergetics	3
HES 693	Seminar	2
HES 698	Research	3
HES 793	Bioenergetics Seminar	1
Statistics [1]		3
Electives [2]		12
Thesis		
HES 699	Thesis	12
Program Total Credits:		42

A minimum of 42 credits are required to complete this program.

[1] Select three credits of statistics with approval of advisor and graduate committee.

[2] Select enough 500-level or above elective credits with approval of advisor and graduate committee to bring the program total to 42 credits.

Ph.D. in Human Bioenergetics

The Ph.D. in Human Bioenergetics covers all aspects of Health and Exercise Science. While it primarily prepares students for academic and research careers, it is also amenable to careers outside academia (e.g. public health, research foundations, footwear/equipment, pharmaceutical or nutrition industries) that require advanced training in research. The program trains professionals in basic and applied research centered around preventing age-related decline in human health and function, understanding the pathophysiology of disease and disability, as well as designing and testing novel countermeasures and maximizing functional performance in first responders, soldiers and athletes.

Learn more about the Ph.D. in Human Bioenergetics on the Department of Health and Exercise Science website (https://www.chhs.colostate.edu/hes/programs-and-degrees/ph-d-in-human-bioenergetics).

Requirements Effective Fall 2014

Code	Title	Credits
Core Courses		
CM 666/PHIL 666	Science and Ethics	3
HES 610	Exercise Bioenergetics	3
HES 700	Professional Skills in Bioenergetics	3
HES 704A	Advanced Topics in Bioenergetics: Movement	3
HES 704B	Advanced Topics in Bioenergetics: Physiology	3
HES 793	Bioenergetics Seminar [1]	4
Statistics [2]		6
Selected Electives [3]		9
Dissertation		
HES 799	Dissertation [3]	12
Master Degree Credit		
Master Degree Credit [4]		30
Program Total Credits:		72

A minimum of 72 credits are required to complete this program.

[1] Course must be taken for a minimum of 4 credits and may be repeated.

[2] Select six credits of statistics with approval of advisor and graduate committee.

[3] Select additional dissertation credits and/or 500-level and above elective credits with approval of advisor and graduate committee to bring the program total to a minimum of 72 credits.

[4] A maximum of 30 credits may be accepted from a master's degree.

Department of Human Development and Family Studies

Office in Behavioral Sciences Building, Room 303
(970) 491-5558

chhs.colostate.edu/hdfs (https://www.chhs.colostate.edu/hdfs)

Professor Lise Youngblade, Department Head
Professor Deborah Fidler, Assistant Department Head

Undergraduate

Majors

- Major in Early Childhood Education
- Major in Human Development and Family Studies
  - Early Childhood Professions Concentration
  - Human Development and Family Studies Concentration
  - Leadership and Entrepreneurial Professions Concentration
  - Pre-Health Professions Concentration
  - Prevention and Intervention Sciences Concentration

Online Degree Programs

The major in Human Development and Family Studies (HDFS) is offered in two formats, both leading to a Bachelor of Science degree. We offer on-campus classes to local degree-seeking students, and we offer distance students the HDFS degree through CSU Online (http://www.online.colostate.edu/degrees/hdfs). The major in Human Development and Family Studies offered through CSU Online provides a flexible, convenient, and accessible format for busy, working, or distance students. The online program of study is the same as the on-campus version, is fully accredited, and is indistinguishable on student transcripts from the on-campus version. The Gerontology Interdisciplinary Minor and courses required to pursue a variety of certifications are also available online.

Gerontology Interdisciplinary Minor

The Gerontology Interdisciplinary Minor is a 21-23 credit program housed in HDFS and available on-campus as well as online, that provides students with the opportunity to earn an undergraduate minor in gerontology. The Gerontology Interdisciplinary Minor prepares students to work in a variety of fields where it is critical to understand the aging process, including the biological, psychological and social aspects of adult development and aging. Admission is ongoing throughout the year. The full program may be found under University-Wide Instructional Programs.

Graduate

Graduate Programs in Human Development and Family Studies

The Department of Human Development and Family Studies (HDFS) offers a Master of Science degree with two specializations and one doctoral program in Applied Developmental Science. The focus of the department is on the study of individual and family development across the lifespan; the development, implementation, and evaluation of intervention and prevention programs for individuals and families at risk; and the influence of social institutions such as schools and communities on development. Our graduate programs advance students' understanding of human behavior and development, as well enable them to contribute to scholarship and professional practice.

Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Human Development and Family Studies (http://www.hdfs.chhs.colostate.edu/students). (http://hdfs.chhs.colostate.edu/students/masters)

Master's Programs

There are two specializations offered under the Master of Science in HDFS: Prevention Science and Marriage and Family Therapy. Curricula in both programs include core courses in individual development, family theories, current research and issues in HDFS, and research methods. A research thesis is also required.

- **Master of Science in HDFS, Marriage & Family Therapy Specialization**
- **Master of Science in HDFS, Prevention Science Specialization**

Ph.D.

The program in Applied Developmental Science builds upon coursework completed in a master's program, yet allows for more advanced, tailored, and personalized learning. Doctoral training also emphasizes mentorships with faculty in order to apply coursework to research in students' areas of specialization.

- **Ph.D. in Applied Developmental Science**

Courses
Human Development and Family Studies (HDFS)

HDFS 101 Individual and Family Development (GT-SS3) Credits: 3 (3-0-0)
Course Description: Principles of life-span human development in the context of the family. Theory and research on the influence of family systems on individuals.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).

HDFS 201 Perspectives in Gerontology Credits: 3 (3-0-0)
Course Description: Multidisciplinary perspectives on a variety of issues in human aging; exploration of careers in gerontology; service-learning with older adults; emphasis on applied gerontology.
Prerequisite: HDFS 101 or PSY 100 or SOC 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 217 Creative Experiences for Children Credits: 3 (2-0-1)
Course Description: Theories of play and creativity provide the foundation for examining the role of art, music, and literature in early childhood development. Exploration of creative techniques appropriate for young children and how these techniques enhance the child's self-expression, creativity, and development in educational, medical, and therapeutic settings.
Prerequisite: HDFS 101 or PSY 100.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 277 Introductory Seminar in HDFS Credit: 1 (1-0-0)
Course Description: Introduction to human development and family studies field, major and concentration requirements, resources, and career exploration. An inclusive environment to develop and practice the necessary skills to transition to the major and academic expectations of the department and college.
Prerequisite: CO 150, may be taken concurrently or HONR 193, may be taken concurrently.
Registration Information: Human Development and Family Studies or Early Childhood Education majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 286 Practicum-Professional Skills Credits: 3 (1-6-0)
Course Description: Observational and applied experience with children, adolescents, adults, or families. Exploration of professional skills and opportunities.
Prerequisite: HDFS 101.
Registration Information: Must have completed 30 credits; required background check through CBI, FBI; major in Human Development and Family Studies or Early Childhood Education only. Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 302 Marriage and Family Relationships Credits: 3 (3-0-0)
Course Description: Preparation for and adjustment to marital and family relationships throughout the life cycle.
Prerequisite: HDFS 101 or SOC 100.
Registration Information: Completion of 30 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 310 Infant and Child Development in Context Credits: 3 (3-0-0)
Course Description: Physical, cognitive, and socioemotional development from conception through middle childhood in context of family, relationships, and culture.
Prerequisite: HDFS 101 or PSY 100.
Registration Information: Completion of 30 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 311 Adolescent/Early Adult Development in Context Credits: 3 (3-0-0)
Course Description: Physical, cognitive, and socioemotional development of adolescents and young adults in context of family, relationships, and culture.
Prerequisite: HDFS 101 or PSY 100.
Registration Information: Completion of 30 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 312 Adult Development-Middle Age and Aging Credits: 3 (3-0-0)
Course Description: Developmental issues and processes pertaining to middle and later adulthood. Contexts in which adult development and aging occur are emphasized.
Prerequisite: HDFS 101 or PSY 100.
Registration Information: Completion of 30 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 315 Disability across the Lifespan and Culture Credits: 3 (3-0-0)
Course Description: Use of interdisciplinary perspective to understand individuals who have disabling conditions relevant to careers in health, educational, rehabilitation, and human service professions. Causes, outcomes, and intervention of commonly occurring disabilities and health conditions (e.g., congenital disabilities, diabetes, spinal cord injuries).
Prerequisite: HDFS 101.
Registration Information: Sophomore standing. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 317 Special Needs in Early Childhood Credits: 3 (3-0-0)
Course Description: Atypical development in early childhood and recommended practices for fostering development of young children (birth through grade 3) with special needs. Includes recommended practices for assessment, intervention, adapted instruction and materials, and inclusive environments to facilitate children's attainment of educational goals.
Prerequisite: HDFS 310 or PSY 260.
Registration Information: Sophomore standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 318 Infancy and Toddlerhood Credits: 3 (3-0-0)
Course Description: Physical, cognitive, language, and socio-emotional development from pre-birth through 36 months, with an emphasis on applied settings.
Prerequisite: HDFS 310 or PSY 260.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 320 Cognitive and Language Development Credits: 3 (3-0-0)
Course Description: Cognitive and language development from birth to adulthood; including biological, social, and cultural influences.
Prerequisite: HDFS 310.
Registration Information: Completion of 30 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 332 Death, Dying, and Grief Credits: 3 (3-0-0)
Course Description: Developmental processes of death and dying related to the dying individuals and their families and for human service agencies.
Prerequisite: HDFS 101 or PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 334 Family and Parenthood Across the Life Cycle Credits: 3 (3-0-0)
Course Description: Parenthood as a developmental process and in the context of family relationships throughout the life cycle.
Prerequisite: HDFS 101 or PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 350 Applied Research Methods Credits: 3 (2-2-0)
Course Description: Interpret, apply, and write about research findings in human development.
Prerequisite: (HDFS 101 or PSY 100) and (STAT 201 or STAT 301).
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 375 Lifespan Intervention and Prevention Science Credits: 3 (3-0-0)
Course Description: Intervention and prevention approaches and skills to improve the health, mental health, and well-being of families and individuals across the lifespan.
Prerequisite: HDFS 310 and HDFS 311.
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 402 Couple and Family Studies Credits: 3 (3-0-0)
Course Description: Theory and research concerning couple and family processes; social contexts in which couples and families change over time.
Prerequisite: HDFS 334.
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 403 Families in the Legal Environment Credits: 3 (3-0-0)
Course Description: The intersection of individuals, children, families and the legal system, including the balance between the right to privacy and government intervention, and social disparities in the legal system. Topics include: establishing the legal parent relationship, adoption, the rights of children and parents, marriage, divorce, dependency and neglect, family violence, disability and estate planning, juvenile delinquency, legalities of gender, and landlord/tenant and housing policy.
Prerequisite: None.
Registration Information: Completion of 60 credits. Sections may be offered: Online. Required field trips.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 404 Child Life Theory and Practice Credits: 3 (3-0-0)
Course Description: Theories and skills related to effective child life practice in hospitals.
Prerequisite: HDFS 310 or PSY 260.
Registration Information: Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 410 Promoting Early Socioemotional Development Credits: 3 (3-0-0)
Course Description: Social and emotional development in children ages 3-8: atypical and typical development, developmental theories and models, risk and protective factors, evidence-based programs, and empirically validated teaching strategies for preventing challenging behaviors and fostering adaptive social skills and emotion regulation.
Prerequisite: HDFS 310 and HDFS 334.
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 411 Developmental Transitions in Adolescence Credits: 3 (3-0-0)
Course Description: Examination of biological, socio-emotional, cognitive, and behavioral changes during adolescence.
Prerequisite: HDFS 311 and HDFS 334.
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 412 Mental and Physical Health in Adulthood Credits: 3 (3-0-0)
Course Description: Mental and physical health of adults, contextual factors of development, and implications for prevention, intervention, and public health planning.
Prerequisite: HDFS 312 and HDFS 375.
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 434 Risk and Resilience Across the Lifespan Credits: 3 (3-0-0)
Course Description: Why some individuals are at high risk for poor developmental outcomes, and why certain individuals fare well despite such risks or adversities. Strong developmental emphasis because resilience is viewed as a process, the results of which may not be manifest for years. There is an ecological emphasis because protective and vulnerability factors often reside in families, schools, neighborhoods.
Prerequisite: HDFS 375.
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 439 Administration of Early Childhood Programs Credits: 3 (3-0-0)
Course Description: Center administration related to program development and operations, budgeting, state regulations and licensing, and personnel issues.
Prerequisite: HDFS 310.
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 445 Early Childhood Health, Safety, and Nutrition Credits: 3 (0-0-3)
Also Offered As: FSHN 445.
Course Description: Planning, promoting and maintaining healthy lifestyle and safe learning environment for preschool children.
Prerequisite: HDFS 310.
Registration Information: Completion of 60 credits. Offered as an online course only. Credit not allowed for both FSHN 445 and HDFS 445.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 470A Campus Connections–Mentoring At-Risk Youth: Youth Mentor Credits: 3 (0-4-2)
Course Description: Service-learning course engaging students as mentors with local at-risk youth.
Prerequisite: None.
Registration Information: Written consent of instructor. Must register for laboratory and recitation. Students must complete an application and a required background check through CBI, FBI. Course may be taken for a maximum of 9 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

HDFS 470B Campus Connections–Mentoring At-Risk Youth: Mentor Coach Credits: 3 (0-4-2)
Course Description: Serve as mentor coach in a service-learning course engaging students as mentors with local at-risk youth.
Prerequisite: HDFS 470 or HDFS 470A.
Registration Information: Written consent of instructor. Must register for laboratory and recitation. Students must complete an application and a required background check through CBI, FBI. Course may be taken for a maximum of 9 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

HDFS 470C Campus Connections–Mentoring At-Risk Youth: Program Administration Credits: 3 (0-4-2)
Course Description: Provide administrative support to a service-learning program for local at-risk youth.
Prerequisite: None.
Registration Information: Written consent of instructor. Must register for laboratory and recitation. Students must complete an application and a required background check through CBI, FBI. Course may be taken for a maximum of 9 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 475 Entrepreneurs and Leaders in Human Services Credits: 3 (3-0-0)
Course Description: Skills and knowledge about leadership and entrepreneurship in areas pertinent to human development and family studies, as human services, non-profits, and other enterprises related to helping individuals, couples, and families.
Prerequisite: HDFS 375.
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 477 HDFS Professional Preparation Credit: 1 (1-0-0)
Course Description: Exploration of professionalism, workplace issues, leadership and communication skills, goal setting, self-management, and building a professional identity in person, writing, and online. Completion of steps to secure an internship.
Prerequisite: HDFS 350, may be taken concurrently.
Registration Information: Completion of 60 credits. Human Development and Family Studies majors only. Sections may be offered: Online. Credit not allowed for both HDFS 477 and HDFS 478.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 478 HDFS Professional Development Credit: 1 (1-0-0)
Course Description: Exploration of professionalism, workplace issues, leadership and communication skills, goal setting, self-management, and building a professional identity in person, writing, and online. Understand the skills and attributes required to become a successful HDFS professional.
Prerequisite: HDFS 350, may be taken concurrently.
Registration Information: Completion of 60 credits. Written consent of instructor. Human Development and Family Studies majors only. Sections may be offered: Online. Credit not allowed for both HDFS 477 and HDFS 478.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HDFS 488A Internship: Human Development and Family Studies Credits: Var[5-8] (0-0-0)
Course Description: Provides an opportunity to integrate HDFS classroom knowledge into real-world experiences. Students complete between 200-320 hours (5-8 credits) at an internship site established and approved by the HDFS Department. Weekly meetings with internship site supervisors foster the development of professional skills and feedback to enhance students' performance, conduct, ethics, and communication skills for the workplace.
Prerequisite: HDFS 477.
Registration Information: Completion of 60 credits. Background check required. Human Development and Family Studies majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 488B Internship: Early Childhood Credits: Var[5-8] (0-0-0)
Course Description: Provides an opportunity to integrate HDFS classroom knowledge into real-world experiences. Students complete between 200-320 hours (5-8 credits) at an internship site established and approved by the HDFS Department. Weekly meetings with internship site supervisors foster the development of professional skills and feedback to enhance students' performance, conduct, ethics, and communication skills for the workplace.
Prerequisite: HDFS 477.
Registration Information: Completion of 60 credits. Background check required. Human Development and Family Studies majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 488C Internship: Pre-Health Credits: Var[5-8] (0-0-0)
Course Description: Provides an opportunity to integrate HDFS classroom knowledge into real-world experiences. Students complete between 200-320 hours (5-8 credits) at an internship site established and approved by the HDFS Department. Weekly meetings with internship site supervisors foster the development of professional skills and feedback to enhance students' performance, conduct, ethics, and communication skills for the workplace.
Prerequisite: HDFS 477.
Registration Information: Completion of 60 credits. Background check required. Human Development and Family Studies majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 488D Internship: Prevention/Intervention Science Credits: Var[5-8] (0-0-0)
Course Description: Provides an opportunity to integrate HDFS classroom knowledge into real-world experiences. Students complete between 200-320 hours (5-8 credits) at an internship site established and approved by the HDFS Department. Weekly meetings with internship site supervisors foster the development of professional skills and feedback to enhance students' performance, conduct, ethics, and communication skills for the workplace.
Prerequisite: HDFS 477.
Registration Information: Completion of 60 credits. Background check required. Human Development and Family Studies majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 488E Internship: Leadership/Entrepreneurship Credits: Var[5-8] (0-0-0)
Course Description: Provides an opportunity to integrate HDFS classroom knowledge into real-world experiences. Students complete between 200-320 hours (5-8 credits) at an internship site established and approved by the HDFS Department. Weekly meetings with internship site supervisors foster the development of professional skills and feedback to enhance students' performance, conduct, ethics, and communication skills for the workplace.
Prerequisite: HDFS 477.
Registration Information: Completion of 60 credits. Background check required. Human Development and Family Studies majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 492 Seminar-Program Proposal Development Credits: 3 (0-0-3)
Course Description: Research, development, and oral presentations of program proposals from a family systems and development perspective.
Prerequisite: (HDFS 350) and (HDFS 477, may be taken concurrently or EDUC 400).
Registration Information: Major in Human Development and Family Studies or Early Childhood Education; completion of 90 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 493 Specialized Seminar Credits: 3 (0-0-3)
Course Description: Advanced study of theory, research, and application in a specialized area.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 495A Independent Study: Human Development Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 495B Independent Study: Family Studies Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 495C Independent Study: Early Childhood Education Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 497A Group Study: Peer Advising Credits: Var[1-3] (0-0-0)
Course Description: Serve as an active member of the Peer Advising Team by providing assistance to undergraduate students and support to the HDFS advisors to enhance the services provided by the HDFS Undergraduate Advising Office.
Prerequisite: HDFS 277.
Registration Information: Written consent of department required.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HDFS 497B Group Study: Undergraduate Outreach and Leadership Credits: Var[1-3] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Registration Information: Written consent of department required. A maximum of 3 credits may count toward a student's concentration. Course may be repeated up to nine times for elective credit.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HDFS 497C Group Study: Student Respect/Wellness Education Credits: Var[1-3] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Registration Information: Written consent of department required. A maximum of 3 credits may count toward a student's concentration. Course may be repeated up to nine times for elective credit.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HDFS 497D Group Study: Asian/Pacific American Cultural Center Credits: Var[1-3] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Registration Information: Written consent of department required. A maximum of 3 credits may count toward a student's concentration. Course may be repeated up to nine times for elective credit.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HDFS 497E Group Study: Rites of Passage Mentoring Program Credit: 1 (0-0-1)
Course Description: Peer mentoring, assisting with a retreat for incoming first year students, attending seminars/community building forums, community service involvement, providing academic resource information, and leadership development. The goal of this course is to improve the academic performance and retention rate of African American first-year and transfer students.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 497F Group Study: Honors Human Development Credits: Var[1-3] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Registration Information: Written consent of department required. A maximum of 3 credits may count toward a student's concentration. Course may be repeated up to nine times for elective credit.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 497G Group Study: Human Development Credits: Var[1-3] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Registration Information: Written consent of department required. A maximum of 3 credits may count toward a student's concentration. Course may be repeated up to nine times for elective credit.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HDFS 498A Research: Human Development Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 498B Research: Family Studies Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 499 Thesis Credits: Var[1-6] (0-0-0)
Course Description: Independent research project presented to a faculty committee.
Prerequisite: None.
Registration Information: Written consent of department chair.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 500 Issues in Human Development & Family Studies Credits: 3 (2-3-0)
Course Description: A selected, broad issue in human development and family studies emphasizing principles of research.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 501 Readings in the Discipline Credit: 1 (1-0-0)
Course Description: Research in human development and family studies content areas; skills in writing an extended literature review.
Prerequisite: None.
Registration Information: Admission to HDFS master's program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 505 Human Development for Helping Professionals Credits: 3 (3-0-0)
Course Description: An advanced overview of lifespan development, focusing on wellness promotion and developmental influences on case conceptualization and treatment.
Prerequisite: None.
Registration Information: Graduate standing or written consent of instructor. This is a partial semester course. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 520 Family Therapy Practice: Treatment Planning Credits: 3 (1-2-1)
Course Description: Integration of family/couple therapy theories and practice related to treatment planning and internal family systems therapy.
Prerequisite: None.
Registration Information: Admission to the Marriage and Family Therapy Program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

HDFS 521 Family Therapy Practice: Common Factors Credits: 3 (1-2-1)
Course Description: Application of common factors - e.g., therapeutic alliance - in family and couple therapy.
Prerequisite: None.
Registration Information: Admission to the Marriage and Family Therapy Program. Must register for lecture, laboratory, and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

HDFS 524 Family Theory Credits: 3 (3-0-0)
Course Description: Major theories and conceptual frameworks for family analysis.
Prerequisite: HDFS 100 to 481 - at least 1 course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 534 Marriage and Family Therapy Credits: 3 (3-0-0)
Course Description: Theories and techniques.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Admission to Marriage and Family Therapy Program or permission of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 549 Research Methods I Credits: 3 (3-0-0)
Course Description: Introduction to empirical research, data analysis, and interpretation in Human Development and Family Sciences.
Prerequisite: None.
Registration Information: Required: 3 credits of STAT; 3 credits of upper division behavioral sciences.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 550 Research Methods II Credits: 3 (3-0-0)
Course Description: Research strategies and ethical considerations.
Prerequisite: HDFS 549.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 590A Workshop: Human Development Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 590B Workshop: Family Studies Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 592 Grant Writing-Human Services and Research Credits: 3 (1-0-2)
Course Description: Writing grant proposals that support client services or for research.
Prerequisite: STAT 201.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 593 Seminar–Human Services Leadership Credit: 1 (0-0-1)
Course Description: Investigates issues relevant to human development and family studies, such as human services, non-profits, and other enterprises related to helping individuals, couples, and families.
Prerequisite: None.
Registration Information: Junior standing. Admission in a graduate program at Colorado State University or consent of instructor. Must have concurrent registration in HDFS 475. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 607 Prevention Science Across the Lifespan Credits: 3 (2-0-1)
Course Description: Theory, methods, interventions, and standards of evidence in preventing mental, emotional, and behavioral disorders.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 608 Program Planning and Implementation Credits: 3 (2-2-0)
Course Description: Design or adapt research-based prevention programs from a family-centered, developmentally appropriate perspective.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 609 Prevention Program Evaluation Credits: 3 (3-0-0)
Course Description: Concepts and practices of program evaluation in prevention science.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 610 Risk and Resilience Credits: 3 (3-0-0)
Course Description: Risk and resilience processes in human development.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 611 Early Child Development Credits: 3 (3-0-0)
Course Description: Advanced study of developmental changes from conception through age ten; research-based applications to practice.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 612 Adolescent Development Credits: 3 (3-0-0)
Course Description: Classical and contemporary theory; review of research related to major developmental processes.
Prerequisite: PSY 300 to 499 - at least 3 credits or SOC 300 to 499 - at least 3 credits or HDFS 300 to 499 - at least 3 credits.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 613 Adult Development and Aging Credits: 3 (3-0-0)
Course Description: Advanced study of developmental change and adaptation during adult years.
Prerequisite: PSY 300 to 499 - at least 3 credits or SOC 300 to 499 - at least 3 credits or HDFS 300 to 499 - at least 3 credits.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 620 Family Therapy Practice: Addictions Credits: 3 (1-2-1)
Course Description: Application of marriage and family therapy theories to clinical practice with a focus on addiction and self-of-the-therapist.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Marriage and Family Therapy Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

HDFS 621 Family Therapy Practice: Topics in Sexuality Credits: 3 (1-2-1)
Course Description: Integration of family therapy theories and practice related to topics in sexuality, termination and referral, and one's personal theory of change.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Marriage and Family Therapy Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

HDFS 624 Skills and Techniques in Family Therapy Credits: 3 (3-0-0)
Course Description: Elaboration of techniques and therapy skills based on theory and research.
Prerequisite: HDFS 534.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Marriage and Family Therapy Program or permission of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 636 Aging and the Family Credits: 3 (3-0-0)
Course Description: Theory and research relating to topics on aging during middle and late years of family life cycle.
Prerequisite: HDFS 300 to 481 - at least 1 course.
Restriction: Must be a: Graduate, Professional.
Registration Information: One course in adult development or 6 credits of upper-division behavioral science.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 644 Foundations in Family Therapy Credits: 3 (3-0-0)
Course Description: Contemporary research and treatment strategies for parenting problems, family violence, and substance abuse.
Prerequisite: HDFS 534.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Marriage and Family Therapy Program or permission of instructor.
Term Offered: Summer (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 650 Multivariate Research Methods I Credits: 3 (2-0-1)
Course Description: Statistical concepts and analysis.
Prerequisite: HDFS 550.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 676 Professional Skills Development Credits: 3 (3-0-0)
Course Description: Fundamental skills of marriage and family therapy; clinic procedures; case assessment, planning, and management.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Marriage and Family Therapy Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 677 Ethical and Legal Issues Credits: 3 (0-0-3)
Course Description: Ethical and legal issues in field of human development and family studies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HDFS 686A Practicum: Human Development Credits: Var[1-15] (0-0-0)
Course Description: Application of human development skills in a variety of professional settings.
Prerequisite: HDFS - at least 9 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 686B Practicum: Family Studies Credits: Var[1-15] (0-0-0)
Course Description: Application of human development skills in a variety of professional settings.
Prerequisite: HDFS - at least 9 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 686D Practicum: Developmental Assessment Credits: Var[1-15] (0-0-0)
Course Description: Application of human development skills in a variety of professional settings.
Prerequisite: HDFS - at least 9 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 686E Practicum: Early Childhood Education Credits: Var[1-15] (0-0-0)
Course Description: Application of human development skills in a variety of professional settings.
Prerequisite: HDFS - at least 9 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 687A Internship: Human Development Credits: Var[1-18] (0-0-0)
Course Description: Application of advanced human development skills in professional settings.
Prerequisite: HDFS 500 to 799 - at least 9 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 687B Internship: Family Studies Credits: Var[1-18] (0-0-0)
Course Description: Application of advanced human development skills in professional settings.
Prerequisite: HDFS 500 to 799 - at least 9 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 687C Internship: Marriage and Family Therapy Credits: Var[1-18] (0-0-0)
Course Description: Application of advanced human development skills in professional settings.
Prerequisite: HDFS 677, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 692A Family Issues: Intimacy and Human Sexuality Credits: 3 (0-0-3)
Course Description: Current issues in the family with implications for intervention, therapy, and policy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Six credits of upper division behavioral sciences.
Term Offered: Summer (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 692B Family Issues: Parenting Credits: 3 (0-0-3)
Course Description: Current issues in the family with implications for intervention, therapy, and policy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Six credits of upper division behavioral sciences.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 692C Family Issues: Family Policy and Programming Credits: 3 (0-0-3)
Course Description: Current issues in the family with implications for intervention, therapy, and policy.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Six credits of upper division behavioral sciences.
Term Offered: Summer (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 692D Family Issues: Contemporary Family Issues Credits: 3 (0-0-3)
Course Description: Current issues in the family with implications for intervention, therapy, and policy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Six credits of upper division behavioral sciences.
Terms Offered: Fall, Spring, Summer. Offered as needed.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 695A Independent Study: Human Development Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 695B Independent Study: Family Studies Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 695C Independent Study: Early Childhood Education Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 697 Group Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 698A Research: Human Development Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 698B Research: Family Studies Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: HDFS 550.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 710 Theories of Applied Developmental Science Credits: 3 (3-0-0)
Course Description: Theories of applied developmental science, and implications for intervention and policy.
Prerequisite: HDFS 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 750 Multivariate Research Methods II Credits: 3 (3-0-0)
Course Description: Applications of multivariate methods to research in applied developmental science.
Prerequisite: HDFS 650.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 772 Marriage and Family Therapy Supervision Credits: 3 (2-0-1)
Course Description: Prepares professionals to supervise marriage and family therapists in a variety of settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 792A Seminar: Lifespan Socioemotional Development Credits: 3 (0-0-3)
Course Description: Current issues in applied developmental science involving a synthesis of theory, research, and application.
Prerequisite: HDFS 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 792B Seminar: Lifespan Cognitive Development Credits: 3 (0-0-3)
Course Description: Current issues in applied developmental science involving a synthesis of theory, research, and application.
Prerequisite: HDFS 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 792C Seminar: Special Topics Credits: 3 (0-0-3)
Course Description: Current issues in applied developmental science involving a synthesis of theory, research, and application.
Prerequisite: HDFS 500.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Major in Early Childhood Education

(Effective Spring Semester 2015, the major in Early Childhood Education replaces the preparation for teacher licensure in Early Childhood Education, Birth through Grade 3. Contact the department for details.)

In collaboration with the Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu) within the School of Education (http://soe.chhs.colostate.edu) (SOE), the Department of Human Development and Family Studies (HDFS) provides a competitive-entry Major in Early Childhood Education requiring an application in the sophomore year for possible admission in the junior year. The degree enables students to apply for Early Childhood teacher licensure and D (http://www.coloradoofficeofearlychildhood.com/#!director-qualifications/c15f)irector Qualifi (http://www.coloradoofficeofearlychildhood.com/#!director-qualifications/c15f)cation (http://www.coloradoofficeofearlychildhood.com/#!director-qualifications/c15f) in the state of Colorado, and qualifies students to engage in a number of early childhood professions including teaching grades P-3 in public or private schools in Colorado, teaching in Head Start or other preschool or childcare programs, establishing a business as a family or center care provider, or serving as director of a childcare center. An understanding of human development and family studies provides a strong foundation for students desiring a license to teach young children between the ages of 0 and 8. Knowledge of lifespan developmental processes and family systems prepares future teachers to work in partnership with parents and grandparents in educating children. Students aspiring to work with children between the ages of 0 and 8 can apply during their sophomore year to the major in Early Childhood Education. If accepted, students take courses in HDFS and SOE as a part of their degree requirements.

Students are encouraged to check the program of study as some prerequisites are required before entry into the major. The Early Childhood Education major uses a cohort model, and admits a limited number of students, typically between 25-30, each year. The admission process takes place once a year in the spring, with the admitted candidates starting in the fall. Students in the Early Childhood Education major achieve both Early Childhood Education core learning outcomes, obtained through HDFS and SOE courses, and all learning outcomes required by the Colorado Department of Education for Early Childhood Education licensure. (http://www.cde.state.co.us/cdeprof/checklist-initialtoprofessionalteacher)

Learning Outcomes

Students will demonstrate:

- Content knowledge and understanding of theory, research, and practice relevant to optimizing the development, health, and well-being of children and families in the context of the larger social environment.
- Effective written and oral communication skills appropriate for early childhood educators interfacing with colleagues, children, and parents/guardians.
- The ability to access, critically evaluate, and apply multiple forms of information related to children and families.
- Professional and leadership skills with individuals and families, including ethical and culturally sensitive conduct.
- Knowledge and skill in teaching and assessing literacy, mathematics, social studies, science, music, art, and physical education in early childhood.

Learn more about the Early Childhood Education major on the Department of Human Development and Family Studies website (https://www.chhs.colostate.edu/hdfs/programs-and-degrees/b-s-in-early-childhood-education).

Requirements

Effective Fall 2016

Students must complete the following courses with a C or better to fulfill requirements for the major: all EDUC courses, all HDFS courses, and PSY 460**.**

Freshman

		AUCC	Credits
Select one course from the following:[1]			3-4
BZ 101	Humans and Other Animals (GT-SC2)	3A	
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
CO 150	College Composition (GT-CO2)	1A	3
HDFS 101	Individual and Family Development (GT-SS3)	3C	3
HDFS 217	Creative Experiences for Children		3
HDFS 277	Introductory Seminar in HDFS		1
PSY 100	General Psychology (GT-SS3)	3C	3
Arts and Humanities		3B	6

Diversity and Global Awareness		3E	3
Historical Perspectives[2]		3D	3
Quantitative Reasoning[3]		1B	3
	Total Credits		31-32

Sophomore

Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
EDUC 275	Schooling in the United States (GT-SS3)	3C	3
HDFS 310	Infant and Child Development in Context		3
HDFS 311	Adolescent/Early Adult Development in Context		3
HDFS 318	Infancy and Toddlerhood		3
HDFS 320	Cognitive and Language Development		3
HDFS 334	Family and Parenthood Across the Life Cycle		3
Select one course from the following:			3
STAT 201	General Statistics		
STAT 301	Introduction to Statistical Methods		
Biological and Physical Sciences[1]		3A	3-4
Electives			3
	Total Credits		30-31

Junior

EDUC 331	Educational Technology and Assessment		2
EDUC 340	Literacy and the Learner		3
EDUC 400	Diagnostic Teaching of Reading		3
EDUC 425	Early Childhood Education I		4
FSHN 445/HDFS 445	Early Childhood Health, Safety, and Nutrition		3
Select one course from the following:			3
HDFS 317	Special Needs in Early Childhood		
PSY 460	Child Exceptionality and Psychopathology		
HDFS 350	Applied Research Methods	4A	3
HDFS 375	Lifespan Intervention and Prevention Science		3
HDFS 410	Promoting Early Socioemotional Development		3
Elective			3
	Total Credits		30

Senior

EDUC 426	Early Childhood Education II		4
EDUC 485C	Student Teaching: Early Childhood		12
EDUC 493A	Seminar: Professional Relations		1
HDFS 434	Risk and Resilience Across the Lifespan	4B	3
HDFS 439	Administration of Early Childhood Programs		3
HDFS 492	Seminar-Program Proposal Development	4C	3
Elective			2
	Total Credits		28
	Program Total Credits:		120

1 BZ 101 or LIFE 102 is required for the major in the freshman year. Select the remaining credits and course(s) from the list of courses in category 3A of the AUCC.

2 Select from the list of HIST courses in category 3D of the AUCC.

3 Any course listed under category 1B is acceptable. Recommended are MATH 117, MATH 118, MATH 124; or MATH 101; or MATH 105.

Major Completion Map

Distinctive Requirements for Degree Program:

Students seeking admission to the Early Childhood Education (ECE) Major with teacher licensure must formally apply and be accepted. The admission process into the program takes place once a year in the spring with the admitted candidates starting the program the following fall. All coursework within the Center for Educator Preparation (CEP) requires a 4 semester (or 2 year) consecutive commitment to complete, therefore EDUC subject code courses must be taken in the semester indicated. Requirements for applying to the ECE major: 1) Must have a 2.75 GPA or better, 2) Suggested to have completed 60 credits (or more) by the end of the semester in which the student is applying (typically students apply their second semester sophomore year), 3) Must have 20 hours of volunteer or work service with children ages 0-8 years (experience must have been within the last 5 years), 4) Must have 3 references. All HDFS subject code courses and EDUC subject code courses must be completed with a grade of C or higher. Students will be required to pass a criminal arrest record background check prior to participating in field placement courses. Students will complete a graduation contract with an HDFS Academic Advisor during the first two weeks of the semester in which they are graduating.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
HDFS 101	Individual and Family Development (GT-SS3)	X		3C	3
HDFS 277	Introductory Seminar in HDFS		X		1
Arts and Humanities				3B	3
Historical Perspectives				3D	3
Quantitative Reasoning				1B	3
MATH 101 or MATH 117/MATH 118/MATH 124 strongly recommended to fulfill the AUCC 1B Mathematics requirement.			X		
	Total Credits				16

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3-4
BZ 101	Humans and Other Animals (GT-SC2)		X	3A	
LIFE 102	Attributes of Living Systems (GT-SC1)		X	3A	
HDFS 217	Creative Experiences for Children	X			3
PSY 100	General Psychology (GT-SS3)		X	3C	3
Arts and Humanities				3B	3
Diversity and Global Awareness				3E	3
HDFS 277 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
HDFS 310	Infant and Child Development in Context	X			3
HDFS 311	Adolescent/Early Adult Development in Context		X		3
HDFS 334	Family and Parenthood Across the Life Cycle		X		3
Biological and Physical Sciences				3A	3-4
Elective					3
	Total Credits				16

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 275	Schooling in the United States (GT-SS3)		X	3C	3
HDFS 320	Cognitive and Language Development		X		3
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)		X	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)		X	2	
HDFS 318	Infancy and Toddlerhood				3
Select one course from the following:					3
STAT 201	General Statistics		X		
STAT 301	Introduction to Statistical Methods		X		

It is recommended that students apply to ECE program by the end Semester 4.			X		
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 331	Educational Technology and Assessment	X			2
EDUC 340	Literacy and the Learner	X			3
HDFS 375	Lifespan Intervention and Prevention Science		X		3
HDFS 410	Promoting Early Socioemotional Development		X		3
HDFS 445/ FSHN 445	Early Childhood Health, Safety, and Nutrition		X		3
PSY 100, STAT 201 OR STAT 301 must be completed by the end of Semester 5.		X			
Student must be admitted to Teacher Licensure Program by the end of Semester 5.		X			
	Total Credits				14
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 400	Diagnostic Teaching of Reading	X			3
EDUC 425	Early Childhood Education I	X			4
HDFS 350	Applied Research Methods	X		4A	3
Select one course from the following:					3
HDFS 317	Special Needs in Early Childhood	X			
PSY 460	Child Exceptionality and Psychopathology	X			
Elective					3
HDFS 320 must be completed by the end of Semester 6.		X			
	Total Credits				16
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 426	Early Childhood Education II	X			4
HDFS 434	Risk and Resilience Across the Lifespan	X		4B	3
HDFS 439	Administration of Early Childhood Programs				3
HDFS 492	Seminar-Program Proposal Development	X		4C	3
Elective					2
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 485C	Student Teaching: Early Childhood	X			12
EDUC 493A	Seminar: Professional Relations	X			1
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				13
	Program Total Credits:				120

Major in Human Development and Family Studies

Human Development and Family Studies (HDFS) (https://www.chhs.colostate.edu/hdfs/programs-and-degrees/b-s-in-human-development-and-family-studies) is an interdisciplinary major focusing on the development of individuals across the lifespan, within the context of family and culture. Students complete foundational coursework in human development (i.e., infancy and childhood, adolescence, emerging and young adulthood, middle and later adulthood/aging) and in the area of family studies. Students study theory and innovative research in the field and learn to identify diverse factors influencing cognitive, emotional, social, and physical development across the lifespan. A hallmark of the HDFS degree program is participation in a semester-long internship during which students apply knowledge and skills acquired in foundational course work and gain valuable experience in their professional field. The HDFS major offers five concentrations that enable students to specialize within their degree and prepare for a variety of career paths. In addition to selecting one of five concentrations, students have the opportunity to work toward the Gerontology Interdisciplinary Minor (http://catalog.colostate.edu/general-catalog/university-wide-programs/interdisciplinary-studies/gerontology-interdisciplinary-minor) or Director Qualifications in early childhood settings, or apply to the Major in Early Childhood Education.

Learning Outcomes

Students will demonstrate:

- Content knowledge and understanding of theory, research, and practice relevant to optimizing the development, health, and well-being of individuals and families across the lifespan in the context of the larger social environment.
- Effective written and oral communication skills appropriate to the field of human development and family studies.
- The ability to access, critically evaluate, and apply multiple forms of information related to individuals and families.
- Professional and leadership skills with individuals and families, including ethical and culturally sensitive conduct.

Potential Occupations

Graduates with a major in HDFS are prepared to work in a range of human service sector settings including youth services organizations; early childhood, elementary, adolescent, and parent education programs; health-care settings; juvenile and adult corrections and criminal justice; family and community services; and programs serving older adults, including long-term care facilities. Students interested in teaching human development and family studies content at the secondary level should explore the interdepartmental Major in Family and Consumer Sciences, Education Concentration. HDFS graduates are also well prepared to pursue graduate degrees in mental health, behavioral and social sciences, education, health and medicine, and other professional programs.

Some examples of career opportunities students may pursue with a bachelor's degree in HDFS include, but are not limited to: early childhood administrator and teacher, adult recreation programmer, administrator in adult and aging facilities, career development specialist, family services specialist, human development specialist, adult education teacher, human resources coordinator, youth agency administrator, community outreach worker, women's program administrator, youth intervention and prevention program administrator, youth employment, training, and development specialist, parent educator, children-family educator, child protection worker, family assistance worker, program administrator, public relations specialist, student affairs professional, youth services worker, case manager, nonprofit agency administrator, and residential center manager.

To help guide students in career planning, there are five concentrations within the Major in Human Development and Family Studies. The HDFS program of study consists of the HDFS foundational courses, which are required for all students regardless of concentration, 15 credits selected from the list of courses within students' chosen concentration, and additional electives to reach 120 credits as required for graduation. Students must declare a minimum of one concentration and may not declare more than two concentrations in the HDFS major. The declared concentration(s) are listed on the students' transcripts and thus indicate specialized training within the HDFS degree program.

Human Development and Family Studies Concentration

The Human Development and Family Studies concentration is a general concentration available to HDFS majors who do not choose one of the more specific concentrations. This general concentration is an excellent choice for students who are interested in a lifespan or more general focus in HDFS and are not seeking the specialized training offered in the other four concentrations. Students choosing this concentration will be preparing to enter a variety of careers or graduate programs, as outlined above. The curriculum includes primarily HDFS, psychology, and social work courses as well as selected courses from other disciplines for a well-rounded and robust education in human development and family studies. By selecting this concentration, students have an opportunity to participate in a variety of experiential learning courses and internship options as they explore and prepare for their career path and additional credentialing options. Please note that the HDFS general concentration does not appear on students' transcripts.

Early Childhood Professions Concentration

The courses in the Early Childhood Professions concentration prepare students for careers in early childhood education as well as professional work with children across a variety of settings, including working with children with special needs. This concentration focuses on early childhood development from birth to eight years old and therefore is an ideal choice for first and second year HDFS majors who plan to apply to the competitive on-campus Major in Early Childhood Education during their sophomore year. Additionally, this concentration is the preferred choice for students interested in early childhood education careers that do not require teacher licensure, for students who will pursue a graduate degree and licensure in childhood education, and those interested in combining the concentration with another concentration in pre-health, prevention and intervention sciences, or leadership and entrepreneurial professions. Students interested in working with children with special needs, those seeking director qualifications in early childhood education, and those seeking other relevant credentials would also benefit from choosing this concentration. The curriculum incorporates courses from several disciplines that focus on early child development, education, diversity, and professional skills.

Pre-Health Professions Concentration

Many students pursuing an HDFS degree plan to apply to graduate or professional programs in a variety of health professions. The Pre-Health Professions concentration prepares students for these careers and supports their goals of obtaining graduate training. Some of the careers students in this concentration pursue are: allied health practitioner, anesthesiologist assistant, child life specialist, chiropractor, dentist, medical doctor, music therapist, naturopathic or complementary medicine practitioner, nurse, occupational therapist, optometrist, pharmacist, physical therapist, physician's assistant, podiatrist, public health educator, speech and language pathologist, or veterinarian. The courses within this concentration include a focus on science and also help prepare students to work with individuals (and their families) with disabilities, mental and physical illness, or those experiencing death, dying, or grief. In addition, students in this concentration are strongly encouraged to consult with health professions advisors in the Collaborative for Student Achievement (http://studentachievement.colostate.edu) for specific course (and corresponding course prerequisite) recommendations based on the credentials that they are pursuing, as the prerequisite requirements vary for graduate and professional programs.

Prevention and Intervention Sciences Concentration

The Prevention and Intervention Sciences concentration is designed for students who are preparing for careers in the helping and human services professions such as counselors, educators, student affairs professionals, and social service providers, as well as for students seeking a research career in human development and family studies or a related field. This concentration is an excellent choice for students interested in careers requiring either a bachelor's degree or additional credentials.

Concentration coursework emphasizes evidence-based programs, and students will learn how to design and implement community-based prevention and intervention programs for youth, adults, and families. Students can either focus on a specific aspect of the lifespan or choose courses across the lifespan.

Leadership and Entrepreneurial Professions Concentration

The Leadership and Entrepreneurial Professions concentration guides students who are preparing for leadership positions in organizations that promote the optimal development of individuals and families. Students in this concentration may intend to work in organizations as directors, managers, or owners. This concentration includes coursework in finance, management, marketing, public policy, professional communication, and leadership. This concentration is also appropriate for students preparing for careers in legal services, such as lawyers or politicians, as well as director positions and other leadership positions in the human services sector. Students in this concentration may choose to pursue additional credentials in leadership, business and entrepreneurship.

Online Degree Program

The Major in Human Development and Family Studies (HDFS) is offered in two formats, both leading to a Bachelor of Science degree. We offer on-campus classes to local degree-seeking students, and we offer distance students the HDFS degree through the Division of Continuing Education and CSU Online (http://www.online.colostate.edu). The online Bachelor of Science degree in HDFS (https://www.online.colostate.edu/degrees/hdfs) provides a flexible, convenient, and accessible format for busy, working, or distance students. The courses in the online program are the same as the on-campus courses. The online Bachelor of Science degree in HDFS carries the full accreditation of CSU and is indistinguishable on student transcripts from the on-campus version of the degree.

Concentrations

- Early Childhood Professions Concentration
- Human Development and Family Studies Concentration
- Leadership and Entrepreneurial Professions Concentration
- Pre-Health Professions Concentration
- Prevention and Intervention Sciences Concentration

Learn more about the Human Development and Family Studies major on the Department of Human Development and Family Studies website (https://www.chhs.colostate.edu/hdfs/programs-and-degrees/b-s-in-human-development-and-family-studies).

Major in Human Development and Family Studies, Early Childhood Professions Concentration

The courses in the Early Childhood Professions concentration prepare students for careers in early childhood education as well as professional work with children across a variety of settings, including working with children with special needs. This concentration focuses on early childhood development from birth to eight years old and therefore is an ideal choice for first and second year HDFS majors who plan to apply to the competitive on-campus Major in Early Childhood Education during their sophomore year. This concentration is also the preferred choice for students interested in the early childhood education careers that do not require teacher licensure, for students who will pursue a graduate degree and licensure in childhood education, and those interested in combining this concentration with another concentration in pre-health, prevention and intervention sciences, or leadership and entrepreneurial professions. Students interested in working with children with special needs, those seeking director qualifications in early childhood education, and those seeking other relevant credentials would also benefit from choosing this concentration. The curriculum incorporates courses from several

disciplines that focus on early child development, education, diversity, and professional skills.

Learn more about the Human Development and Family Studies major on the Department of Human Development and Family Studies website (https://www.chhs.colostate.edu/hdfs/programs-and-degrees/b-s-in-human-development-and-family-studies). (https://www.chhs.colostate.edu/hdfs/programs-and-degrees/b-s-in-human-development-and-family-studies)

Requirements

Effective Fall 2019

A minimum grade of C is required in all courses used to satisfy the requirements of the Major in Human Development and Family Studies, Early Childhood Professions Concentration. Courses used as substitutions also require a minimum grade of C.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
HDFS 101	Individual and Family Development (GT-SS3)	3C	3
HDFS 277	Introductory Seminar in HDFS		1
PSY 100	General Psychology (GT-SS3)	3C	3
SOC 100	General Sociology (GT-SS3)	3C	3
Select one course from the following:			3-4
BZ 101	Humans and Other Animals (GT-SC2)	3A	
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
Arts and Humanities		3B	6
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Quantitative Reasoning		1B	3
	Total Credits		31-32

Sophomore

HDFS 310	Infant and Child Development in Context		3
HDFS 311	Adolescent/Early Adult Development in Context		3
HDFS 312	Adult Development-Middle Age and Aging		3
HDFS 334	Family and Parenthood Across the Life Cycle		3
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
Select one course from the following:			3
STAT 201	General Statistics		
STAT 301	Introduction to Statistical Methods		
Early Childhood Professions Concentration Courses (See list below)			3
Biological and Physical Sciences		3A	3-4
Electives			6
	Total Credits		30-31

Junior

HDFS 350	Applied Research Methods	4A	3
HDFS 375	Lifespan Intervention and Prevention Science		3
HDFS 402	Couple and Family Studies		3
HDFS 434	Risk and Resilience Across the Lifespan	4B	3
Select one course from the following:[1]			1
HDFS 477	HDFS Professional Preparation		
HDFS 478	HDFS Professional Development		
Early Childhood Professions Concentration Courses (See list below)			6

Electives			11
	Total Credits		30
Senior			
HDFS 410	Promoting Early Socioemotional Development		3
HDFS 488B[1]	Internship: Early Childhood		5-8
HDFS 492	Seminar-Program Proposal Development	4C	3
Early Childhood Professions Concentration Course (See list below)			3
Electives[2]			11-14
	Total Credits		28
	Program Total Credits:		120

Early Childhood Professions Concentration Courses

Of the 15 credits of concentration courses, 3 credits of HDFS 410 are required (as noted above). Of the remaining 12 credits, a minimum of 6 credits must be HDFS courses and a minimum of 9 credits must be upper-division (300- to 400-level). Courses may not double-count for more than one HDFS concentration.

Code	Title	AUCC	Credits
Select 6-12 credits from the following courses:			
FSHN 445/HDFS 445	Early Childhood Health, Safety, and Nutrition		3
HDFS 217	Creative Experiences for Children		3
HDFS 286	Practicum-Professional Skills		3
HDFS 317	Special Needs in Early Childhood		3
HDFS 318	Infancy and Toddlerhood		3
HDFS 320	Cognitive and Language Development		3
HDFS 439	Administration of Early Childhood Programs		3
Select 0-6 credits from the following courses:			
D 324	Teaching Creative Movement for Children		2
EDUC 275	Schooling in the United States (GT-SS3) [3]	3C	3
IE 471	Children and Youth in Global Context		3
PSY 460	Child Exceptionality and Psychopathology		3
SOWK 371A	Social Work with Selected Populations: Children and Families		3

1 Students with substantial concentration-specific work experience may petition the Director of Undergraduate Advising in HDFS to replace HDFS 488B with additional coursework and complete HDFS 478 instead of **HDFS 477**.

2 Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

3 Courses selected to fulfill All-University Core Curriculum (AUCC) requirements may not double count toward the Early Childhood Professions Concentration Course requirement.

Major Completion Map

Distinctive Requirements for Degree Program:

Human Development and Family Studies is an open-entry major for freshmen. For sophomores and above, students must complete and/or be enrolled in HDFS 101, PSY 100 or SOC 100 in order to declare HDFS. HDFS subject code courses must be completed with a grade of C or higher. Background

check required prior to participating in the internship course (HDFS 488B) during the senior year. Students will complete a graduation contract with an HDFS Academic Advisor during the first two weeks of the semester in which they are graduating.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
HDFS 101	Individual and Family Development (GT-SS3)	X		3C	3
HDFS 277	Introductory Seminar in HDFS		X		1
Arts and Humanities				3B	3
Historical Perspectives				3D	3
Quantitative Reasoning				1B	3
	Total Credits				16

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
PSY 100	General Psychology (GT-SS3)		X	3C	3
SOC 100	General Sociology (GT-SS3)		X	3C	3
Select one course from the following:					3-4
BZ 101	Humans and Other Animals (GT-SC2)		X	3A	
LIFE 102	Attributes of Living Systems (GT-SC1)		X	3A	
Arts and Humanities				3B	3
Diversity and Global Awareness				3E	3
CO 150, HDFS 277, and AUCC 1B (Quantitative Reasoning) requirement must be completed by the end of Semester 2.		X			
	Total Credits				15-16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
HDFS 310	Infant and Child Development in Context	X			3
HDFS 311	Adolescent/Early Adult Development in Context		X		3
HDFS 312	Adult Development-Middle Age and Aging		X		3
HDFS 334	Family and Parenthood Across the Life Cycle				3
Biological and Physical Sciences				3A	3-4
	Total Credits				15-16

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)		X	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)		X	2	
Select one course from the following:					3
STAT 201	General Statistics		X		
STAT 301	Introduction to Statistical Methods		X		
Early Childhood Professions Concentration Course (See Department List on Concentration Requirements tab)					3
Electives					6
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
HDFS 350	Applied Research Methods		X	4A	3
HDFS 375	Lifespan Intervention and Prevention Science				3
Early Childhood Professions Concentration Course (See Department List on Concentration Requirements tab)					3
Electives					5
STAT 201 or STAT 301 must be completed by the end of Semester 5.		X			
	Total Credits				14

Semester 6		Critical	Recommended	AUCC	Credits
HDFS 402	Couple and Family Studies				3
HDFS 434	Risk and Resilience Across the Lifespan			4B	3
Select one course from the following:					1
HDFS 477	HDFS Professional Preparation				
HDFS 478	HDFS Professional Development				
Early Childhood Professions Concentration Course (See Department List on Concentration Requirements tab)					3
Electives					6
	Total Credits				16

Senior

Semester 7		Critical	Recommended	AUCC	Credits
HDFS 410	Promoting Early Socioemotional Development				3
HDFS 488B	Internship: Early Childhood				5-8
Early Childhood Professions Concentration Course (See Department List on Concentration Requirements tab)					3
Elective					0-3
HDFS 350 must be completed by the end of Semester 7.		X			
	Total Credits				14

Semester 8		Critical	Recommended	AUCC	Credits
HDFS 492	Seminar-Program Proposal Development	X		4C	3
Electives		X			11
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				14
	Program Total Credits:				120

Major in Human Development and Family Studies, Human Development and Family Studies Concentration

The Human Development and Family Studies concentration is a general concentration available to HDFS majors who do not choose one of the more specific concentrations. This general concentration is an excellent choice for students who are interested in a lifespan or more general focus in HDFS and are not seeking the specialized training offered in the other four concentrations. Students choosing this concentration will be preparing to enter a variety of careers or graduate programs, as outlined above. The curriculum includes primarily HDFS, psychology, and social work courses as well as selected courses from other disciplines for a well-rounded and robust education in human development and family studies. By selecting this concentration, students have an opportunity to participate in a variety of experiential learning courses and internship options as they explore and prepare for their career path and additional credentialing options. Please note that the HDFS general concentration does not appear on students' transcripts.

Learn more about the Human Development and Family Studies major on the Human Development and Family Studies website (https://www.chhs.colostate.edu/hdfs/programs-and-degrees/b-s-in-human-development-and-family-studies). (https://www.chhs.colostate.edu/hdfs/programs-and-degrees/b-s-in-human-development-and-family-studies)

Requirements

Effective Fall 2019

A minimum grade of C is required in all courses used to satisfy the requirements of the Major in Human Development and Family Studies, Human Development and Family Studies Concentration. Courses used as substitutions also require a minimum grade of C.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
HDFS 101	Individual and Family Development (GT-SS3)	3C	3
HDFS 277	Introductory Seminar in HDFS		1
PSY 100	General Psychology (GT-SS3)	3C	3
SOC 100	General Sociology (GT-SS3)	3C	3
Select one course from the following:			3-4

BZ 101	Humans and Other Animals (GT-SC2)	3A	
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
Arts and Humanities		3B	6
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Quantitative Reasoning		1B	3
	Total Credits		31-32
Sophomore			
HDFS 310	Infant and Child Development in Context		3
HDFS 311	Adolescent/Early Adult Development in Context		3
HDFS 334	Family and Parenthood Across the Life Cycle		3
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
Select one course from the following:			3
STAT 201	General Statistics		
STAT 301	Introduction to Statistical Methods		
Biological and Physical Sciences		3A	3-4
Electives			12
	Total Credits		30-31
Junior			
HDFS 312	Adult Development-Middle Age and Aging		3
HDFS 350	Applied Research Methods	4A	3
HDFS 375	Lifespan Intervention and Prevention Science		3
HDFS 402	Couple and Family Studies		3
HDFS 434	Risk and Resilience Across the Lifespan	4B	3
Select one course from the following:[1]			1
HDFS 477	HDFS Professional Preparation		
HDFS 478	HDFS Professional Development		
Human Development and Family Studies Concentration Courses (See list below)			9
Electives			5
	Total Credits		30
Senior			
HDFS 488A[1]	Internship: Human Development and Family Studies		5-8
HDFS 492	Seminar-Program Proposal Development	4C	3
Human Development and Family Studies Concentration Courses (See list below)			6
Electives[2]			11-14
	Total Credits		28
	Program Total Credits:		120

Human Development and Family Studies Concentration Courses

Of the required total of 15 credits, a minimum of 9 credits must be HDFS courses. A minimum of 12 credits must be upper-division (300- to 400-level). Courses may not double-count for more than one HDFS concentration.

Code	Title	Credits
Select 9-15 credits from the following courses:		
HDFS 201	Perspectives in Gerontology	3
HDFS 217	Creative Experiences for Children	3
HDFS 286	Practicum-Professional Skills	3
HDFS 317	Special Needs in Early Childhood	3

HDFS 318	Infancy and Toddlerhood	3
HDFS 320	Cognitive and Language Development	3
HDFS 332	Death, Dying, and Grief	3
HDFS 403	Families in the Legal Environment	3
HDFS 404	Child Life Theory and Practice	3
HDFS 439	Administration of Early Childhood Programs	3
One course from the following may count:		
HDFS 410	Promoting Early Socioemotional Development	
HDFS 411	Developmental Transitions in Adolescence	
HDFS 412	Mental and Physical Health in Adulthood	
Three credits from the following may count:		
HDFS 470A	Campus Connections–Mentoring At-Risk Youth: Youth Mentor	
HDFS 497A	Group Study: Peer Advising	
HDFS 497B	Group Study: Undergraduate Outreach and Leadership	
Select 0-6 credits from the following courses:		
D 324	Teaching Creative Movement for Children	2
ETST 405	Ethnicity, Class, and Gender in the U.S.	3
FSHN 150	Survey of Human Nutrition	3
FSHN 444	Nutrition and Aging	1
HES 434	Physical Activity Throughout the Lifespan	3
IE 471	Children and Youth in Global Context	3
OT 355	The Disability Experience in Society	2
PHIL 205	Introduction to Ethics	3
PHIL 327	Philosophy of Behavioral Sciences	3
POLS 460	Public Policy Process	3
PSY 252	Mind, Brain, and Behavior	3
PSY 310	Basic Counseling Skills	3
PSY 320	Abnormal Psychology	3
PSY 328	Psychology of Human Sexuality	3
PSY 454	Biological Psychology	3
PSY 460	Child Exceptionality and Psychopathology	3
PSY 492A	Seminar: Applied Social Psychology	1-3
PSY 492B	Seminar: Cognitive Psychology	1-3
PSY 492C	Seminar: Counseling/Clinical Psychology	1-3
PSY 492D	Seminar: Industrial/Organizational Psychology	1-3
PSY 492E	Seminar: Perceptual and Brain Sciences	1-3
PSY 492F	Seminar: Special Topics in Psychology	1-3
SOWK 370	Addictions - A Social Work Perspective	3
SOWK 371A	Social Work with Selected Populations: Children and Families	3
SOWK 371B	Social Work with Selected Populations: Juvenile Offenders	3
SOWK 371C	Social Work with Selected Populations: Adult Offenders	3
SOWK 371E	Social Work with Selected Populations: Social Gerontology	3
SPCM 334	Co-Cultural Communication	3

1 Students with substantial concentration-specific work experience may petition the Director of Undergraduate Advising in HDFS to replace HDFS 488A with additional coursework and complete HDFS 478 instead of HDFS 477.

2 Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

Human Development and Family Studies is an open-entry major for freshmen. For sophomores and above, students must complete and/or be enrolled in HDFS 101, PSY 100 or SOC 100 in order to declare HDFS. HDFS subject code courses must be completed with a grade of C or higher. Background

check required prior to participating in the internship course (HDFS 488A) during the senior year. Students will complete a graduation contract with an HDFS Academic Advisor during the first two weeks of the semester in which they are graduating.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
HDFS 101	Individual and Family Development (GT-SS3)	X		3C	3
HDFS 277	Introductory Seminar in HDFS		X		1
Arts and Humanities				3B	3
Historical Perspectives				3D	3
Quantitative Reasoning				1B	3
	Total Credits				16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
PSY 100	General Psychology (GT-SS3)		X	3C	3
SOC 100	General Sociology (GT-SS3)		X	3C	3
Select one course from the following:					3-4
BZ 101	Humans and Other Animals (GT-SC2)		X	3A	
LIFE 102	Attributes of Living Systems (GT-SC1)		X	3A	
Arts and Humanities				3B	3
Diversity and Global Awareness				3E	3
CO 150, HDFS 277 and the AUCC 1B (Quantitative Reasoning) requirement must be completed by the end of Semester 2.		X			
	Total Credits				15-16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
HDFS 310	Infant and Child Development in Context	X			3
HDFS 334	Family and Parenthood Across the Life Cycle		X		3
Biological and Physical Sciences				3A	3-4
Electives					6
	Total Credits				15-16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
HDFS 311	Adolescent/Early Adult Development in Context		X		3
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)		X	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)		X	2	
Select one course from the following:					3
STAT 201	General Statistics		X		
STAT 301	Introduction to Statistical Methods		X		
Electives					6
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
HDFS 312	Adult Development-Middle Age and Aging		X		3
HDFS 350	Applied Research Methods		X	4A	3
HDFS 375	Lifespan Intervention and Prevention Science		X		3
Human Development and Family Studies Concentration Course (See Department List on Concentration Requirements tab)					3
Elective					2
STAT 201 or STAT 301 must be completed by the end of Semester 5.		X			
	Total Credits				14
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
HDFS 402	Couple and Family Studies		X		3

HDFS 434	Risk and Resilience Across the Lifespan		X	4B	3
Select one course from the following:					1
HDFS 477	HDFS Professional Preparation				
HDFS 478	HDFS Professional Development				
Human Development and Family Studies Concentration Courses (See Department List on Concentration Requirements tab)					6
Elective					3
	Total Credits				16

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
HDFS 488A	Internship: Human Development and Family Studies				5-8
Human Development and Family Studies Concentration Course (See Department List on Concentration Requirements tab)					3
Electives					2-5
HDFS 350 must be completed by the end of Semester 7.		X			
	Total Credits				13

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
HDFS 492	Seminar-Program Proposal Development	X		4C	3
Human Development and Family Studies Concentration Course (See Department List on Concentration Requirements tab)		X			3
Electives		X			9
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Human Development and Family Studies, Leadership and Entrepreneurial Professions Concentration

The Leadership and Entrepreneurial Professions concentration guides students who are preparing for leadership positions in organizations that promote the optimal development of individuals and families. Students in this concentration may intend to work in organizations as directors, managers, or owners. This concentration includes coursework in finance, management, marketing, public policy, professional communication, and leadership. This concentration is also appropriate for students preparing for careers in legal services, such as lawyers or politicians, as well as director positions and other leadership positions in the human services sector. Students in this concentration may choose to pursue additional credentials in leadership, business and entrepreneurship.

Learn more about the Human Development and Family Studies major on the Department of Human Development and Family Studies website (https://www.chhs.colostate.edu/hdfs/programs-and-degrees/b-s-in-human-development-and-family-studies).

Requirements

Effective Fall 2019

A minimum grade of C (2.000) is required in all courses used to satisfy the requirements of the Major in Human Development and Family Studies, Leadership and Entrepreneurial Professions Concentration. Courses used as substitutions also require a minimum grade of C (2.000).

Freshman

		AUCC	**Credits**
CO 150	College Composition (GT-CO2)	1A	3
HDFS 101	Individual and Family Development (GT-SS3)	3C	3
HDFS 277	Introductory Seminar in HDFS		1
PSY 100	General Psychology (GT-SS3)	3C	3
SOC 100	General Sociology (GT-SS3)	3C	3
Select one course from the following:			3-4
BZ 101	Humans and Other Animals (GT-SC2)	3A	
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
Arts and Humanities		3B	6

Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Quantitative Reasoning		1B	3
	Total Credits		31-32
Sophomore			
HDFS 310	Infant and Child Development in Context		3
HDFS 311	Adolescent/Early Adult Development in Context		3
HDFS 334	Family and Parenthood Across the Life Cycle		3
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
Select one course from the following:			3
STAT 201	General Statistics		
STAT 301	Introduction to Statistical Methods		
Biological and Physical Sciences		3A	3-4
Electives			12
	Total Credits		30-31
Junior			
HDFS 312	Adult Development-Middle Age and Aging		3
HDFS 350	Applied Research Methods	4A	3
HDFS 375	Lifespan Intervention and Prevention Science		3
HDFS 402	Couple and Family Studies		3
HDFS 434	Risk and Resilience Across the Lifespan	4B	3
Select one course from the following:[1]			1
HDFS 477	HDFS Professional Preparation		
HDFS 478	HDFS Professional Development		
Leadership and Entrepreneurial Professions Concentration Courses (See list below):			9
Electives			5
	Total Credits		30
Senior			
HDFS 475	Entrepreneurs and Leaders in Human Services		3
HDFS 488E[1]	Internship: Leadership/Entrepreneurship		5-8
HDFS 492	Seminar-Program Proposal Development	4C	3
Leadership and Entrepreneurial Professions Concentration Course (See list below):			3
Electives[2]			11-14
	Total Credits		28
	Program Total Credits:		120

Leadership and Entrepreneurial Professions Courses

Of the 15 credits of concentration courses, 3 credits of HDFS 475 are required (as noted above). Of the remaining 12 credits, a minimum of 6 credits must be HDFS courses and a minimum of 9 credits must be upper-division (300- to 400-level). Courses may not double-count for more than one HDFS concentration.

Code	Title	AUCC	Credits
Select 6-12 credits from the following courses:			
HDFS 201	Perspectives in Gerontology		3
HDFS 403	Families in the Legal Environment		3
HDFS 439	Administration of Early Childhood Programs		3

One course from the following may count:

HDFS 410	Promoting Early Socioemotional Development		
HDFS 411	Developmental Transitions in Adolescence		
HDFS 412	Mental and Physical Health in Adulthood		

Three credits from the following may count:

HDFS 470B	Campus Connections–Mentoring At-Risk Youth: Mentor Coach		
HDFS 470C	Campus Connections–Mentoring At-Risk Youth: Program Administration		
HDFS 497A	Group Study: Peer Advising		
HDFS 497B	Group Study: Undergraduate Outreach and Leadership		
HDFS 497C	Group Study: Student Respect/ Wellness Education		
HDFS 497D	Group Study: Asian/Pacific American Cultural Center		
HDFS 497E	Group Study: Rites of Passage Mentoring Program		

Select 0-6 credits from the following courses:

ACT 205	Fundamentals of Accounting		3
BUS 205	Legal and Ethical Issues in Business		3
ECON 202	Principles of Microeconomics (GT-SS1) [3]	3C	3
ECON 204	Principles of Macroeconomics (GT-SS1) [3]	3C	3
ECON 211	Gender in the Economy (GT-SS1) [3]	3E	3
ETST 404	Race Formation in the United States		3
ETST 405	Ethnicity, Class, and Gender in the U.S.		3
FACS 320	Finance-Personal and Family		3
FIN 305	Fundamentals of Finance		3
IU 170	A Call to Lead I: Theories and Skills		2
IU 270	Leadership Styles I: Personal Application		2
IU 470	Effective Leadership I: Success as a Leader		3
JTC 316	Multiculturalism and the Media		3
MGT 305	Fundamentals of Management		3
MGT 340	Fundamentals of Entrepreneurship		3
MGT 360	Social and Sustainable Venturing		3
MKT 305	Fundamentals of Marketing		3
PHIL 205	Introduction to Ethics		3
POLS 460	Public Policy Process		3
SOC 332	Comparative Majority-Minority Relations		3
SPCM 334	Co-Cultural Communication		3
SPCM 335	Gender and Communication		3
SPCM 408	Applied Deliberative Techniques		3
SPCM 436	Conflict Management and Communication		3

1 Students with substantial concentration-specific work experience may petition the Director of Undergraduate Advising in HDFS to replace HDFS 488E with additional coursework and complete HDFS 478 instead of **HDFS 477**.

2 Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

3 Courses selected to fulfill All-University Core Curriculum (AUCC) requirements may not double count toward the Leadership and Entrepreneurial Professions Concentration Course requirement.

Major Completion Map

Distinctive Requirements for Degree Program:

Human Development and Family Studies is an open-entry major for freshmen. For sophomores and above, students must complete and/or be enrolled in HDFS 101, PSY 100 or SOC 100 in order to declare HDFS. HDFS subject code courses must be completed with a grade of C or higher. Background check required prior to participating in the internship course (HDFS 488E) during the senior year. Students will complete a graduation contract with an HDFS Academic Advisor during the first two weeks of the semester in which they are graduating.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
HDFS 101	Individual and Family Development (GT-SS3)	X		3C	3
HDFS 277	Introductory Seminar in HDFS		X		1
Arts and Humanities				3B	3
Historical Perspectives				3D	3
Quantitative Reasoning				1B	3
	Total Credits				16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
PSY 100	General Psychology (GT-SS3)		X	3C	3
SOC 100	General Sociology (GT-SS3)		X	3C	3
Select one course from the following:					3-4
BZ 101	Humans and Other Animals (GT-SC2)		X	3A	
LIFE 102	Attributes of Living Systems (GT-SC1)		X	3A	
Arts and Humanities				3B	3
Diversity and Global Awareness				3E	3
CO 150, HDFS 277, and AUCC 1B (Quantitative Reasoning) requirement must be completed by the end of Semester 2.		X			
	Total Credits				15-16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
HDFS 310	Infant and Child Development in Context	X			3
HDFS 334	Family and Parenthood Across the Life Cycle		X		3
Biological and Physical Sciences				3A	3-4
Electives					6
	Total Credits				15-16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
HDFS 311	Adolescent/Early Adult Development in Context	X			3
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)		X	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)		X	2	
Select one course from the following:					3
STAT 201	General Statistics		X		
STAT 301	Introduction to Statistical Methods		X		
Electives					6
	Total Credits				15

Junior

Semester 5		Critical	Recommended	AUCC	Credits
HDFS 312	Adult Development-Middle Age and Aging		X		3
HDFS 350	Applied Research Methods		X	4A	3
HDFS 375	Lifespan Intervention and Prevention Science		X		3
Leadership and Entrepreneurial Professions Concentration Course (See Department List on Concentration Requirements tab)					3
Elective					2
STAT 201 or STAT 301 must be completed by the end of Semester 5.		X			
	Total Credits				14

Semester 6		Critical	Recommended	AUCC	Credits
HDFS 402	Couple and Family Studies		X		3
HDFS 434	Risk and Resilience Across the Lifespan		X	4B	3
Select one course from the following:					1
HDFS 477	HDFS Professional Preparation				
HDFS 478	HDFS Professional Development				
Leadership and Entrepreneurial Professions Concentration Courses (See Department List on Concentration Requirements tab)					6
Elective					3
	Total Credits				16

Senior

Semester 7		Critical	Recommended	AUCC	Credits
HDFS 475	Entrepreneurs and Leaders in Human Services				3
HDFS 488E	Internship: Leadership/Entrepreneurship				5-8
Electives					2-5
HDFS 350 must be completed by the end of Semester 7.		X			
	Total Credits				13

Semester 8		Critical	Recommended	AUCC	Credits
HDFS 492	Seminar-Program Proposal Development	X		4C	3
Leadership and Entrepreneurial Professions Concentration Course (See Department List on Concentration Requirements tab)		X			3
Electives		X			9
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Human Development and Family Studies, Pre-Health Professions Concentration

Many students pursuing a degree in Human Development and Family Studies plan to apply to graduate or professional programs in a variety of health professions. The Pre-Health Professions concentration prepares students for these careers and supports their goals of obtaining graduate training. Some of the careers students in this concentration pursue are: allied health practitioner, anesthesiologist assistant, child life specialist, chiropractor, dentist, medical doctor, music therapist, naturopathic or complementary medicine practitioner, nurse, occupational therapist, optometrist, pharmacist, physical therapist, physician's assistant, podiatrist, public health educator, speech and language pathologist, or veterinarian. The courses within this concentration include a focus on science and also help prepare students to work with individuals (and their families) with disabilities, mental and physical illness, or those experiencing death, dying, or grief. In addition, students in this concentration are strongly encouraged to consult with health professions advisors in the Collaborative for Student Achievement (http://studentachievement.colostate.edu) for specific course (and corresponding course prerequisite) recommendations based on the credentials that they are pursuing, as the prerequisite requirements vary for graduate and professional programs.

Learn more about the Human Development and Family Studies major on the Department of Human Development and Family Studies website (https://www.chhs.colostate.edu/hdfs/programs-and-degrees/b-s-in-human-development-and-family-studies).

Requirements

Effective Fall 2019

A minimum grade of C (2.000) is required in all courses used to satisfy the requirements of the Major in Human Development and Family Studies, Pre-Health Professions Concentration. Courses used as substitutions also require a minimum grade of C (2.000).

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
HDFS 101	Individual and Family Development (GT-SS3)	3C	3
HDFS 277	Introductory Seminar in HDFS		1
PSY 100	General Psychology (GT-SS3)	3C	3
SOC 100	General Sociology (GT-SS3)	3C	3
Select one course from the following:			3-4
BZ 101	Humans and Other Animals (GT-SC2)	3A	
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
Arts and Humanities		3B	6
Quantitative Reasoning		1B	3
Electives			6
	Total Credits		31-32

Sophomore

HDFS 310	Infant and Child Development in Context		3
HDFS 334	Family and Parenthood Across the Life Cycle		3
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
Select one course from the following:			3
STAT 201	General Statistics		
STAT 301	Introduction to Statistical Methods		
Pre-Health Professions Concentration Course (See list below)			3
Biological and Physical Sciences		3A	3-4
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Electives			6
	Total Credits		30-31

Junior

HDFS 311	Adolescent/Early Adult Development in Context		3
HDFS 312	Adult Development-Middle Age and Aging		3
HDFS 350	Applied Research Methods	4A	3
HDFS 375	Lifespan Intervention and Prevention Science		3
HDFS 402	Couple and Family Studies		3
HDFS 434	Risk and Resilience Across the Lifespan	4B	3
Select one course from the following:[1]			1
HDFS 477	HDFS Professional Preparation		
HDFS 478	HDFS Professional Development		
Pre-Health Professions Concentration Courses (See list below)			6
Electives			6
	Total Credits		31

Senior

HDFS 488C[1]	Internship: Pre-Health		5-8

HDFS 492	Seminar-Program Proposal Development	4C	3
Pre-Health Professions Concentration Courses (See list below)			6
Electives[2]			10-13
	Total Credits		27
	Program Total Credits:		120

Pre-Health Professions Concentration Courses

Of the required total of 15 credits, a minimum of 9 credits must be HDFS courses. A minimum of 12 credits must be upper-division (300- to 400-level). Courses may not double-count for more than one HDFS concentration.

Code	Title	AUCC	Credits
Select 9-15 credits from the following courses:			
HDFS 201	Perspectives in Gerontology		3
HDFS 217	Creative Experiences for Children		3
HDFS 315	Disability across the Lifespan and Culture		3
HDFS 317	Special Needs in Early Childhood		3
HDFS 320	Cognitive and Language Development		3
HDFS 332	Death, Dying, and Grief		3
HDFS 404	Child Life Theory and Practice		3
FSHN 445/HDFS 445	Early Childhood Health, Safety, and Nutrition		3
Two courses from the following may count:			
HDFS 410	Promoting Early Socioemotional Development		
HDFS 411	Developmental Transitions in Adolescence		
HDFS 412	Mental and Physical Health in Adulthood		
Three credits from the following may count:			
HDFS 470A	Campus Connections–Mentoring At-Risk Youth: Youth Mentor		
HDFS 470B	Campus Connections–Mentoring At-Risk Youth: Mentor Coach		
HDFS 497C	Group Study: Student Respect/ Wellness Education		
Select 0-6 credits from the following courses:			
BMS 300	Principles of Human Physiology		4
BMS 301	Human Gross Anatomy		5
BMS 302	Laboratory in Principles of Physiology		2
BMS 345	Functional Neuroanatomy		4
BZ 350	Molecular and General Genetics		4
CHEM 245	Fundamentals of Organic Chemistry		4
CHEM 341	Modern Organic Chemistry I		3
FSHN 150	Survey of Human Nutrition		3
FSHN 444	Nutrition and Aging		1
HES 434	Physical Activity Throughout the Lifespan		3
LIFE 205	Microbial Biology		3
LIFE 206	Microbial Biology Laboratory		2
MIP 300	General Microbiology		3
MIP 302	General Microbiology Laboratory		2

OT 110	Introduction to Occupational Therapy		3
OT 215	Medical Terminology		1
OT 355	The Disability Experience in Society		2
PH 121	General Physics I (GT-SC1) [3]	3A	5
PH 122	General Physics II (GT-SC1) [3]	3A	5
PSY 252	Mind, Brain, and Behavior		3
PSY 320	Abnormal Psychology		3
PSY 454	Biological Psychology		3
SOC 253	Intro to Criminology and Criminal Justice		3

1 Students with substantial concentration-specific work experience may petition the Director of Undergraduate Advising in HDFS to replace HDFS 488C with additional coursework and complete HDFS 478 instead of **HDFS 477**.

2 Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

3 All-University Core Curriculum (AUCC) courses may not be used to fulfill both AUCC requirements and Pre-Health Professions Concentration Course requirements.

Major Completion Map

Distinctive Requirements for Degree Program:
Human Development and Family Studies is an open-entry major for freshmen. For sophomores and above, students must complete and/or be enrolled in HDFS 101, PSY 100 or SOC 100 in order to declare HDFS. HDFS subject code courses must be completed with a grade of C (2.000) or higher. Background check required prior to participating in the internship course (HDFS 488C) during the senior year. Students will complete a graduation contract with an HDFS Academic Advisor during the first two weeks of the semester in which they are graduating.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
HDFS 101	Individual and Family Development (GT-SS3)	X		3C	3
HDFS 277	Introductory Seminar in HDFS		X		1
Arts and Humanities				3B	3
Quantitative Reasoning				1B	3
Elective					3
	Total Credits				16

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
PSY 100	General Psychology (GT-SS3)		X	3C	3
SOC 100	General Sociology (GT-SS3)		X	3C	3
Select one course from the following:					3-4
BZ 101	Humans and Other Animals (GT-SC2)		X	3A	
LIFE 102	Attributes of Living Systems (GT-SC1)		X	3A	
Arts and Humanities				3B	3
Elective					3
CO 150, HDFS 277 and the AUCC 1B (Quantitative Reasoning) requirement must be completed by the end of Semester 2.		X			
	Total Credits				15-16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
HDFS 310	Infant and Child Development in Context	X			3
HDFS 334	Family and Parenthood Across the Life Cycle		X		3
Biological and Physical Sciences				3A	3-4
Diversity and Global Awareness				3E	3
Historical Perspectives				3D	3
	Total Credits				15-16

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)		X	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)		X	2	
Select one course from the following:					3
STAT 201	General Statistics		X		
STAT 301	Introduction to Statistical Methods		X		
Pre-Health Professions Concentration Course (See Department List on Concentration Requirements tab)					3
Electives					6
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
HDFS 311	Adolescent/Early Adult Development in Context		X		3
HDFS 312	Adult Development-Middle Age and Aging		X		3
HDFS 402	Couple and Family Studies				3
Pre-Health Professions Concentration Course (See Department List on Concentration Requirements tab)					3
Elective					3
STAT 201 or STAT 301 must be completed by the end of Semester 5.		X			
	Total Credits				15

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
HDFS 350	Applied Research Methods		X	4A	3
HDFS 375	Lifespan Intervention and Prevention Science		X		3
HDFS 434	Risk and Resilience Across the Lifespan		X	4B	3
Select one course from the following:					1
HDFS 477	HDFS Professional Preparation				
HDFS 478	HDFS Professional Development				
Pre-Health Professions Concentration Course (See Department List on Concentration Requirements tab)					3
Elective					3
	Total Credits				16

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
HDFS 488C	Internship: Pre-Health				5-8
Pre-Health Professions Concentration Course (See Department List on Concentration Requirements tab)					3
Electives					2-5
HDFS 350 must be completed by the end of Semester 7.		X			
	Total Credits				13

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
HDFS 492	Seminar-Program Proposal Development	X		4C	3
Pre-Health Professions Concentration Course (See Department List on Concentration Requirements tab)		X			3
Electives		X			8
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				14
	Program Total Credits:				120

Major in Human Development and Family Studies, Prevention and Intervention Sciences Concentration

The Prevention and Intervention Sciences concentration is designed for students who are preparing for careers in the helping and human services professions such as counselors, educators, student affairs professionals, and social service providers, as well as for students seeking a research career in human development and family studies or a related field. This concentration is an excellent choice for students interested in careers requiring either a bachelor's degree or additional credentials.

Concentration coursework emphasizes evidence-based programs, and students will learn how to design and implement community-based prevention and intervention programs for youth, adults, and families. Students can either focus on a specific aspect of the lifespan, or choose courses across the lifespan.

Learn more about the Human Development and Family Studies major on the Department of Human Development and Family Studies website (https://www.chhs.colostate.edu/hdfs/programs-and-degrees/b-s-in-human-development-and-family-studies).

Requirements

Effective Fall 2019

A minimum grade of C (2.000) is required in all courses used to satisfy the requirements of the Major in Human Development and Family Studies, Prevention and Intervention Sciences Concentration. Courses used as substitutions also require a minimum grade of C (2.000).

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
HDFS 101	Individual and Family Development (GT-SS3)	3C	3
HDFS 277	Introductory Seminar in HDFS		1
PSY 100	General Psychology (GT-SS3)	3C	3
SOC 100	General Sociology (GT-SS3)	3C	3
Select one course from the following:			3-4
BZ 101	Humans and Other Animals (GT-SC2)	3A	
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
Arts and Humanities		3B	6
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Quantitative Reasoning		1B	3
	Total Credits		31-32

Sophomore

HDFS 310	Infant and Child Development in Context		3
HDFS 311	Adolescent/Early Adult Development in Context		3
HDFS 334	Family and Parenthood Across the Life Cycle		3
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
Select one course from the following:			3
STAT 201	General Statistics		
STAT 301	Introduction to Statistical Methods		
Biological and Physical Sciences		3A	3-4
Electives			12
	Total Credits		30-31

Junior

HDFS 312	Adult Development-Middle Age and Aging		3
HDFS 350	Applied Research Methods	4A	3
HDFS 375	Lifespan Intervention and Prevention Science		3
HDFS 402	Couple and Family Studies		3
HDFS 434	Risk and Resilience Across the Lifespan	4B	3

Select one course from the following:[1]			1
HDFS 477	HDFS Professional Preparation		
HDFS 478	HDFS Professional Development		
Prevention and Intervention Sciences Concentration Course (See list below)			9
Electives			5
	Total Credits		30
Senior			
HDFS 488D[1]	Internship: Prevention/Intervention Science		5-8
HDFS 492	Seminar-Program Proposal Development	4C	3
Prevention and Intervention Sciences Concentration Courses (See list below)			6
Electives[2]			11-14
	Total Credits		28
	Program Total Credits:		120

Prevention and Intervention Sciences Concentration Courses

Of the 15 credits of concentration courses, a minimum of 9 credits must be HDFS courses and a minimum of 12 credits must be upper-division (300- to 400-level). Courses may not double-count for more than one HDFS concentration.

Code	Title	Credits
Select 9-15 credits from the following courses:		
HDFS 201	Perspectives in Gerontology	3
HDFS 286	Practicum-Professional Skills	3
HDFS 332	Death, Dying, and Grief	3
HDFS 403	Families in the Legal Environment	3
Two courses from the following may count:		
HDFS 410	Promoting Early Socioemotional Development	
HDFS 411	Developmental Transitions in Adolescence	
HDFS 412	Mental and Physical Health in Adulthood	
Three credits from the following may count:		
HDFS 470A	Campus Connections–Mentoring At-Risk Youth: Youth Mentor	
HDFS 470B	Campus Connections–Mentoring At-Risk Youth: Mentor Coach	
HDFS 470C	Campus Connections–Mentoring At-Risk Youth: Program Administration	
HDFS 497A	Group Study: Peer Advising	
HDFS 497B	Group Study: Undergraduate Outreach and Leadership	
HDFS 497C	Group Study: Student Respect/Wellness Education	
HDFS 497D	Group Study: Asian/Pacific American Cultural Center	
HDFS 497E	Group Study: Rites of Passage Mentoring Program	
Select 0-6 credits from the following courses:		
ANTH 441	Method in Cultural Anthropology	3
ANTH 443	Ethnographic Field Methods	3
ETST 404	Race Formation in the United States	3
ETST 405	Ethnicity, Class, and Gender in the U.S.	3
FACS 320	Finance-Personal and Family	3
IE 470	Women and Development	3
IE 471	Children and Youth in Global Context	3
MU 241	Introduction to Music Therapy	3
OT 355	The Disability Experience in Society	2
POLS 460	Public Policy Process	3
PSY 310	Basic Counseling Skills	3
PSY 327	Psychology of Women	3
PSY 328	Psychology of Human Sexuality	3
PSY 330	Clinical and Counseling Psychology	3

PSY 370	Psychological Measurement and Testing	3
PSY 460	Child Exceptionality and Psychopathology	3
PSY 492A	Seminar: Applied Social Psychology	1-3
PSY 492B	Seminar: Cognitive Psychology	1-3
PSY 492C	Seminar: Counseling/Clinical Psychology	1-3
PSY 492D	Seminar: Industrial/Organizational Psychology	1-3
PSY 492E	Seminar: Perceptual and Brain Sciences	1-3
PSY 492F	Seminar: Special Topics in Psychology	1-3
SOC 253	Intro to Criminology and Criminal Justice	3
SOC 311	Methods of Sociological Inquiry	3
SOC 344	Health, Medicine, and Society	3
SOWK 370	Addictions - A Social Work Perspective	3
SOWK 371A	Social Work with Selected Populations: Children and Families	3
SOWK 371B	Social Work with Selected Populations: Juvenile Offenders	3
SOWK 371C	Social Work with Selected Populations: Adult Offenders	3
SOWK 371E	Social Work with Selected Populations: Social Gerontology	3
SPCM 436	Conflict Management and Communication	3
STAT 341	Statistical Data Analysis I	3
STAT 342	Statistical Data Analysis II	3

[1] Students with substantial concentration-specific work experience may petition the Director of Undergraduate Advising in HDFS to replace HDFS 488D with additional coursework and complete HDFS 478 instead of **HDFS 477**.

[2] Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

Human Development and Family Studies is an open-entry major for freshmen. For sophomores and above, students must complete and/or be enrolled in HDFS 101, PSY 100 or SOC 100 in order to declare HDFS. HDFS subject code courses must be completed with a grade of C (2.000) or higher. Background check required prior to participating in the internship course (HDFS 488D) during the senior year. Students will complete a graduation contract with an HDFS Academic Advisor during the first two weeks of the semester in which they are graduating.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
HDFS 101	Individual and Family Development (GT-SS3)	X		3C	3
HDFS 277	Introductory Seminar in HDFS		X		1
Arts and Humanities				3B	3
Historical Perspectives				3D	3
Quantitative Reasoning				1B	3
	Total Credits				16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
PSY 100	General Psychology (GT-SS3)		X	3C	3
SOC 100	General Sociology (GT-SS3)		X	3C	3
Select one course from the following:					3-4
BZ 101	Humans and Other Animals (GT-SC2)		X	3A	
LIFE 102	Attributes of Living Systems (GT-SC1)		X	3A	
Arts and Humanities				3B	3
Diversity and Global Awareness				3E	3
CO 150, HDFS 277 and AUCC 1B (Quantitative Reasoning) requirement must be completed by the end of Semester 2.		X			
	Total Credits				15-16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
HDFS 310	Infant and Child Development in Context	X			3
HDFS 334	Family and Parenthood Across the Life Cycle		X		3
Biological and Physical Sciences				3A	3-4
Electives					6
	Total Credits				15-16

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
HDFS 311	Adolescent/Early Adult Development in Context		X		3
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)		X	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)		X	2	
Select one course from the following:					3
STAT 201	General Statistics		X		
STAT 301	Introduction to Statistical Methods		X		
Electives					6
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
HDFS 312	Adult Development-Middle Age and Aging		X		3
HDFS 350	Applied Research Methods		X	4A	3
HDFS 375	Lifespan Intervention and Prevention Science		X		3
Prevention and Intervention Sciences Concentration Course (See Department List on Concentration Requirements tab)					3
Elective					2
STAT 201 or STAT 301 must be completed by the end of Semester 5.		X			
	Total Credits				14

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
HDFS 402	Couple and Family Studies		X		3
HDFS 434	Risk and Resilience Across the Lifespan		X	4B	3
Select one course from the following:					1
HDFS 477	HDFS Professional Preparation				
HDFS 478	HDFS Professional Development				
Prevention and Intervention Sciences Concentration Courses (See Department List on Concentration Requirements tab)					6
Elective					3
	Total Credits				16

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
HDFS 488D	Internship: Prevention/Intervention Science				5-8
Prevention and Intervention Sciences Concentration Course (See Department List on Concentration Requirements tab)					3
Electives					2-5
HDFS 350 must be completed by the end of Semester 7.		X			
	Total Credits				13

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
HDFS 492	Seminar-Program Proposal Development	X		4C	3
Prevention and Intervention Sciences Concentration Course (See Department List on Concentration Requirements tab)		X			3
Electives		X			9

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X	
Total Credits		15
Program Total Credits:		120

Master of Science in Human Development and Family Studies, Plan A, Marriage and Family Therapy Specialization

The Marriage and Family Therapy (MFT) specialization, which is accredited by the Commission on the Accreditation of Marriage & Family Therapy Education (http://coamfte.org/iMIS15/coamfte/home.aspx), provides a specific professional curriculum that prepares graduates for licensure as marriage and family therapists. Courses focus on individual and family development, evidence-based clinical practices, social justice frameworks, and research methods. MFT students also complete a thesis. Training includes practica and internships with live supervision in the CSU Center for Family and Couple Therapy (http://www.cfct.chhs.colostate.edu) as well as Campus Connections: Therapeutic Mentoring (https://www.chhs.colostate.edu/cc) At Risk (https://www.chhs.colostate.edu/cc) Youth (https://www.chhs.colostate.edu/cc) and other clinical programs. MFT graduates go on to work as therapists in private practice or at for-profit and non-profit mental health agencies. Some students enter doctoral programs upon graduation, including CSU's Ph.D. in Applied Developmental Science.

Learn more about the Master's in Human Development and Family Studies, Marriage and Family Therapy specialization on the Department of Human Development and Family Studies website. (https://www.chhs.colostate.edu/hdfs/programs-and-degrees/m-s-in-human-development-and-family-studies/marriage-and-family-therapy-specialization)

Requirements Effective Fall 2019

Code	Title	Credits
Required Courses		
EDCO 670	Introduction to Mental Health Counseling	3
HDFS 500	Issues in Human Development & Family Studies	3
HDFS 501	Readings in the Discipline	1
HDFS 520	Family Therapy Practice: Treatment Planning	3
HDFS 521	Family Therapy Practice: Common Factors	3
HDFS 524	Family Theory	3
HDFS 534	Marriage and Family Therapy	3
HDFS 549	Research Methods I	3
HDFS 550	Research Methods II	3
HDFS 620	Family Therapy Practice: Addictions	3
HDFS 621	Family Therapy Practice: Topics in Sexuality	3
HDFS 624	Skills and Techniques in Family Therapy	3
HDFS 644	Foundations in Family Therapy	3
HDFS 676	Professional Skills Development	3
HDFS 677	Ethical and Legal Issues	3
HDFS 687C	Internship: Marriage and Family Therapy	Var.
Selected Courses		
Select one from the following:		3
HDFS 611	Early Child Development	
HDFS 612	Adolescent Development	
HDFS 613	Adult Development and Aging	
HDFS 792A	Seminar: Lifespan Socioemotional Development	
HDFS 792B	Seminar: Lifespan Cognitive Development	
Select at least one from the following:		3
HDFS 610	Risk and Resilience	
HDFS 692A	Family Issues: Intimacy and Human Sexuality	
HDFS 692B	Family Issues: Parenting	
Thesis		
HDFS 699	Thesis	6
Program Total Credits:		60

A minimum of 60 credits are required to complete this program.

Master of Science in Human Development and Family Studies, Plan A, Prevention Science Specialization

Prevention Science coursework focuses on lifespan developmental processes and normative family functioning, as well as theories of prevention science and risk and resilience. Students gain skills such as program planning and evaluation, program administration, grant writing, research design, and technical communication. Graduates of this specialization enter careers in the management of prevention and intervention programs in human services and the non-profit sector, program evaluation, policy analysis, and education.

Learn more about the M.S. in Human Development and Family Studies, Prevention Science specialization on the Department of Human Development and Family Studies website. (https://www.chhs.colostate.edu/hdfs/programs-and-degrees/m-s-in-human-development-and-family-studies/prevention-science-specialization)

Requirements Effective Fall 2015

Code	Title	Credits
Required Courses		
HDFS 500	Issues in Human Development & Family Studies	3
HDFS 501	Readings in the Discipline	1

HDFS 524	Family Theory	3
HDFS 549	Research Methods I	3
HDFS 550	Research Methods II	3
HDFS 592	Grant Writing-Human Services and Research	3
HDFS 607	Prevention Science Across the Lifespan	3
HDFS 608	Program Planning and Implementation	3
HDFS 609	Prevention Program Evaluation	3
HDFS 610	Risk and Resilience	3
HDFS 650	Multivariate Research Methods I	3
Selected Courses		
Select at least two from the following:		6
HDFS 611	Early Child Development	
HDFS 612	Adolescent Development	
HDFS 613	Adult Development and Aging	
HDFS 710	Theories of Applied Developmental Science	
Electives [1]		
Thesis		
HDFS 699	Thesis	6
Program Total Credits:		43

A minimum of 43 credits are required to complete this program.

[1] Select enough 500-level or above elective credits with approval of advisor and graduate committee to bring the program total to 43 credits.

Ph.D. in Applied Developmental Science

The Ph.D. in Applied Developmental Science (ADS) emphasizes how basic research in human development can inform programs designed to prevent problems and enhance well-being across the lifespan. Students gain knowledge in lifespan human development theory, basic and applied research skills, and the translation of science into practices and programs to address a wide range of social and public health problems. Graduates from the ADS program are equipped to work in settings such as academia, for-profit and not-for-profit research and advocacy organizations, governmental and human services agencies, or community agencies that promote the health and well-being of individuals, families, and communities.

Students can enter the ADS program with a completed master's degree or with a completed bachelor's degree. Students entering with a bachelor's will be required to complete a master's in Human Development and Family Studies (HDFS), with a specialization in Prevention Science (http://catalog.colostate.edu/general-catalog/colleges/health-human-sciences/human-development-family-studies/plan-a-ms-human-development-family-studies-prevention-science-specialization) or Marriage and Family Therapy (http://catalog.colostate.edu/general-catalog/colleges/health-human-sciences/human-development-family-studies/plan-a-ms-human-development-family-studies-marriage-therapy-specialization).

Learn more about the Ph.D. in Applied Developmental Science on the Department of Human Development and Family Studies website. (https://www.chhs.colostate.edu/hdfs/programs-and-degrees/ph-d-in-applied-developmental-science)

Requirements Effective Spring 2019

Ph.D. course requirements include a minimum of 79 credits for each of four entry routes:

Entry A: For students enrolled in the continuous Master of Science in Human Development and Family Studies (Prevention Science Specialization)/Applied Developmental Science Ph.D. at CSU, up to 43 credits of the CSU M.S. degree in Human Development and Family Studies (Prevention Science Specialization) will apply toward partial fulfillment of the required 79 credits.

Entry B: For students enrolled in the continuous Master of Science in Human Development and Family Studies (Marriage and Family Therapy Specialization)/Applied Developmental Science Ph.D. at CSU, up to 22 credits of the CSU M.S. degree in Human Development and Family Studies (Marriage and Family Therapy Specialization) will apply toward partial fulfillment of the required 79 credits

Entry C: For students who submit a previously earned Master's degree, up to 30 credits may be accepted toward partial fulfillment of the required 79 credits. All credits accepted toward partial fulfillment of the requirements below must be approved by the Director of the Applied Developmental Science Program, the Department of Human Development and Family Studies, and the Graduate School.

Entry D: For students who do not submit a Master's degree in partial fulfillment of the required 79 credits, up to 10 credits earned after the bachelor's degree may be accepted for transfer. Only courses taken at a 500-level or higher will be considered. Students will also be required to complete a 1st year project. All credits accepted toward partial fulfillment of the requirements below must be approved by the student's graduate committee, the Department of Human Development and Family Studies, and the Graduate School.

Code	Title	Credits
Core Courses		
HDFS 500	Issues in Human Development & Family Studies	3
HDFS 524	Family Theory	3
HDFS 610	Risk and Resilience	3
HDFS 710	Theories of Applied Developmental Science	3
Applied Developmental Science Elective Courses [1]		
Select a minimum of 21 credits from the following courses:		21
HDFS 592	Grant Writing-Human Services and Research	
HDFS 607	Prevention Science Across the Lifespan	
HDFS 608	Program Planning and Implementation	
HDFS 609	Prevention Program Evaluation	
HDFS 611	Early Child Development	
HDFS 612	Adolescent Development	
HDFS 613	Adult Development and Aging	
HDFS 636	Aging and the Family	
HDFS 692A	Family Issues: Intimacy and Human Sexuality	
HDFS 692B	Family Issues: Parenting	

HDFS 692C	Family Issues: Family Policy and Programming	
HDFS 692D	Family Issues: Contemporary Family Issues	
HDFS 792A	Seminar: Lifespan Socioemotional Development	
HDFS 792B	Seminar: Lifespan Cognitive Development	
HDFS 792C	Seminar: Special Topics	
Research Methods/Statistics		
HDFS 501	Readings in the Discipline	1
HDFS 549	Research Methods I	3
HDFS 550	Research Methods II	3
HDFS 650	Multivariate Research Methods I	3
HDFS 750	Multivariate Research Methods II	3
Elective [1,2]		3
Research/Apprenticeship/Internship		
Select a minimum of 6 credits from the following courses:		6
HDFS 684	Supervised College Teaching	
HDFS 687A	Internship: Human Development	
HDFS 687B	Internship: Family Studies	
HDFS 687C	Internship: Marriage and Family Therapy	
HDFS 698A	Research: Human Development	3
HDFS 698B	Research: Family Studies	3
Thesis and Dissertation		
HDFS 699	Thesis	6
HDFS 799	Dissertation	12
Program Total Credits:		79

A minimum of 79 credits are required to complete this program.

1 Select courses with approval of advisor and graduate committee.

2 Select statistics or methodology elective from outside the HDFS department from approved departmental list.

Department of Occupational Therapy

Occupational Therapy Building, Room 200
(970) 491-6253
chhs.colostate.edu/ot (http://ot.chhs.colostate.edu)

Dr. Anita Bundy, Department Head

Known nationally and internationally for its excellence, the Department of Occupational Therapy is ranked among the top 10 programs in the nation by *U.S. News and World Report*. It is recognized by CSU as a Program of Research and Scholarly Excellence and it has been designated as a Program of Excellence by the state of Colorado. The department offers graduate-level education to prepare students as leaders in the field of occupational therapy.

The occupational therapy program is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association (AOTA), 4720 Montgomery Lane, Suite 200, Bethesda, MD 20814-3449; (301) 652-2682. The National Board for Certification in Occupational Therapy (NBCOT) is the credentialing agency responsible for the development and implementation of the certification process for OT practitioners.

Students interested in more information regarding prerequisite and application requirements may contact the department at (970) 491-6253 or otinfo@colostate.edu.

Graduate

Graduate Programs in Occupational Therapy

The Occupational Therapy Department offers the following degree programs:

- Master of Science in Occupational Therapy (M.S.)
- Master of Occupational Therapy, Plan C (M.O.T.)
- Post-Professional Master of Science (M.S.)
- Ph.D. in Occupation and Rehabilitation Science

Students with a bachelor's degree in a discipline outside of occupational therapy pursue the Master of Science (http://www.ot.chhs.colostate.edu/students/professional.aspx) or the Master of Occupational Therapy (http://www.ot.chhs.colostate.edu/students/professional.aspx) degree. The program focuses on preparation for a broad-based, advanced-generalist practice and provides students with the knowledge and skills necessary to support people of all ages who have special needs by addressing daily challenges related to their life roles and assisting them in maximizing their independence.

Students with a bachelor's degree in occupational therapy pursue the Post-Professional Master of Science (http://www.ot.chhs.colostate.edu/students/post-professional.aspx) degree. Under the guidance of an advisor, students complete an individualized program of study and a thesis project that is designed to add to the profession's understanding of human performance and participation in everyday occupations and contexts.

The interdisciplinary Doctor of Philosophy (Ph.D.) degree in Occupation and Rehabilitation Science (http://www.ot.chhs.colostate.edu/students/phd.aspx) offers graduate training in research that is dedicated to assisting people of all ages and abilities perform and participate in everyday occupations as a source of lifelong meaning, development, health, and well-being. The program was created to meet the national demand for Ph.D. trained scientists and educators in occupational therapy and related disciplines. Upon graduation, students typically pursue academic careers in research and higher education, although additional career opportunities exist in industry and government.

Please contact the Occupational Therapy Department for further details by calling (970) 491-6253 or emailing the department at otinfo@colostate.edu.

Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Occupational Therapy (http://ot.chhs.colostate.edu).

Master's Programs

- Master of Science in Occupational Therapy, Plan A
- Master of Occupational Therapy, Plan C (M.O.T.)

Ph.D.

- Ph.D. in Occupation and Rehabilitation Science

Courses

Occupational Therapy (OT)

OT 110 Introduction to Occupational Therapy Credits: 3 (3-0-0)
Course Description: Roles and activities in occupational therapy.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

OT 215 Medical Terminology Credit: 1 (0-0-1)
Course Description: Definition and use of medical terms.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

OT 355 The Disability Experience in Society Credits: 2 (1-0-1)
Course Description: Description and exploration of disabling conditions; review of support systems including legal and financial implications.
Prerequisite: PSY 100 or SOC 100.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 450 Biomechanics of Human Occupation Credits: 3 (0-2-2)
Course Description: Exploration of performance of the activities of daily living in context as impacted by function/dysfunction of the human musculoskeletal system.
Prerequisite: None.
Registration Information: Must register for laboratory and recitation. Minimum of 4 credits of either combined anatomy and physiology or human anatomy at the 200-level or higher. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

OT 590 Workshop Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 597 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 601 Occupation and Rehabilitation Science I Credits: 3 (1-0-2)
Course Description: Multidisciplinary perspectives on human performance and participation in everyday occupations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to master's degree program in occupational therapy.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

OT 610 Professional Decision Making Credits: 3 (0-2-2)
Course Description: Exploration of the thought processes occupational therapists use when determining how best to address clients' needs.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to master's degree program in occupational therapy.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

OT 611 Reflective and Evidence-Based Practice Credits: 3 (0-0-3)
Course Description: Development of reflective and evidence-based practice skills through integrating and synthesizing fieldwork experiences in OT practice.
Prerequisite: OT 687A to 687Z.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

OT 620 Research to Practice I Credits: 3 (3-0-0)
Course Description: Critically evaluate qualitative and quantitative research processes pertaining to individuals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to master's degree program in occupational therapy.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

OT 621 Occupational Performance: Infancy-Childhood Credits: 4 (2-2-1)
Course Description: Optimizing occupational performance and participation for infants and children within a contextual framework.
Prerequisite: OT 687A to 687Z.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of the Occupation Therapy Department can be substituted for OT 687.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

OT 630 Occupational Performance: Adult to Old Age I Rec Credits: 3 (0-0-3)
Course Description: Optimizing occupational performance for adults and older adults with attention to roles, satisfaction, competence and activities.
Prerequisite: OT 610 and OT 620 and OT 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in OT 636; must have concurrent registration in OT 660; must have concurrent registration in OT 665; must have concurrent registration in OT 686C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 631 Program Assessment and Development Credits: 3 (0-0-3)
Course Description: Assessment of program strengths and needs, followed by development of proposals to support occupational performance and participation.
Prerequisite: OT 687A to 687Z.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of the Occupational Therapy Department can substitute for OT 687A-Z.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

OT 636 Occupational Performance: Adult/Old Age I Lab Credits: 2 (0-4-0)
Course Description: Optimizing occupational performance for adults and older adults with attention to roles, satisfaction, competence, and activities.
Prerequisite: OT 601 and OT 610 and OT 620.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in OT 630; Must have concurrent registration in OT 660; Must have concurrent registration in OT 665; Must have concurrent registration in OT 686C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 640 Research to Practice II Credits: 3 (3-0-0)
Course Description: Critically evaluate qualitative and quantitative research processes pertaining to groups and systems.
Prerequisite: OT 620.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 641 Occupation and Rehabilitation Science II Credits: 3 (1-0-2)
Course Description: Explore historical evolution of topics and the link to future implications for and growth of occupation and rehabilitation science.
Prerequisite: OT 601 and OT 611 and OT 631 and OT 687 to 687*.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 656 Topics on Brain Plasticity and Performance Credits: 3 (2-0-1)
Course Description: Multidisciplinary viewpoints on brain plasticity and its relationship to performance across the lifespan.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Occupational Therapy graduate student or written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 660 Occupational Performance:Adult/Old Age II Rec Credits: 3 (0-0-3)
Course Description: Foundations of occupational performance for adults and older adults with attention to abilities, skills, and developed capacities.
Prerequisite: OT 610 and OT 620 and OT 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in OT 630; must have concurrent registration in OT 636; must have concurrent registration in OT 665; must have concurrent registration in OT 686C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 661 Occupational Performance: Adolescent-Young Adult Credits: 3 (1-2-1)
Course Description: Optimizing occupational performance and participation for youth and young adults within a contextual framework.
Prerequisite: OT 621.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, laboratory, and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 665 Adult to Old Age II Lab Credits: 2 (0-4-0)
Course Description: Optimizing occupational performance for adults and older adults with attention to abilities, skills, and developed capacities.
Prerequisite: OT 601 and OT 610 and OT 620.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in OT 630; must have concurrent registration in OT 636; must have concurrent registration in OT 660; must have concurrent registration in OT 686C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 666 Optimizing Occupation through Technology Credits: 3 (0-0-3)
Course Description: Use of technology-based resources and/or strategies (current and emerging) to meet client needs in their everyday occupations and contexts.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Occupational Therapy M.O.T., M.S., or Ph.D. program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 676 Pathokinesiological Conditions and Assessment Credits: 3 (3-0-0)
Course Description: Various musculoskeletal imbalances and injuries that present as difficulties in function and participation in everyday activity.
Prerequisite: OT 450.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 686A Fieldwork I: OT Process Credits: Var[1-4] (0-0-0)
Course Description: Level I fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to occupational therapy master's degree program; evidence of professional liability insurance required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

OT 686B Fieldwork I: Seminar Credits: 3 (0-2-2)
Course Description: Level I fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of all first year OT courses; admission to occupational therapy master's degree program; evidence of professional liability insurance required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

OT 686C Fieldwork I: Adult to Old Age Credits: Var[1-4] (0-0-0)
Course Description: Level I fieldwork in various settings.
Prerequisite: OT 686A and OT 610.
Restriction: Must be a: Graduate, Professional.
Registration Information: Concurrent registration in OT 630 and OT 660; evidence of professional liability insurance required.
Terms Offered: Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 686D Fieldwork I: Infancy to Young Adult Credits: Var[1-4] (0-0-0)
Course Description: Level I fieldwork in various settings.
Prerequisite: (OT 687A to 687Z) and (OT 621, may be taken concurrently or OT 661, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Registration Information: Evidence of professional liability insurance required.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

OT 686E Fieldwork I: Special Interest Credits: Var[1-4] (0-0-0)
Course Description: Level I fieldwork in various settings.
Prerequisite: OT 686A.
Restriction: Must be a: Graduate, Professional.
Registration Information: Evidence of professional liability insurance required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 687A Fieldwork IIA: Acute In-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687B Fieldwork IIA: Rehab In-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687C Fieldwork IIA: SNF/Acute LTC Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687D Fieldwork IIA: General Rehab Out-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687E Fieldwork IIA: Hand Therapy Hospital Out-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687F Fieldwork IIA: Hand Therapy Private Out-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687G Fieldwork IIA: Psych In-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687H Fieldwork IIA: Combined Practice Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687M Fieldwork II: Behavioral Health Community Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687N Fieldwork II: Older Adult Community Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687O Fieldwork II: Older Adult Day Program Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687P Fieldwork II: Adult Day Program Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687Q Fieldwork II: Home Health Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687T Fieldwork II: Other Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688A Fieldwork IIB: Acute In-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688B Fieldwork IIB: Rehab In-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688C Fieldwork IIB: SNF/Acute LTC Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688D Fieldwork IIB: General Rehab Out-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688E Fieldwork IIB: Hand Therapy Hospital Out-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688F Fieldwork IIB: Hand Therapy Private Out-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688G Fieldwork IIB: Psych In-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688H Fieldwork IIB: Combined Practice Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688I Fieldwork IIB: Pediatric Hospital/Unit Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688J Fieldwork IIB: Pediatric Hospital/Out-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688K Fieldwork IIB: Pediatric Community Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688L Fieldwork IIB: Pediatric Out-Patient Clinic Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688M Fieldwork IIB: Behavioral Health Community Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688N Fieldwork IIB: Older Adult Community Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688O Fieldwork IIB: Older Adult Day Program Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688P Fieldwork IIB: Adult Day Program Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688Q Fieldwork IIB: Home Health Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688R Fieldwork IIB: School Early Intervention Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688S Fieldwork IIB: School (PK-12) Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688T Fieldwork IIB: Other Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 690 Workshop Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 692 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 694 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 701 Occupation and Rehabilitation Science III Credits: 3 (0-0-3)
Course Description: Investigation of the intersection of occupational science and rehabilitation science research situated in various paradigms.
Prerequisite: OT 640 and OT 641.
Restriction: Must be a: Graduate, Professional.
Registration Information: Three credits of research must be in quantitative research and three credits must be in qualitative research.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

OT 710 Teaching Occupation and Rehab Science Credits: 3 (0-0-3)
Course Description: Design and implementation of teaching and learning philosophies and approaches in occupation and rehabilitation science contexts.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

OT 784 Supervised College Teaching Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission into a PhD program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 786 Practicum Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: OT 620, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Concurrent enrollment in OT 620 or 3 credits of qualitative research.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 792 Seminar Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission into a PhD program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 794 Independent Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission into a PhD program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 796 Group Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission into a PhD program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 799 Dissertation Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Master of Science in Occupational Therapy, Plan A

Requirements
Effective Fall 2015

First Year

Fall		**Credits**
OT 601	Occupation and Rehabilitation Science I	3
OT 610	Professional Decision Making	3
OT 620[1]	Research to Practice I	3
OT 686A	Fieldwork I: OT Process	1
	Total Credits	10
Spring		
OT 630	Occupational Performance: Adult to Old Age I Rec	3
OT 636	Occupational Performance: Adult/Old Age I Lab	2
OT 640[1]	Research to Practice II	3
OT 660	Occupational Performance:Adult/Old Age II Rec	3
OT 665	Adult to Old Age II Lab	2
OT 686C	Fieldwork I: Adult to Old Age	1
	Total Credits	14
Summer		
Select 12 credits from the following:		12
OT 687A	Fieldwork IIA: Acute In-Patient	
OT 687B	Fieldwork IIA: Rehab In-Patient	
OT 687C	Fieldwork IIA: SNF/ Acute LTC	
OT 687D	Fieldwork IIA: General Rehab Out-Patient	

OT 687E	Fieldwork IIA: Hand Therapy Hospital Out-Patient	
OT 687F	Fieldwork IIA: Hand Therapy Private Out-Patient	
OT 687G	Fieldwork IIA: Psych In-Patient	
OT 687H	Fieldwork IIA: Combined Practice	
	Total Credits	12
Second Year		
Fall		
OT 611	Reflective and Evidence-Based Practice	3
OT 621	Occupational Performance: Infancy-Childhood	4
OT 631	Program Assessment and Development	3
OT 699	Thesis	3
	Total Credits	13
Spring		
OT 641	Occupation and Rehabilitation Science II	3
OT 661	Occupational Performance: Adolescent-Young Adult	3
OT 686D	Fieldwork I: Infancy to Young Adult	1
OT 699	Thesis	3
	Total Credits	10
Summer		
Select 12 credits from the following:[2]		12
OT 688A	Fieldwork IIB: Acute In-Patient	
OT 688B	Fieldwork IIB: Rehab In-Patient	
OT 688C	Fieldwork IIB: SNF/ Acute LTC	
OT 688D	Fieldwork IIB: General Rehab Out-Patient	
OT 688E	Fieldwork IIB: Hand Therapy Hospital Out-Patient	
OT 688F	Fieldwork IIB: Hand Therapy Private Out-Patient	
OT 688G	Fieldwork IIB: Psych In-Patient	
OT 688H	Fieldwork IIB: Combined Practice	
OT 688I	Fieldwork IIB: Pediatric Hospital/Unit	
OT 688J	Fieldwork IIB: Pediatric Hospital/Out-Patient	
OT 688K	Fieldwork IIB: Pediatric Community	
OT 688L	Fieldwork IIB: Pediatric Out-Patient Clinic	
OT 688M	Fieldwork IIB: Behavioral Health Community	
OT 688N	Fieldwork IIB: Older Adult Community	
OT 688O	Fieldwork IIB: Older Adult Day Program	
OT 688P	Fieldwork IIB: Adult Day Program	
OT 688Q	Fieldwork IIB: Home Health	
OT 688R	Fieldwork IIB: School Early Intervention	
OT 688S	Fieldwork IIB: School (PK-12)	
OT 688T	Fieldwork IIB: Other	
	Total Credits	12
	Program Total Credits:	71

A minimum of 71 credits are required to complete this program.

1 A 3-credit research course outside the department may be substituted with faculty advisor approval.

2 May also be taken in the Fall.

Master of Occupational Therapy, Plan C (M.O.T.)

Requirements Effective Spring 2015

First Year

Fall		**Credits**
OT 601	Occupation and Rehabilitation Science I	3
OT 610	Professional Decision Making	3
OT 620	Research to Practice I	3
OT 686A	Fieldwork I: OT Process	1
	Total Credits	10
Spring		
OT 630	Occupational Performance: Adult to Old Age I Rec	3
OT 636	Occupational Performance: Adult/Old Age I Lab	2
OT 640	Research to Practice II	3

OT 660	Occupational Performance:Adult/Old Age II Rec	3
OT 665	Adult to Old Age II Lab	2
OT 686C	Fieldwork I: Adult to Old Age	1
	Total Credits	14

Summer

Select 12 credits from the following:		12
OT 687A	Fieldwork IIA: Acute In-Patient	
OT 687B	Fieldwork IIA: Rehab In-Patient	
OT 687C	Fieldwork IIA: SNF/ Acute LTC	
OT 687D	Fieldwork IIA: General Rehab Out-Patient	
OT 687E	Fieldwork IIA: Hand Therapy Hospital Out-Patient	
OT 687F	Fieldwork IIA: Hand Therapy Private Out-Patient	
OT 687G	Fieldwork IIA: Psych In-Patient	
OT 687H	Fieldwork IIA: Combined Practice	
	Total Credits	12

Second Year

Fall

OT 611	Reflective and Evidence-Based Practice	3
OT 621	Occupational Performance: Infancy-Childhood	4
OT 631	Program Assessment and Development	3
	Total Credits	10

Spring

OT 641	Occupation and Rehabilitation Science II	3
OT 661	Occupational Performance: Adolescent-Young Adult	3
OT 686D	Fieldwork I: Infancy to Young Adult	1
Elective Out-of-Department[1]		3
	Total Credits	10

Summer

Select 12 credits from the following:[2]		12
OT 688A	Fieldwork IIB: Acute In-Patient	
OT 688B	Fieldwork IIB: Rehab In-Patient	
OT 688C	Fieldwork IIB: SNF/ Acute LTC	
OT 688D	Fieldwork IIB: General Rehab Out-Patient	
OT 688E	Fieldwork IIB: Hand Therapy Hospital Out-Patient	
OT 688F	Fieldwork IIB: Hand Therapy Private Out-Patient	
OT 688G	Fieldwork IIB: Psych In-Patient	
OT 688H	Fieldwork IIB: Combined Practice	
OT 688I	Fieldwork IIB: Pediatric Hospital/Unit	
OT 688J	Fieldwork IIB: Pediatric Hospital/Out-Patient	
OT 688K	Fieldwork IIB: Pediatric Community	
OT 688L	Fieldwork IIB: Pediatric Out-Patient Clinic	
OT 688M	Fieldwork IIB: Behavioral Health Community	
OT 688N	Fieldwork IIB: Older Adult Community	
OT 688O	Fieldwork IIB: Older Adult Day Program	
OT 688P	Fieldwork IIB: Adult Day Program	
OT 688Q	Fieldwork IIB: Home Health	
OT 688R	Fieldwork IIB: School Early Intervention	
OT 688S	Fieldwork IIB: School (PK-12)	
OT 688T	Fieldwork IIB: Other	
	Total Credits	12
	Program Total Credits:	68

A minimum of 68 credits are required to complete this program.

1 Select one 3-credit elective from a department list of approved courses.

2 May also be taken in the Fall.

Ph.D. in Occupation and Rehabilitation Science

Requirements Effective Fall 2012

Ph.D. course requirements include a minimum of 72 credits for each of three entry routes:

Entry A: For students enrolled in the continuous Master's/Ph.D. degree program in occupational therapy at CSU, 18 credits of the CSU M.S. degree in Occupational Therapy will apply toward partial fulfillment of the required 72 credits.

Entry B: For students who submit a previously earned Master's degree, up to 30 credits may be accepted toward partial fulfillment of the required 72 credits. All potential credits accepted toward partial fulfillment of the requirements below must be approved by the student's graduate committee, the Department of Occupational Therapy, and the Graduate School.

Entry C: For students who do not submit a Master's degree in partial fulfillment of the required 72 credits, up to 10 credits earned after the bachelor's degree maybe accepted for transfer. Only courses taken at a 500-level or higher will be considered. All potential credits accepted toward partial fulfillment of the requirements below must be approved by the student's graduate committee, the Department of Occupational Therapy, and the Graduate School.

Code	Title	Credits
Occupation and Rehabilitation Science Core		
OT 601	Occupation and Rehabilitation Science I [1]	3
OT 641	Occupation and Rehabilitation Science II [1]	3
OT 701	Occupation and Rehabilitation Science III	3
OT 792	Seminar [2]	6
Research Core		
OT 620	Research to Practice I [1,3]	3
OT 640	Research to Practice II [1,3]	3
Select one group from the following:		9
Group A:		
OT 786	Practicum [1]	
OT 699	Thesis	
Group B:		
OT 786	Practicum [1]	
or OT 699	Thesis	
Advanced Quantitative or Qualitative Research [4]		3
Academic Career Core		
OT 710	Teaching Occupation and Rehab Science	3
HDFS 592	Grant Writing-Human Services and Research	1-3
or NB 771	Writing, Submitting, and Reviewing Grants	
Electives		
Directed Electives [5]		18-20
Dissertation		
OT 799	Dissertation	15
Program Total Credits:		72

A minimum of 72 credits are required to complete this program.

1. Students enrolled in the continuous M.S./Ph.D. program receive credit from their M.S. toward the Ph.D. for these courses.
2. OT 792 will be taken two or more times for a total of 6 credits.
3. Students may substitute 3 credits of qualitative research for OT 620 and 3 credits of quantitative research for OT 640 with approval of graduate committee and the department.
4. With approval of graduate committee, select three credits of advanced research from the following departments/academic units: Human Development and Family Studies, Psychology, School of Education, Sociology, or Statistics.
5. With approval of graduate committee, select enough elective credits to bring program total to a minimum of 72 credits from the following departments/academic units: Occupational Therapy, Anthropology, Biomedical Science, Computer Science, Health and Exercise Science, Human Development and Family Studies, Neurobiology, Psychology, School of Education, School of Social Work, Statistics.

School of Social Work

Office in Education Building, Room 127
(970) 491-6612
www.chhs.colostate.edu/ssw (https://www.chhs.colostate.edu/ssw)

School Leadership:

- Audrey Shillington, Director School of Social Work
- Anne Williford, PhD Program Director
- Amy Martonis, MSW Program Director and CLOE Director
- Brenda Miles, BSW Program Director
- Liz Davis, Field Education Director

The School of Social Work offers a Bachelor of Social Work (BSW), Master of Social Work (MSW) and a Ph.D. in Social Work. Additionally, the school offers several graduate certificate programs to provide further practice specialization.

Social work is distinguished by a tradition of concern for people and their interactions with society. Social work professionals are community problem solvers who intervene in organizational settings, communities, social service agencies, groups, individuals, and families

with goals of enhancing well-being and promoting social, economic, and environmental justice.

Employment Opportunities:

- Child Welfare
- Public Health
- Family Services
- Gerontology
- Behavioral Health
- Policy/Legislative Work
- Mental Health
- Addictions
- Medical/Health
- School Social Work
- Corrections
- Community Organization/Advocacy

The Social Work curriculum focuses on the practical application of social work principles, research, policies, and practices within human rights and social justice perspectives. Students acquire a professional social work knowledge-based skills and values transferable to different settings, population groups, and problem areas. Students apply a person-in-environment lens to engage and intervene with social systems locally, nationally, and globally. Several practical experiences are required through intensive internship programs. Both the BSW and MSW programs are accredited by the Council on Social Work Education (https://www.cswe.org).

Undergraduate

Major

- Major in Social Work
  - Addictions Counseling Concentration

Graduate

Graduate Programs in Social Work

The School of Social Work offers an M.S.W. degree and a Ph.D. in Social Work. The MSW degree is accredited by the Council on Social Work Education, with an emphasis in advanced generalist practice. The Ph.D. prepares students for academic positions or for careers in research. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the School of Social Work (http://www.ssw.chhs.colostate.edu).

Certificates

- Advanced Clinical Behavioral Health
- Conflict Resolution and Mediation
- Military and Veteran Culture
- Nonprofit Administration
- PreK-12 School Social Worker

Master's Program

- Master of Social Work

Ph.D.

- Ph.D. in Social Work

Courses

Social Work (SOWK)

SOWK 110 Contemporary Social Welfare (GT-SS1) Credits: 3 (2-0-1)
Course Description: Principles, values and institutions of U.S. social welfare in context of human need within family, groups, and society.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

SOWK 120 Academic and Career Success Credit: 1 (1-0-0)
Course Description: Skills for general academic success, personal growth, self-management, and knowledge of campus/community resources. Examination of professional opportunities within the field of social work.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Undergraduate social work majors only. This may be offered as a partial semester course. Credit not allowed for both SOWK 120 and SOWK 280A1.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 150 Introduction to Social Work Credits: 3 (3-0-0)
Course Description: Introduction to generalist social work, including the history of social welfare in the U.S. and the knowledge, values, skills, practice settings, and populations served across the profession with special emphasis on vulnerable groups. The broad range of theoretical approaches and intervention strategies required are introduced. Practice roles discussed are advocate, broker, counselor, mediator, researcher, and community change agent.
Prerequisite: (PSY 100, may be taken concurrently) and (SOC 100, may be taken concurrently or SOC 105, may be taken concurrently).
Restriction: Must be a: Undergraduate.
Registration Information: Undergraduate students only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 286A Practicum I Credits: 3 (2-0-2)
Course Description: Introductory social work practice skills in communication, relationship development, and professional behavior in the community setting.
Prerequisite: SOWK 150 with a minimum grade of C, may be taken concurrently.
Restriction: Must be a: Undergraduate.
Registration Information: Social Work majors only. Must register for lecture and practicum.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 286B Practicum II Credits: 3 (2-0-2)
Course Description: Introductory social work practice skills in communication, relationship development, and professional behavior in the community setting.
Prerequisite: SOWK 286A with a minimum grade of C.
Restriction: Must be a: Undergraduate.
Registration Information: Social Work majors only. Must register for lecture and practicum.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 300 Research in Applied Professions Credits: 3 (3-0-0)
Course Description: Basic understanding of the research process and research methodologies, including skill in finding, understanding, interpreting, and applying research findings using critical thinking skills. Major emphasis on the steps and procedures to investigate various social problems and interventions that are central to contemporary social work practice while learning how research can be used to improve social work practice and to foster social and economic justice.
Prerequisite: SOC 210, may be taken concurrently or STAT 100, may be taken concurrently or STAT 201, may be taken concurrently or STAT 301, may be taken concurrently or STAT 311, may be taken concurrently.
Restriction: Must be a: Undergraduate.
Registration Information: Completion of AUCC 1B Quantitative Reasoning requirement.
Terms Offered: Fall. Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 330 Dismantling Privilege and Oppression Credits: 3 (2-0-1)
Course Description: Knowledge and skill in deconstructing one's own identity, privilege and oppression to apply that process of understanding to a client's unique intersecting identities creating culturally sensitive social work practices.
Prerequisite: SOWK 286A with a minimum grade of C, may be taken concurrently.
Restriction: Must be a: Undergraduate.
Registration Information: Must register for lecture and recitation. Social Work majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 333 Human Behavior in the Social Environment Credits: 3 (2-0-1)
Course Description: Historic and contemporary theoretical foundations as contributions to practice knowledge in social work. Uses ecological and systems theory as organizing frameworks with critical thinking as a skill for identifying and challenging assumptions. Understanding human behavior theory relevant to social work practice.
Prerequisite: HDFS 101, may be taken concurrently and SOWK 286A with a minimum grade of C, may be taken concurrently and SOWK 330 with a minimum grade of C, may be taken concurrently.
Restriction: Must be a: Undergraduate.
Registration Information: Must register for lecture and recitation. Credit not allowed for both SOWK 233 and SOWK 333. Social Work majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 340 Generalist Practice-Individuals and Families Credits: 3 (2-0-1)
Course Description: Knowledge and techniques used in applying the generalist planned change process to individual and family system assessments and interventions.
Prerequisite: SOWK 286B with a minimum grade of C, may be taken concurrently.
Restriction: Must be a: Undergraduate.
Registration Information: Must register for lecture and recitation. Progression into the major is required prior to registration.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 341 Generalist Practice-Small Groups Credits: 3 (1-0-2)
Course Description: Knowledge, skills and competencies needed for the planned change process in groups within a generalist framework.
Prerequisite: SOWK 340 with a minimum grade of C, may be taken concurrently.
Restriction: Must be a: Undergraduate.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 343 Generalist Practice-Organizations Credits: 3 (2-0-1)
Course Description: Knowledge, values, and skills for the planned change process with organizations.
Prerequisite: SOWK 340 with a minimum grade of C, may be taken concurrently.
Restriction: Must be a: Undergraduate.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 352 Indigenous Women, Children and Tribes Credits: 3 (3-0-0)
Also Offered As: ETST 352.
Course Description: Historical and contemporary lives of women, children, and tribal communities.
Prerequisite: None.
Registration Information: Credit not allowed for both SOWK 352 and ETST 352.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 370 Addictions - A Social Work Perspective Credits: 3 (2-0-1)
Course Description: Applying a bio-psychosocial lens to the system of addictions and substance abuse from a social work perspective.
Prerequisite: HDFS 101 or PSY 100.
Registration Information: Sophomore standing. Must register for lecture and recitation. Credit not allowed for SOWK 370 and SOWK 371D.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 371A Social Work with Selected Populations: Children and Families Credits: 3 (3-0-0)
Course Description: Application of practice processes with children and families.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 371B Social Work with Selected Populations: Juvenile Offenders Credits: 3 (3-0-0)
Course Description: Application of practice processes with juvenile offenders.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 371C Social Work with Selected Populations: Adult Offenders Credits: 3 (3-0-0)
Course Description: Application of practice processes with adult offenders.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 371E Social Work with Selected Populations: Social Gerontology Credits: 3 (3-0-0)
Course Description: Application of practice processes with selected populations.
Prerequisite: HDFS 101.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description: Assist instructor in teaching selected classes, group training, or discussion group leadership.
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 400 Generalist Practice-Communities Credits: 3 (2-0-1)
Course Description: Knowledge and skills to engage with communities, create culturally sensitive change, and evaluate the planned change process.
Prerequisite: SOWK 343, may be taken concurrently.
Restriction: Must be a: Undergraduate.
Registration Information: Must register for lecture and recitation. Social Work majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 410 Social Welfare - Policy, Issues, and Advocacy Credits: 3 (2-0-1)
Course Description: Issues and processes shaping social welfare institutions; definitions of social welfare policy; analytical framework for policy analysis.
Prerequisite: (POLS 101 or POLS 103) and (SOWK 400 with a minimum grade of C, may be taken concurrently).
Restriction: Must be a: Undergraduate.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 450 International Social Welfare and Development Credits: 3 (2-0-1)
Also Offered As: IE 450.
Course Description: Framework of social welfare and development in international area; social need with focus on cultures/countries in transition.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Credit not allowed for both SOWK 450 and IE 450.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 482A Social Work in Costa Rica Credits: 3 (1-0-2)
Course Description: International social work practice through exposure to culturally diverse communities in Costa Rica. Examine social problems, social action, and social injustice in the context of global interdependence.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Enrollment in Bachelor of Social Work or Master of Social Work degree program. Completed letter of application.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 482B Study Abroad: Social Work in India Credits: 3 (1-0-2)
Course Description: International social work practice through exposure to culturally diverse communities in India. Examine social problems, social action, and social injustice in the context of global interdependence.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Open to all majors. Completed letter of application.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 488 Field Placement Credits: Var[2-10] (0-0-0)
Course Description: Integrate and apply social work competencies (Council on Social Work Education accreditation standards) learned across coursework through direct practice in an agency setting for field education. Demonstrate competency in professional knowledge, values, skills, and affective and cognitive processes for beginning social work practitioners.
Prerequisite: SOWK 300 and SOWK 341 and SOWK 330 and SOWK 410, may be taken concurrently.
Restriction: Must be a: Undergraduate.
Registration Information: Maximum of 10 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

SOWK 492 Seminar Credits: 3 (0-0-3)
Course Description: Integrates the knowledge, values, skills, cognitive and affective processes, and behaviors, that develop social work competency while in field placement.
Prerequisite: SOWK 488, may be taken concurrently.
Restriction: Must be a: Undergraduate.
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 495 Independent Study Credits: Var[1-12] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 496 Group Study Credits: Var[1-12] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 500 Principles and Philosophy of Social Work Credits: 3 (3-0-0)
Course Description: Establish larger framework for graduate social work study, and beginning professional practice. Provide an understanding of the nature, history, values, ethics, and practice contexts for social work. Evaluate their goodness-of-fit with the profession, the knowledge base required, and the diverse people, organizations, and communities served by social work.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Admission to the MSW program. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 511 Small Systems Practice Skills Credits: 3 (1-0-2)
Course Description: Foundational practice knowledge and skills for engagement, assessment, intervention, and evaluation with individuals and families within a systems framework.
Prerequisite: SOWK 500, may be taken concurrently and SOWK 515, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Must register for lecture and recitation. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 515 Theoretical Foundations for Social Work Credits: 3 (2-0-1)
Course Description: Historical and contemporary theoretical foundations for social work practice. Ecological and systems theories are presented as organizing frameworks and critical thinking is developed as a skill for identifying and challenging assumptions.
Prerequisite: SOWK 500, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Must register for lecture and recitation. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 520 Social Welfare Policy and Advocacy Credits: 3 (2-0-1)
Course Description: Analysis of how social welfare policies affect the well-being of people and the tools that can be used to advocate for social change.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program.
Registration Information: Admission to the MSW program. Must register for lecture and recitation. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 530 Anti-Oppressive Social Work Practice Credits: 3 (2-0-1)
Course Description: Developing anti-oppressive practice with a focus on multiculturalism and social justice advocacy. Critically evaluate personal traits, attitudes and values regarding diversity and identity formation while exploring theoretical frameworks for understanding oppression. Analyze the relationships among power, privilege and oppression. Acquiring strategies for combating injustice.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program.
Registration Information: Admission to MSW program. Must register for lecture and recitation. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 550 Animal Assisted Therapy/Human-Animal Bond Credits: 3 (2-0-1)
Course Description: Nature of human-animal bond and animal assisted therapy as an intervention method.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 551 Fundamentals of Mediation Credits: 3 (1-0-2)
Course Description: Knowledge and skills essential to the successful application of mediation for a wide variety of interpersonal conflicts.
Prerequisite: None.
Registration Information: Bachelor's degree. Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 552 Conflict Management: Health and Elder Care Credits: 3 (1-0-2)
Course Description: Knowledge, values and skills necessary for the practice of conflict resolution in healthcare and eldercare settings.
Prerequisite: SOWK 551.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 553 Multi-Party Conflict Resolution Credits: 3 (2-0-1)
Course Description: Theories, models, and skills required for design and guidance of multi-party conflict resolution in group, community and organizational settings.
Prerequisite: SOWK 551.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 554 Conflict Resolution in the Workplace Credits: 3 (1-0-2)
Course Description: Knowledge, values and skills necessary for the practice of conflict resolution in the workplace.
Prerequisite: SOWK 551.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 556 Divorce and Family Mediation Credits: 3 (1-0-2)
Course Description: Knowledge and skills essential to the practice of family mediation including divorce and child custody.
Prerequisite: SOWK 551.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 560 Social Work Practice in Schools Credits: 3 (0-0-3)
Course Description: Knowledge and skills essential to the practice of social work in educational settings. Topics include historical, legal, structural, and cultural context of practice in schools, the impact of disability on an individual and a family including special education processes and law, current issues challenging the practitioner in school settings, specific assessment practices covering Functional Behavior Assessment (FBA) and development of Behavior Intervention Plans (BIP).
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 561 School/Community: People with Disabilities Credits: 3 (0-0-3)
Course Description: Teamwork approach to serving persons with special needs; values, issues and best practices related to creating desirable futures for them.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 588 Field Placement Credits: Var[1-6] (0-0-0)
Course Description: Students integrate and apply professional competencies learned across coursework through direct practice in an agency setting for 270 hours of field education. Students will demonstrate competency in professional knowledge, values, skills, and affective and cognitive processes for beginning social work practitioners.
Prerequisite: SOWK 500 with a minimum grade of C, may be taken concurrently and SOWK 511 with a minimum grade of C, may be taken concurrently and SOWK 515 and SOWK 530, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Maximum of 6 credits allowed.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

SOWK 590 Workshop Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 592 Integrative Foundation Field Seminar Credit: 1 (0-0-1)
Course Description: Integration of field placement experiences with foundation year MSW knowledge to enhance skills and shape social work best practices. Each session will focus on integrating students' field placement experiences with knowledge, values, skills, behaviors, and cognitive and affective processes for professional social work practice.
Prerequisite: SOWK 500 with a minimum grade of C and SOWK 515 with a minimum grade of C and SOWK 588, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 600 Methods of Research Credits: 3 (3-0-0)
Course Description: Emphasis on delivering evidence-based practice as well as conducting research to improve social work practice and policy by being effective consumers of research for social work practice and understanding diverse research types, study designs, sampling, measures, and research ethics.
Prerequisite: SOWK 588 with a minimum grade of C.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Advanced Standing MSW program or SOWK 588 with a grade of C or better. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 601 Methods of Research II Credits: 3 (3-0-0)
Course Description: Data analysis, computer processing in social work research, and methods for evaluating one's own practice.
Prerequisite: SOWK 600.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 603A Direct Practice: Assessment and Evaluation Credits: 2 (0-0-2)
Course Description: Selection and application of techniques for monitoring and evaluating interventions with individuals, families, and groups.
Prerequisite: SOWK 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in SOWK 688.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

SOWK 603B Direct Practice: Assessment and Evaluation Credits: 2 (0-0-2)
Course Description: Selection and application of techniques for monitoring and evaluating interventions with individuals, families, and groups.
Prerequisite: SOWK 603A.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in SOWK 688.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

SOWK 630 Advanced Generalist Practice with Individuals Credits: 3 (2-0-1)
Course Description: Knowledge, values, and skills to engage, assess, intervene, and evaluate individuals using an advanced generalist practice approach.
Prerequisite: SOWK 588 and SOWK 592.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Advanced Standing program or SOWK 588; SOWK 592. Must register for lecture and recitation. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 631 Advanced Community Practice Credits: 3 (1-0-2)
Course Description: Preparing students to engage in and lead community practice that improves the well-being of individuals, families and communities; positively impacts the availability and impact of services and service delivery systems; and seeks to achieve social, economic, and environmental justice.
Prerequisite: SOWK 588.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Advanced Standing MSW program or SOWK 588. Must register for lecture and recitation. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 633 Contemporary Issues in Social Welfare Policy Credits: 3 (1-0-2)
Course Description: Application of social welfare policy analysis models, normative aspects of policy analysis and assessment skills.
Prerequisite: SOWK 520 with a minimum grade of C and SOWK 588.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Admission to the Advanced Standing MSW program or SOWK 520 with a grade of C or better; SOWK 588. Must register for lecture and recitation. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 634 Advanced Practice with Families and Groups Credits: 3 (1-0-2)
Course Description: Apply engagement, assessment, and intervention skills, theoretical models, and evidence-based practice approaches in work with families and groups.
Prerequisite: SOWK 630.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 640 Contemporary Issues in Military Culture Credits: 3 (0-0-3)
Course Description: Exploration of multiple issues informing social work practice with military and veteran populations including ethical decision making in military social work, resources for veterans, challenges faced by women in the military, secondary trauma, and problems veterans face, such as homelessness, addiction, reintegration, mental illness, suicide. Military culture, the different branches of the military, and generational differences among military personnel will be examined.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 641 Military Family Systems Credits: 3 (0-0-3)
Course Description: Exploration of effectively engaging with military families. Strategies to assess and intervene with military and veteran couples, children, and families will be examined. Exploration of topics of integration and reintegration; grief, loss, and bereavement; family-centered programs; support of guard/reserve families; deployment; support of veteran caregivers; and effective interventions through a systems framework.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 642 Clinical Intervention with Military Personnel Credits: 3 (0-0-3)
Course Description: Clinical framework for working with members of the military including active duty, veterans, and military families, applied to examine common diagnoses and effective interventions, including post-traumatic stress disorder, traumatic brain injury, substance abuse, and suicide. Cognitive behavioral therapy, reactive exposure behavioral therapy, exposure therapy, rehabilitation, animal-assisted therapy, and additional therapies will be investigated.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 660 Nonprofit Program Development Credits: 3 (0-0-3)
Course Description: Application of the tools, knowledge, and understanding of how to provide strength-based nonprofit program development and management.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 661 Nonprofit Financial Development Credits: 3 (0-0-3)
Course Description: Application of the tools, knowledge, and understanding of how to provide strength-based nonprofit financial development.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 662 Nonprofit Volunteer Development & Management Credits: 3 (0-0-3)
Course Description: Theoretical framework for understanding volunteerism and practice skills for building and managing an effective volunteer program.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 675 Psychopathology and Community Health Credits: 3 (0-0-3)
Course Description: Foundation for diagnosing mental and emotional disorders relevant to community behavioral health practice with individuals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor degree. This is a partial semester course. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 676 Psychopharmacology and Community Health Credits: 3 (0-0-3)
Course Description: Foundation in psychopharmacology (i.e. prescribed psychotropic drugs) for non-medically trained professionals practicing in behavioral health.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor's degree. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 677 Trauma-Informed Care Credits: 3 (0-0-3)
Course Description: Establishes a foundation for providing trauma mental health services to individuals, families, groups and organizations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor's degree. This is a partial semester course. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 684 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 10 credits allowed.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

SOWK 688 Field Placement Credits: Var[1-10] (0-0-0)
Course Description: Integrate and apply advanced generalist professional competencies learned across coursework through direct practice in an agency setting completing 675 hours. Demonstrate competency in professional knowledge, values, skills, and affective and cognitive processes for advanced generalist social work practitioners.
Prerequisite: SOWK 592 and SOWK 500 with a minimum grade of C and SOWK 511 and SOWK 515 and SOWK 520 and SOWK 530 and SOWK 588 with a minimum grade of S.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Advanced Standing MSW program or SOWK 500 with a C or better; SOWK 511; SOWK 515; SOWK 520; SOWK 530; SOWK 588 with an S grade; SOWK 592. Maximum of 15 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

SOWK 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 698 Advanced Research and Social Work Capstone Credits: 3 (1-0-2)
Course Description: Applied research project designed and implemented in groups to culminate knowledge and skill application. May be conducted with field agency, a community organization, or in alignment with specific School of Social Work faculty research. Groups will evaluate, research, and/or analyze a topic relevant to social work practice at the micro, mezzo, or macro level.
Prerequisite: SOWK 600 with a minimum grade of C.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 701 Contemporary Issues in Social Work Credits: 3 (1-0-2)
Course Description: Issues and trends currently impacting social work research, professional education, and practice.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Admission to the School of Social Work PhD Program.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 702 Social Welfare Policy Credits: 3 (1-0-2)
Course Description: Social policy analysis and impact on social welfare systems and programs.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 703 Pedagogical Approaches in Social Work Credits: 3 (1-0-2)
Course Description: Pedagogy and practices for teaching social work curriculum.
Prerequisite: SOWK 701.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the School of Social Work PhD Program. Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 704 Theory for Applied Social Sciences Credits: 3 (1-0-2)
Course Description: Nature and processes of theory building in social sciences. Issues of epistemology, logic, political and moral philosophy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 705 Systematic Research for Scientific Inquiry Credits: 3 (1-0-2)
Course Description: Systematic research in areas of interest that summarizes findings from available studies and provides a critique of the current body of evidence in this area.
Prerequisite: SOWK 701.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the School of Social Work PhD Program. Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 784 Supervised College Teaching Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 786 Research Practicum Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOWK 701 and EDRM 700 and EDRM 704.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 792 Seminar Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: SOWK 701.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Major in Social Work

Social work is distinguished by a tradition of concern for people and their interactions with society. Social work professionals are community

problem solvers who intervene in organizational settings, communities, social service agencies, groups, individuals, and families with goals of enhancing well-being and promoting social and economic justice. Most social workers are employed in fields such as child welfare and family services, mental health, medical social work, school social work, corrections, community organization, or advocacy.

The Social Work curriculum focuses on the practical application of social work principles, policies, and practices within human rights and social justice perspectives. Students acquire a professional social work foundation transferable to different settings, population groups, and problem areas. Attention is devoted to understanding the social welfare system in the U.S., and working with individuals, families, and communities to effect the desired change. At the global level, human rights and economic, environmental and social needs are explored through international travel courses. Several practical experiences are required. Students work with an agency participant throughout their sophomore year, and then as seniors, participate in a social work agency internship. International placements may be available. The curriculum also includes a strong liberal arts base in social science research and statistics, arts, humanities, social science, and natural sciences.

CSU students are admitted to the School of Social Work (SSW) when they declare Social Work as a major. Two professional organizations, the National Association of Social Workers (NASW (https://www.socialworkers.org)) and the Council on Social Work Accreditation (CSWE (https://cswe.org/Home.aspx)) guide social work practice and education. The NASW develops the Code of Ethics (https://www.socialworkers.org/About/Ethics/Code-of-Ethics/Code-of-Ethics-English) for practicing social workers. The CSWE accredits bachelor's and master's social work education programs in the United States. The BSW program is accredited by CSWE.

Learning Outcomes

Graduating seniors will have demonstrated:

- Skills in conceptualizing and applying knowledge of social welfare policy and services, a systems perspective, theory, community resources, and community policy-making processes and practices.
- Knowledge and mastery of the foundation competencies as required by the CSWE for accreditation of the BSW degree.
- An understanding of the social work code of ethics including mastery of skills in maintaining client confidentiality, establishing professional boundaries, and resolving ethical dilemmas that are presented in case situations.

Potential Occupations

Social Work graduates are employed in a variety of settings including welfare agencies, schools, hospitals, clinics, institutions, community centers, public health, corrections, and group homes. Entry-level job opportunities are plentiful. Graduates should be willing to work with people of all ages and in a multitude of circumstances and settings. Opportunities to work with older adults are especially prevalent. Internships are required. Graduates of the BSW program are eligible to apply for advanced standing in graduate programs.

Some examples of career opportunities include, but are not limited to: child welfare worker, adolescent group home counselor, crisis counselor, child protection worker, adult protection worker, geriatric social worker, case manager, nursing home administrator, medical social service counselor, community outreach coordinator, youth program counselor, home health worker, occupational social services worker, foster parent consultant, probation officer, client advocate, victim-witness program counselor, program manager, substance abuse counselor, domestic violence counselor, adoption worker, or international development.

Progression in the Major

Progression in the Major is guided by standards required by both NASW (https://www.socialworkers.org) and CSWE (https://cswe.org/Home.aspx) to ensure compliance with accreditation standards, and that students meet nationally recognized ethical requirements for their profession.

The NASW (https://www.socialworkers.org) Code of Ethics (https://www.socialworkers.org/About/Ethics/Code-of-Ethics/Code-of-Ethics-English) requires that social workers act ethically in their work with clients. It also requires that social workers take action when their colleagues are not acting competently or ethically. The CSWE (https://cswe.org/Home.aspx) requires that social work programs describe the procedures for informing students of the program's criteria for evaluating students' academic and professional performance and that the program has policies and procedures for terminating students' enrollment in the social work program for reasons of academic and professional performance.

To meet the requirements of these professional governing bodies, the School of Social Work (SSW) has developed a Progression in the Major procedure. Progression in the Major is a time in a student's academic career when faculty and students can review each student's fitness for the profession of social work. Prior to enrolling in the 300 level practice courses (SOWK 340, SOWK 341, SOWK 343), students must apply for Progression in the Major. Approval of the Progression in the Major application is a prerequisite for enrollment in SOWK 340. Generally, students who have 60 or more credits must apply for progression in order to graduate in the following four semesters. The application for Progression in the Major will be distributed in SOWK 286A and SOWK 286B.

As a professional program, academic performance and fitness to proceed in the SSW program require a minimum grade point average, completion of required course work, and behaviors appropriate to the performance of social work. Problems in student performance may be addressed with the student at any time in the student's academic career in the SSW.

Student Expectations for Progression:

- Maintain a minimum GPA of 2.500 in SOWK course work; a grade of C or better in all SOWK coursework; 2.000 in overall university course work; 2.000 in All-University Core Curriculum (AUCC) course work.
- Demonstrate conduct that complies with the CSU Student Code of Conduct.
- Demonstrate conduct that adheres to the NASW Code of Ethics and social work values in interactions with faculty, peers, the community, organizations, and clients.
- Remain free of criminal convictions while enrolled in the SSW and CSU.
- Refrain from substance use that interferes with the performance of responsibilities to clients and agencies and/or interferes with classroom performance.
- Demonstrate behavior that prioritizes the welfare of those to whom the student has a responsibility such as clients and coworkers.
- Refrain from any behaviors that cause harm to clients, including romantic or sexual relationships.

- Demonstrate respect for all persons and appreciation for the race, age, color, religion, national origin or ancestry, sex, gender, disability, veteran status, genetic information, sexual orientation, or gender identity or expression.
- Demonstrate sound judgment, both in work with clients and in regard to oneself, such as seeking professional help for physical and emotional problems that interfere with professional functioning.
- Demonstrate honesty and integrity in work with client systems and in the classroom.

Review Process

Concerns regarding a student's application for progression will be reported to the director of the BSW program. Concerns may be identified during the Progression in the Major application review process or at any time before or after progression. Progression applications will be reviewed by the director of the BSW program. Concerns regarding any of the foregoing student expectations will be addressed by the BSW director directly with the student and the student's advisor. Major concerns regarding the student's ability to proceed in the program will be reviewed by the director of the BSW program with the administrative team of the SSW, including but not limited to the director of the SSW. A meeting will then be scheduled for review of the concerns with the student, faculty member(s) involved, the director of the BSW program and the director of SSW. Review of concerns may result in one or more of the following resolutions, through the director of SSW:

- Dismissal or resolution of the expressed concerns.
- A probationary period which includes a remediation contract with the student to address concerns that will be monitored by the BSW program director or designated faculty.
- Dismissal of the student from the Social Work major.
- A report to the CSU Office of Conflict Resolution and Student Conduct Services, in the event the concerns include possible violations of the Student Conduct Code.

Students may appeal these decisions using established university and SSW procedures.

Practicum and Internship

Students directly apply classroom knowledge, skills, and social work values through a six-credit supervised practicum, SOWK 286A, and SOWK 286B, in the sophomore year. In this practicum, students are matched with community agencies which require background checks before placement.

In the senior year, students fulfill a 10-credit field placement in a social work agency or program in a community setting. Field placement agencies generally require background checks also, Examples of available field placements include child and public welfare programs; hospitals, homeless and women's shelters, rehabilitation and mental health agencies, schools, adolescent residential care, geriatric centers, and correction programs. For a complete list of field placements, students may visit the Field Education page on the School of Social Work website (http://www.ssw.chhs.colostate.edu/field). In their field placement and under supervision, students have the opportunity to demonstrate the required CSWE competencies.

Concentration(s)

- Addictions Counseling Concentration

Learn more about the Social Work major on the School of Social Work website (https://www.chhs.colostate.edu/ssw/programs-and-degrees/bachelor-of-social-work). (https://www.chhs.colostate.edu/ssw/programs-and-degrees/bachelor-of-social-work)

Requirements

Effective Fall 2019

A grade of C (2.000) or above is required in each SOWK course required for the major; a 2.500 overall GPA in all SOWK courses is required for the major.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
HDFS 101	Individual and Family Development (GT-SS3)	3C	3
PSY 100	General Psychology (GT-SS3)	3C	3
SOWK 120	Academic and Career Success		1
SOWK 150	Introduction to Social Work		3
Select one course from the following:			3-4
ANTH 120	Human Origins and Variation (GT-SC2)	3A	
BZ 101	Humans and Other Animals (GT-SC2)	3A	
BZ 110	Principles of Animal Biology (GT-SC2)	3A	
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
Select one course from the following:			3
SOC 100	General Sociology (GT-SS3)	3C	
SOC 105	Social Problems (GT-SS3)	3C	
Select one course from the following:			3
POLS 101	American Government and Politics (GT-SS1)	3C	
POLS 103	State and Local Government and Politics (GT-SS1)	3C	

Quantitative Reasoning[1]		1B	3
Electives			6
	Total Credits		31-32
Sophomore			
SOWK 286A	Practicum I		3
SOWK 286B	Practicum II		3
Select one course from the following:			3
SOC 210	Quantitative Sociological Analysis		
STAT 201	General Statistics		
STAT 301	Introduction to Statistical Methods		
Health/Wellness Course (See list below)[3]			2-3
Arts and Humanities		3B	6
Biological and Physical Sciences[2]		3A	3-4
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Electives			3-4
	Total Credits		30-31
Junior			
SOWK 300	Research in Applied Professions		3
SOWK 330	Dismantling Privilege and Oppression		3
SOWK 333	Human Behavior in the Social Environment		3
SOWK 340	Generalist Practice-Individuals and Families		3
SOWK 341	Generalist Practice-Small Groups		3
SOWK 343	Generalist Practice-Organizations		3
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
Economic, Environmental, and Social Justice Course (See list below)[3]			3
Electives			6
	Total Credits		30
Senior			
SOWK 400	Generalist Practice-Communities	4B	3
SOWK 410	Social Welfare - Policy, Issues, and Advocacy	4A	3
SOWK 488	Field Placement		10
SOWK 492	Seminar	4C	3
Upper-Division Social and Behavioral Sciences (See list below)[3]			6
Elective[4]			3
	Total Credits		28
	Program Total Credits:		120

Economic, Environmental, and Social Justice Course List

Code	Title	AUCC	Credits
AGRI 270/IE 270	World Interdependence-Population and Food (GT-SS3)	3E	3
ANTH 100	Introductory Cultural Anthropology (GT-SS3)	3C	3
ANTH 200	Cultures and the Global System (GT-SS3)	3E	3

ANTH 235	Indigenous Peoples of North America		3
ANTH 310	Peoples and Cultures of Africa		3
ANTH 312	Modern Indian Culture and Society		3
ANTH 314	Southeast Asian Cultures and Societies		3
ANTH 335	Language and Culture		3
ANTH 338	Gender and Anthropology		3
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	3
AREC 240/ECON 240	Issues in Environmental Economics (GT-SS1)	3C	3
E 142	Reading Without Borders (GT-AH2)	3E	3
ECON 101	Economics of Social Issues (GT-SS1)	3C	3
ECON 211	Gender in the Economy (GT-SS1)	3E	3
ECON 212	Racial Inequality and Discrimination (GT-SS1)	3C	3
ECON 310	Poverty and the Welfare State		3
ETST 100	Introduction to Ethnic Studies (GT-SS3)	3E	3
ETST 201	Introduction to Queer Studies		3
ETST 205	Ethnicity and the Media (GT-SS3)	3E	3
ETST 234/E 234	Introduction to Native American Literature		3
ETST 239/E 239	Introduction to Chicano Literature		3
ETST 240	Native American Cultural Experience (GT-AH2)	3B	3
ETST 250/HIST 250	African American History (GT-HI1)	3D	3
ETST 252/HIST 252	Asian American History (GT-HI1)	3D	3
ETST 253	Chicanx History and Culture (GT-HI1)	3E	3
ETST 254	La Chicana in Society		3
ETST 255/HIST 255	Native American History (GT-HI1)	3D	3
ETST 256	Border Crossings: People/Politics/Culture (GT-SS3)	3E	3
ETST 300	Queer Studies and Women of Color		3
ETST 310	African-American Studies		3
ETST 320	Ethnicity and Film: Asian-American Experience		3
ETST 324	Asian-Pacific Americans and the Law		3
ETST 330	African American Resistance and Self-Creation		3
ETST 332	Contemporary Chicanx Issues		3
ETST 352/SOWK 352	Indigenous Women, Children, and Tribes		3
ETST 354	Black Cinema and Media		3
ETST 364/HIST 364	Asian American Social Movements, 1945-Present		3
ETST 365	Global Environmental Justice Movements		3
ETST 370	Caribbean Identities		3
ETST 371	The Modern Caribbean		3
ETST 377	African Americans in Sports		3
ETST 382/LGEN 382	Italian Ethnic Identity, Culture, and Gender		3

ETST 404	Race Formation in the United States		3
ETST 405	Ethnicity, Class, and Gender in the U.S.		3
ETST 410	African American Periods and Personalities		3
ETST 411	Black Feminism(s)		3
ETST 412	Africa and African Diaspora		3
ETST 413	Queer Creative Expressions		3
ETST 414/ANTH 414	Development in Indian Country		3
ETST 422/E 422	African-American Literature		3
ETST 425	Indigenous Film and Video		3
ETST 430	Latina/o Creative Expression		3
ETST 432	Latinx Routes to Empowerment		3
ETST 438/E 438	Native American Literature		3
ETST 444/SOC 444	Federal Indian Law and Policy		3
ETST 454/SPCM 454	Chicanx Film and Video		3
GES 101	Foundations of Environmental Sustainability		3
GES 192	Global Environmental Sustainability Seminar		3
GES 450	Global Sustainability and Health		3
HIST 115	The Islamic World: Late Antiquity to 1500	3D	3
HIST 120	Asian Civilizations I (GT-HI1)	3D	3
HIST 121	Asian Civilizations II (GT-HI1)	3D	3
HORT 171/SOCR 171	Environmental Issues in Agriculture (GT-SS3)	3E	3
IE 179	Globalization: Exploring Our Global Village (GT-SS3)	3E	3
NR 130	Global Environmental Systems (GT-SC2)	3A	3
POLS 131	Current World Problems (GT-SS1)	3E	3
POLS 309	Urban Politics		3
POLS 331	Politics and Society Along Mexican Border		3
POLS 361	U.S. Environmental Politics and Policy		3
POLS 405	Race and Ethnicity in U.S. Politics		3
POLS 409	Urban and Regional Politics		3
POLS 413	U.S. Civil Rights and Liberties		3
POLS 442	Environmental Politics in Developing World		3
POLS 443	Comparative Social Movements		3
POLS 444	Comparative African Politics		3
POLS 445	Comparative Asian Politics		3
POLS 446	Politics of South America		3
POLS 447	Politics in Mexico, Central America, Caribbean		3
POLS 448	Comparative Racial/Ethnic Politics		3
POLS 449	Middle East Politics		3
POLS 463	Urban Policy and Management		3
SOC 205	Contemporary Race-Ethnic Relations (GT-SS3)	3E	3

SOC 220	Global Environmental Issues (GT-SS3)	3E	3
SOC 322	Introduction to Environmental Justice		3
SOC 344	Health, Medicine, and Society		3
WS 200	Introduction to Women's Studies	3C	3
WS 269	Women of Color in the United States		3
WS 270	Feminist Theory		3

Health/Wellness Course List

Code	Title	AUCC	Credits
ERHS 220	Environmental Health		3
ERHS 430	Human Disease and the Environment		3
FSHN 125	Food and Nutrition in Health		2
FSHN 150	Survey of Human Nutrition		3
HES 145	Health and Wellness		3
HES 345	Population Health and Disease Prevention		3
MIP 101	Introduction to Human Disease (GT-SC2)	3A	3
MIP 149	The Microbial World		3
PHIL 130	Bioethics and Society		2
PSY 328	Psychology of Human Sexuality		3

Upper-Division Social and Behavioral Sciences Course List (Select 6 credits with approval of advisor)

Code	Title	AUCC	Credits
ANTH 3XX or ANTH 4XX			
ECON 3XX or ECON 4XX			
ETST 300	Queer Studies and Women of Color		3
ETST 310	African-American Studies		3
ETST 324	Asian-Pacific Americans and the Law		3
ETST 330	African American Resistance and Self-Creation		3
ETST 332	Contemporary Chicanx Issues		3
ETST 352/SOWK 352	Indigenous Women, Children, and Tribes		3
ETST 364/HIST 364	Asian American Social Movements, 1945-Present		3
ETST 365	Global Environmental Justice Movements		3
ETST 370	Caribbean Identities		3
ETST 371	The Modern Caribbean		3
ETST 404	Race Formation in the United States		3
ETST 405	Ethnicity, Class, and Gender in the U.S.		3
ETST 410	African American Periods and Personalities		3
ETST 411	Black Feminism(s)		3
ETST 412	Africa and African Diaspora		3
ETST 414/ANTH 414	Development in Indian Country		3

ETST 432	Latinx Routes to Empowerment	3
ETST 444/SOC 444	Federal Indian Law and Policy	3
HDFS 3XX or HDFS 4XX		
HIST 3XX or HIST 4XX		
POLS 3XX or POLS 4XX		
PSY 3XX or PSY 4XX		
SOC 3XX or SOC 4XX		

1 MATH 101 is recommended.

2 At least one of the courses must be a human or animal biology course.

3 Course may only count in one list.

4 Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
A grade of C (2.000) or above is required in each SOWK course required for the major; a 2.500 overall GPA in all SOWK courses is required for the major. MATH 101 recommended.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)	X		1A	3
HDFS 101	Individual and Family Development (GT-SS3)			3C	3
PSY 100	General Psychology (GT-SS3)		X	3C	3
SOWK 120	Academic and Career Success				1
Quantitative Reasoning		X		1B	3
Elective					3
	Total Credits				16

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
SOWK 150	Introduction to Social Work		X		3
Select one course from the following:			X	3A	3-4
ANTH 120	Human Origins and Variation (GT-SC2)			3A	
BZ 101	Humans and Other Animals (GT-SC2)			3A	
BZ 110	Principles of Animal Biology (GT-SC2)			3A	
LIFE 102	Attributes of Living Systems (GT-SC1)			3A	
Select one course from the following:		X			3
SOC 100	General Sociology (GT-SS3)			3C	
SOC 105	Social Problems (GT-SS3)			3C	
Select one course from the following:			X		3
POLS 101	American Government and Politics (GT-SS1)			3C	
POLS 103	State and Local Government and Politics (GT-SS1)			3C	
Elective					3
CO 150, PSY 100, and SOC 100 or SOC 105 must be completed by the end of Semester 2.		X			
	Total Credits				15-16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
SOWK 286A	Practicum I	X			3
Arts and Humanities			X	3B	3
Biological and Physical Sciences			X	3A	3-4
Diversity and Global Awareness			X	3E	3
Historical Perspectives			X	3D	3
	Total Credits				15-16

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
SOWK 286B	Practicum II	X			3
Select one course from the following:		X			3
SOC 210	Quantitative Sociological Analysis				
STAT 201	General Statistics				
STAT 301	Introduction to Statistical Methods				
Health/Wellness (See Department List on Major Requirements Tab):					2-3
Arts and Humanities			X	3B	3
Electives					3-4
Progression to Major is strongly recommended by the end of Semester 4.			X		
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
SOWK 300	Research in Applied Professions		X		3
SOWK 330	Dismantling Privilege and Oppression	X			3
SOWK 333	Human Behavior in the Social Environment	X			3
SOWK 340	Generalist Practice-Individuals and Families	X			3
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)			2	
Progression to Major must be completed by the end of Semester 5.		X			
SOWK 150, SOWK 286A, and SOWK 333, must be completed by the end of Semester 5.		X			
	Total Credits				15

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
SOWK 341	Generalist Practice-Small Groups	X			3
SOWK 343	Generalist Practice-Organizations	X			3
Economic, Environmental, and Social Justice (See Department List on Major Requirements Tab)			X		3
Electives					6
SOWK 286B, SOWK 330 must be completed by the end of Semester 6.		X			
	Total Credits				15

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
SOWK 400	Generalist Practice-Communities	X		4B	3
SOWK 410	Social Welfare - Policy, Issues, and Advocacy	X		4A	3
Upper-Division Social and Behavioral Sciences (See Department List on Major Requirements Tab)		X			6
Elective					3
SOWK 300 must be completed by the end of Semester 7.		X			
	Total Credits				15

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
SOWK 488	Field Placement	X			10
SOWK 492	Seminar	X		4C	3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				13
	Program Total Credits:				120

Major in Social Work, Addictions Counseling Concentration

The Addictions Counseling concentration provides students obtaining a degree in social work, the course requirements for becoming a certified addictions counselor (CAC Level 1) in the state of Colorado. Students will be placed in an addictions treatment setting for the required field placement in social work.

Learn more about the Major in Social Work, Addictions Counseling concentration on the School of Social Work website (https://www.chhs.colostate.edu/ssw/programs-and-degrees/bachelor-of-social-work).

Requirements

Effective Fall 2019

Students must have a C (2.000) or better in the following courses: HDFS 101, PSY 100, SOC 100 or SOC 105, and SOWK 150. Students must maintain a grade of C in all required courses for the concentration,

A grade of C (2.000) or above is required in each SOWK course required for the major; a 2.500 overall GPA in all SOWK courses is required for the major.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
HDFS 101	Individual and Family Development (GT-SS3)	3C	3
PSY 100	General Psychology (GT-SS3)	3C	3
SOWK 120	Academic and Career Success		1
SOWK 150	Introduction to Social Work		3
Select one course from the following:			3-4
ANTH 120	Human Origins and Variation (GT-SC2)	3A	
BZ 101	Humans and Other Animals (GT-SC2)	3A	
BZ 110	Principles of Animal Biology (GT-SC2)	3A	
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
Select one course from the following:			3
SOC 100	General Sociology (GT-SS3)	3C	
SOC 105	Social Problems (GT-SS3)	3C	
Select one course from the following:			3
POLS 101	American Government and Politics (GT-SS1)	3C	
POLS 103	State and Local Government and Politics (GT-SS1)	3C	
Quantitative Reasoning[1]		1B	3
Electives			6
	Total Credits		31-32

Sophomore

SOWK 286A	Practicum I		3
SOWK 286B	Practicum II		3
SOWK 370	Addictions - A Social Work Perspective		3
Select one course from the following:			3
SOC 210	Quantitative Sociological Analysis		
STAT 201	General Statistics		
STAT 301	Introduction to Statistical Methods		
Health/Wellness Course (See list below)[2]			2-3
Arts and Humanities		3B	6
Biological and Physical Sciences[3]		3A	3-4
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Electives[4]			1-2
	Total Credits		31-32

Junior

PSY 310	Basic Counseling Skills		3
PSY 311A	Basic Counseling Skills Laboratory: CACI		2
SOWK 300	Research in Applied Professions		3
SOWK 330	Dismantling Privilege and Oppression		3
SOWK 333	Human Behavior in the Social Environment		3
SOWK 340	Generalist Practice-Individuals and Families		3
SOWK 341	Generalist Practice-Small Groups		3
SOWK 343	Generalist Practice-Organizations		3
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
Economic, Environmental, and Social Justice Course (See list below)[2]			3
	Total Credits		29

Senior

PSY 360	Psychology of Drug Addiction Treatment		3
PSY 362	Professional Issues in Addiction Treatment		3
PSY 364	Infectious Diseases and Substance Use		3
SOWK 400	Generalist Practice-Communities	4B	3
SOWK 410	Social Welfare - Policy, Issues, and Advocacy	4A	3
SOWK 488	Field Placement		10
SOWK 492	Seminar	4C	3
	Total Credits		28
	Program Total Credits:		120

Economic, Environmental, and Social Justice Course List

Code	Title	AUCC	Credits
AGRI 270/IE 270	World Interdependence-Population and Food (GT-SS3)	3E	3
ANTH 100	Introductory Cultural Anthropology (GT-SS3)	3C	3
ANTH 200	Cultures and the Global System (GT-SS3)	3E	3
ANTH 235	Indigenous Peoples of North America		3
ANTH 310	Peoples and Cultures of Africa		3
ANTH 312	Modern Indian Culture and Society		3
ANTH 314	Southeast Asian Cultures and Societies		3
ANTH 335	Language and Culture		3
ANTH 338	Gender and Anthropology		3
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	3
AREC 240/ECON 240	Issues in Environmental Economics (GT-SS1)	3C	3
E 142	Reading Without Borders (GT-AH2)	3E	3
ECON 101	Economics of Social Issues (GT-SS1)	3C	3
ECON 211	Gender in the Economy (GT-SS1)	3E	3
ECON 212	Racial Inequality and Discrimination (GT-SS1)	3C	3

ECON 310	Poverty and the Welfare State		3
ETST 100	Introduction to Ethnic Studies (GT-SS3)	3E	3
ETST 201	Introduction to Queer Studies		3
ETST 205	Ethnicity and the Media (GT-SS3)	3E	3
ETST 234/E 234	Introduction to Native American Literature		3
ETST 239/E 239	Introduction to Chicano Literature		3
ETST 240	Native American Cultural Experience (GT-AH2)	3B	3
ETST 250/HIST 250	African American History (GT-HI1)	3D	3
ETST 252/HIST 252	Asian American History (GT-HI1)	3D	3
ETST 253	Chicanx History and Culture (GT-HI1)	3E	3
ETST 254	La Chicana in Society		3
ETST 255/HIST 255	Native American History (GT-HI1)	3D	3
ETST 256	Border Crossings: People/Politics/ Culture (GT-SS3)	3E	3
ETST 300	Queer Studies and Women of Color		3
ETST 310	African-American Studies		3
ETST 320	Ethnicity and Film: Asian-American Experience		3
ETST 324	Asian-Pacific Americans and the Law		3
ETST 330	African American Resistance and Self-Creation		3
ETST 332	Contemporary Chicanx Issues		3
ETST 352/SOWK 352	Indigenous Women, Children, and Tribes		3
ETST 354	Black Cinema and Media		3
ETST 364/HIST 364	Asian American Social Movements, 1945-Present		3
ETST 365	Global Environmental Justice Movements		3
ETST 370	Caribbean Identities		3
ETST 371	The Modern Caribbean		3
ETST 377	African Americans in Sports		3
ETST 382/LGEN 382	Italian Ethnic Identity, Culture, and Gender		3
ETST 404	Race Formation in the United States		3
ETST 405	Ethnicity, Class, and Gender in the U.S.		3
ETST 410	African American Periods and Personalities		3
ETST 411	Black Feminism(s)		3
ETST 412	Africa and African Diaspora		3
ETST 413	Queer Creative Expressions		3
ETST 414/ANTH 414	Development in Indian Country		3
ETST 422/E 422	African-American Literature		3
ETST 425	Indigenous Film and Video		3
ETST 430	Latina/o Creative Expression		3
ETST 432	Latinx Routes to Empowerment		3
ETST 438/E 438	Native American Literature		3
ETST 444/SOC 444	Federal Indian Law and Policy		3
ETST 454/SPCM 454	Chicanx Film and Video		3

GES 101	Foundations of Environmental Sustainability		3
GES 192	Global Environmental Sustainability Seminar		3
GES 450	Global Sustainability and Health		3
HIST 115	The Islamic World: Late Antiquity to 1500	3D	3
HIST 120	Asian Civilizations I (GT-HI1)	3D	3
HIST 121	Asian Civilizations II (GT-HI1)	3D	3
HORT 171/SOCR 171	Environmental Issues in Agriculture (GT-SS3)	3E	3
IE 179	Globalization: Exploring Our Global Village (GT-SS3)	3E	3
NR 130	Global Environmental Systems (GT-SC2)	3A	3
POLS 131	Current World Problems (GT-SS1)	3E	3
POLS 309	Urban Politics		3
POLS 331	Politics and Society Along Mexican Border		3
POLS 361	U.S. Environmental Politics and Policy		3
POLS 405	Race and Ethnicity in U.S. Politics		3
POLS 409	Urban and Regional Politics		3
POLS 413	U.S. Civil Rights and Liberties		3
POLS 442	Environmental Politics in Developing World		3
POLS 443	Comparative Social Movements		3
POLS 444	Comparative African Politics		3
POLS 445	Comparative Asian Politics		3
POLS 446	Politics of South America		3
POLS 447	Politics in Mexico, Central America, Caribbean		3
POLS 448	Comparative Racial/Ethnic Politics		3
POLS 449	Middle East Politics		3
POLS 463	Urban Policy and Management		3
SOC 205	Contemporary Race-Ethnic Relations (GT-SS3)	3E	3
SOC 220	Global Environmental Issues (GT-SS3)	3E	3
SOC 322	Introduction to Environmental Justice		3
SOC 344	Health, Medicine, and Society		3
WS 200	Introduction to Women's Studies	3C	3
WS 269	Women of Color in the United States		3
WS 270	Feminist Theory		3

Health/Wellness Course List

Code	Title	AUCC	Credits
ERHS 220	Environmental Health		3
ERHS 430	Human Disease and the Environment		3
FSHN 125	Food and Nutrition in Health		2
FSHN 150	Survey of Human Nutrition		3

HES 145	Health and Wellness		3
HES 345	Population Health and Disease Prevention		3
MIP 101	Introduction to Human Disease (GT-SC2)	3A	3
MIP 149	The Microbial World		3
PHIL 130	Bioethics and Society		2
PSY 328	Psychology of Human Sexuality		3

1 MATH 101 or STAT 100 is recommended.

2 Course may only count in one list.

3 At least one of the courses must be a human or animal biology course.

4 Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
A grade of C (2.000) or above is required in each SOWK course required for the major; a 2.500 overall GPA in all SOWK courses is required for the major. MATH 101 or STAT 100 recommended.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)	X		1A	3
HDFS 101	Individual and Family Development (GT-SS3)			3C	3
PSY 100	General Psychology (GT-SS3)		X	3C	3
SOWK 120	Academic and Career Success				1
Quantitative Reasoning		X		1B	3
Elective					3
	Total Credits				16

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
SOWK 150	Introduction to Social Work		X		3
Select one course from the following:			X	3A	3-4
ANTH 120	Human Origins and Variation (GT-SC2)			3A	
BZ 101	Humans and Other Animals (GT-SC2)			3A	
BZ 110	Principles of Animal Biology (GT-SC2)			3A	
LIFE 102	Attributes of Living Systems (GT-SC1)			3A	
Select one course from the following:		X			3
SOC 100	General Sociology (GT-SS3)			3C	
SOC 105	Social Problems (GT-SS3)			3C	
Select one course from the following:			X		3
POLS 101	American Government and Politics (GT-SS1)			3C	
POLS 103	State and Local Government and Politics (GT-SS1)			3C	
Elective					3
CO 150, PSY 100, and SOC 100 or SOC 105 must be completed by the end of Semester 2.		X			
	Total Credits				15-16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
SOWK 286A	Practicum I	X			3
Arts and Humanities			X	3B	3
Biological and Physical Sciences			X	3A	3-4
Diversity and Global Awareness			X	3E	3

Historical Perspectives			X	3D	3
	Total Credits				15-16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
SOWK 286B	Practicum II	X			3
SOWK 370	Addictions - A Social Work Perspective				3
Select one course from the following:		X			3
SOC 210	Quantitative Sociological Analysis				
STAT 201	General Statistics				
STAT 301	Introduction to Statistical Methods				
Health/Wellness course (See list on Concentration Requirements Tab):					2-3
Arts and Humanities			X	3B	3
Electives					1-2
Progression to Major is strongly recommended by the end of Semester 4.			X		
	Total Credits				16
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
SOWK 300	Research in Applied Professions		X		3
SOWK 330	Dismantling Privilege and Oppression	X			3
SOWK 333	Human Behavior in the Social Environment	X			3
SOWK 340	Generalist Practice-Individuals and Families	X			3
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)			2	
Progression to Major must be completed by the end of Semester 5.		X			
SOWK 150, SOWK 286A, and SOWK 333, must be completed by the end of Semester 5.		X			
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
PSY 310	Basic Counseling Skills				3
PSY 311A	Basic Counseling Skills Laboratory: CACI				2
SOWK 341	Generalist Practice-Small Groups	X			3
SOWK 343	Generalist Practice-Organizations	X			3
Economic, Environmental, and Social Justice Course (See Department List on Concentration Requirements Tab)			X		3
SOWK 286B, SOWK 330 must be completed by the end of Semester 6.		X			
	Total Credits				14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
PSY 360	Psychology of Drug Addiction Treatment				3
PSY 362	Professional Issues in Addiction Treatment				3
PSY 364	Infectious Diseases and Substance Use				3
SOWK 400	Generalist Practice-Communities	X		4B	3
SOWK 410	Social Welfare - Policy, Issues, and Advocacy	X		4A	3
SOWK 300 must be completed by the end of Semester 7.		X			
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
SOWK 488	Field Placement	X			10
SOWK 492	Seminar	X		4C	3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				13
	Program Total Credits:				120

Graduate Certificate in Advanced Clinical Behavioral Health

The Certificate in Advanced Clinical Behavioral Health will increase the competence and accountability of MSW students, social work professionals, and eligible individuals from other disciplines as they work with clients and interdisciplinary teams around assessment, diagnosis, medication, and trauma.

Effective Fall 2015

Additional coursework may be required due to prerequisites.

Code	Title	Credits
SOWK 675	Psychopathology and Community Health	3
SOWK 676	Psychopharmacology and Community Health	3
SOWK 677	Trauma-Informed Care	3
Program Total Credits:		9

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Learn more about the Graduate Certificate in Advanced Clinical Behavioral Health on the School of Social Work website (https://www.chhs.colostate.edu/ssw/programs-and-degrees). (https://www.online.colostate.edu/certificates/advanced-clinical-behavioral-health)

Graduate Certificate in Conflict Resolution and Mediation

The Graduate Certificate in Conflict Resolution and Mediation provides fundamental skills for helping professionals as they work with clients and interdisciplinary teams around the rapidly growing field of mediation. This certificate provides the required 40 hours of training to be recognized as a mediator by the Mediation Association of Colorado (through SOWK 551). Additionally, this certificate prepares students to work with specialized populations requiring conflict resolution services.

Effective Spring 2017

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Required Course:		
SOWK 551	Fundamentals of Mediation	3
Select two of the following courses:		6
SOWK 552	Conflict Management: Health and Elder Care	
SOWK 553	Multi-Party Conflict Resolution	
SOWK 554	Conflict Resolution in the Workplace	
SOWK 556	Divorce and Family Mediation	
Program Total Credits:		9

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Learn more about the Graduate Certificate in Conflict Resolution and Mediation on the School of Social Work website (https://www.online.colostate.edu/certificates/conflict-resolution-mediation-certificate).

Graduate Certificate in Military and Veteran Culture

The Graduate Certificate in Military and Veteran Culture increases the competence and practice skills of helping professionals as they work with clients and interdisciplinary teams within military and veteran systems.

Effective Spring 2017

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Required Courses:		
SOWK 640	Contemporary Issues in Military Culture	3
SOWK 641	Military Family Systems	3
SOWK 642	Clinical Intervention with Military Personnel	3
Program Total Credits:		9

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Learn more about the Graduate Certificate in Military and Veteran Culture on the School of Social Work website (https://www.chhs.colostate.edu/ssw/programs-and-degrees).

Graduate Certificate in Nonprofit Administration

The Graduate Certificate in Nonprofit Administration increases the knowledge and skills of human service professionals to provide strengths-based nonprofit program development, financial planning and management, and volunteer recruitment and retention.

Effective Spring 2017

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Required Courses:		
SOWK 660	Nonprofit Program Development	3
SOWK 661	Nonprofit Financial Development	3
SOWK 662	Nonprofit Volunteer Development & Management	3
Program Total Credits:		9

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Learn more about the Graduate Certificate in Nonprofit Administration on the School of Social Work website (https://www.chhs.colostate.edu/ssw/programs-and-degrees).

Graduate Certificate in PreK-12 School Social Worker

This certificate provides social workers with the required coursework to be certified as a Special Services Provider by the Colorado Department of Education (through SOWK 560). Additionally, the coursework provides content related to special education law (IDEA, 504, ADA), functional behavioral assessment, behavior intervention planning, and skills-training that supports employment marketability. This certificate is designed specifically for students who have completed or will be completing their Master of Social Work (MSW) degree from a Council on Social Work Education (CSWE) accredited program.

Effective Fall 2015

Additional coursework may be required due to prerequisites.

Code	Title	Credits
SOWK 551	Fundamentals of Mediation	3
SOWK 560	Social Work Practice in Schools	3
SOWK 561	School/Community: People with Disabilities	3
Program Total Credits:		9

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Learn more about the Graduate Certificate in PreK-12 School Social Worker on the School of Social Work website (https://www.chhs.colostate.edu/ssw/programs-and-degrees).

Master of Social Work

The Master of Social Work (MSW) degree offered by CSU features a nationally recognized advanced generalist curriculum that is accredited by the Council on Social Work Education (CSWE) (https://www.cswe.org). Students are prepared for roles as social work practitioners in complex, diverse, and dynamic settings and learn to promote human rights and individual, community, and global health and well-being. The School of Social Work offers different program options for completing the MSW degree. There are full-time and part-time campus-based programs, part-time distance learning options, and a dual degree that combines the MSW degree with a Master of Public Health (MSW/MPH).

1. **Full Program –** This is the standard two-year program, starting every fall, with on-campus and in-person instruction. Students in this program complete three elective courses which enables them to complete one of five g (https://www.online.colostate.edu/certificates/credit-certificates.dot)raduate certificate programs offered by the School of Social Work if they choose to do so.
2. **Advanced Standing –** This option is available only to those who have earned a BSW from a program accredited by the Council on Social Work Education within the past seven years. The BSW degree must be granted prior to the beginning of advanced standing classes. Students attend one full year consisting of three semesters, beginning with the summer term. (**Schedule here**.)
3. **Part-time Hybrid Learning Options –** The School of Social Work also offers a part-time hybrid program and advanced standing option that utilizes online and in-person instruction based at the cohort locations of Denver, Boulder, and Fort Collins. For additional information please visit the **Distance MSW Program website** (https://www.chhs.colostate.edu/ssw/programs-and-degrees/master-of-social-work/distance-master-of-social-work-program).
4. **MSW/MPH Dual Degree –** In partnership with Colorado School of Public Health, the School of Social Work offers a dual degree MSW/MPH program. For information visit the **MSW/MPH section**.

Learn more about the Master of Social Work (https://www.chhs.colostate.edu/ssw/programs-and-degrees/master-of-social-work) on the School of Social Work website.

Requirements Effective Fall 2019

First Year		
Fall		**Credits**
SOWK 500	Principles and Philosophy of Social Work	3
SOWK 511	Small Systems Practice Skills	3
SOWK 515	Theoretical Foundations for Social Work	3
SOWK 530	Anti-Oppressive Social Work Practice	3
Elective		3
	Total Credits	15
Spring		
SOWK 520	Social Welfare Policy and Advocacy	3
SOWK 588	Field Placement	6
SOWK 592	Integrative Foundation Field Seminar	1
Electives		3-6
	Total Credits	13-16
Summer		
Elective		0-3
	Total Credits	0-3
Second Year		
Fall		
SOWK 600	Methods of Research	3
SOWK 630	Advanced Generalist Practice with Individuals	3
SOWK 633	Contemporary Issues in Social Welfare Policy	3
SOWK 688	Field Placement	7
Elective		0-3
	Total Credits	16-19
Spring		
SOWK 631	Advanced Community Practice	3
SOWK 634	Advanced Practice with Families and Groups	3
SOWK 688	Field Placement	8

SOWK 698	Advanced Research and Social Work Capstone	3
	Total Credits	17
	Program Total Credits:	64

A minimum of 64 credits are required to complete the full M.S.W. program.

Advanced Standing Requirements Effective Fall 2019

Advanced Standing M.S.W.

This option is available only to those who have earned a B.S.W. from a program accredited by the Council on Social Work Education and have earned that degree within the past seven years. The B.S.W. degree must be granted prior to the beginning of advanced standing classes. Applicants must have earned a minimum GPA of 3.0 for the entire B.S.W.

Students attend one full year consisting of three semesters, starting with the Summer term.

First Year		
Fall		**Credits**
SOWK 600	Methods of Research	3
SOWK 630	Advanced Generalist Practice with Individuals	3
SOWK 633	Contemporary Issues in Social Welfare Policy	3
SOWK 688	Field Placement	7
	Total Credits	16
Spring		
SOWK 631	Advanced Community Practice	3
SOWK 634	Advanced Practice with Families and Groups	3
SOWK 688	Field Placement	8
SOWK 698	Advanced Research and Social Work Capstone	3
	Total Credits	17
Summer		
SOWK 530	Anti-Oppressive Social Work Practice	3
Required Elective		3
	Total Credits	6
	Program Total Credits:	39

A minimum of 39 credits are required to complete the Advanced Standing M.S.W. program.

Ph.D. in Social Work

The curriculum leading to the Ph.D. in Social Work combines a core curriculum in social work with outside coursework drawn from related disciplines, and includes thorough training in research methodology and data analysis. The curriculum allows the student reasonable flexibility in tailoring programs of study to their special area(s) of interest under the guidance of their advisor and committee.

Learn more about the Ph.D. in Social Work on the School of Social Work website. (https://www.chhs.colostate.edu/ssw/programs-and-degrees/ph-d-in-social-work)

Requirements Effective Fall 2019

Code	Title	Credits
Research Methods		
EDRM 600	Introduction to Research Methods	3
EDRM 704	Qualitative Research	3
STAT 511A	Design and Data Analysis for Researchers I: R Software	4
STAT 512	Design and Data Analysis for Researchers II	4
Social Work Content		
SOWK 701	Contemporary Issues in Social Work	3
SOWK 702	Social Welfare Policy	3
SOWK 703	Pedagogical Approaches in Social Work	3
SOWK 704	Theory for Applied Social Sciences	3
SOWK 705	Systematic Research for Scientific Inquiry	3
Electives		9
	Selected with approval of committee. At least 3 credits must be graduate level research methods.	
SOWK 799	Dissertation	12-15
Master's Degree Credit		30
Program Total Credits:		80-83

A minimum of 80 credits are required to complete this program. 50 credits of post-master's work are required.

College of Liberal Arts

Dean's Office
Clark Building, Room C138
(970) 491-5421
libarts.colostate.edu (https://www.libarts.colostate.edu)

Professor Ben Withers, Dean
Professor Alexandra Bernasek, Senior Associate Dean
Professor Roze Hentschell, Associate Dean for Undergraduate Studies
Professor Michael Carolan, Associate Dean for Research and Graduate Studies

Undergraduate Majors

Anthropology
Art (B.A.)

Art (B.F.A.)
Communication Studies
Dance
Economics
English
Ethnic Studies
Geography
History
Journalism and Media Communication
Languages, Literatures, and Cultures
Music (B.A.)
Music (B.M.)
Philosophy
Political Science
Sociology
Theatre
Women's and Gender Studies

Interdisciplinary Majors

Major in International Studies
Major in Interdisciplinary Liberal Arts

Dual Degree Programs

Majors in Engineering Science (B.S.) and International Studies (B.A.)
Majors in Interdisciplinary Liberal Arts (B.A.) and Engineering Science (B.S.)

Undergraduate Minors

Anthropology
Applied Environmental Policy Analysis
Chinese
Creative Writing
Criminology and Criminal Justice
Economics
English
Ethnic Studies
French
Geography
German
History
Japanese
Music
Philosophy
Political Science
Sociology
Spanish
Theatre – Acting/Directing
Theatre – Design/Technical Theatre
Technical and Science Communication

Interdisciplinary and Interdepartmental Minors

Arabic Studies Interdisciplinary Minor
Arts Leadership and Administration Minor
Environmental Affairs Interdisciplinary Minor
Film Studies Interdisciplinary Minor
Global Studies Interdisciplinary Minor
Italian Studies Interdisciplinary Minor
Legal Studies Interdisciplinary Minor
Linguistics and Culture Interdisciplinary Minor
Media Studies Minor
Music, Stage and Sports Production Interdisciplinary Minor
Religious Studies Interdisciplinary Minor
Russian Studies Interdisciplinary Minor
Women's Study Interdisciplinary Minor

For a complete list of departmental program offerings (including certificates), see individual department catalog pages.

College-Wide Graduate Programs

Master's Programs

Master in Arts Leadership and Cultural Management, Plan C

The College of Liberal Arts aims to educate committed and active citizens and to develop in them an understanding of humans, including their history, literature, and art; their social, political, and economic systems; and their relationship to the environment. The College offers courses in the arts, humanities, and social sciences, which constitute the foundation of a liberal arts education.

College Programs

Undergraduate majors lead to one of four degrees: Bachelor of Arts, Bachelor of Fine Arts, Bachelor of Music, or Bachelor of Science. Descriptions of the specific departmental and interdepartmental majors and concentrations in the College of Liberal Arts are located in the following pages.

Students should consider simultaneously completing the requirements of a second major or a departmental or interdisciplinary minor, either in the College of Liberal Arts or in another college. With careful planning, numerous combinations are possible within four years of study.

The minimum scholastic average acceptable for graduation in any college program is a 2.000 average in all major courses in addition to the university's overall grade point average requirement of 2.000 for CSU courses.

Undergraduate Career Opportunities and Career Counseling

Graduates from the College of Liberal Arts enter a remarkable variety of careers. Degrees from the College of Liberal Arts prepare students for success in their professional, personal, and civic lives. The skills and dispositions students develop through study in the liberal arts are widely sought. In preparing themselves for future career opportunities students are encouraged to work closely with Academic Support Coordinators, departmental mentors, and career counselors. Through these conversations students will be encouraged to develop resumes, interviewing skills, and articulation of the ways in which their skills will benefit potential employers. Students should also consider participating in internships to gain practical work experience.

Career Center
career.colostate.edu (http://career.colostate.edu)
(970) 491-5707

Prelaw

Clark A, Room 076
(970) 491-5421
Prelaw advisor: Gina Robinson

Make an appointment by emailing: Gina.Robinson@colostate.edu (gina.robinson@colostate.edu)

Students preparing for law school can choose any major. Law schools seek above-average students with broad educational backgrounds and excellent communication, and analytical skills. Prelaw students, regardless of major, should design a course of study that develops their skills in speaking, writing and analytical capabilities. Law schools require an undergraduate degree for admission. Visit the Department of Political Science (http://politicalscience.colostate.edu/undergraduate/pre-law)for more information.

Education Abroad

Because the knowledge of at least one other culture is valuable in understanding our own, students are encouraged to take a semester or longer to study outside of the United States as part of their overall program at CSU. Students interested in education abroad should plan, far in advance, by discussing opportunities with their advisor and by visiting the Office of International Programs (http://educationabroad.colostate.edu) in Laurel Hall.

Graduate Programs

A variety of liberal arts advanced degrees are available in the College. Academic degrees offered are Doctor of Philosophy, Master of Arts, Master of Science, Master of Fine Arts, and Master of Music. The last two are generally considered professional degrees.

The College offers three interdisciplinary master's degrees. The Department of Anthropology (https://anthgr.colostate.edu/graduate-programs/ma-in-anthropology) offers a master's degree in Anthropology with a specialization in International Development, with courses from across CSU. The Departments of English and Languages, Literatures and Cultures offer a joint master's program in foreign languages and the teaching of English as a second/foreign language. The LEAP Institute for the Arts offers a Master's in Arts Leadership and Cultural Management in collaboration with the College of Business, the College of Liberal Arts and others, that prepares students for leadership opportunities within and outside of the creative sector. Information on all three degree programs may be obtained from any participating department.

For detailed information about graduate programs, contact individual departments. See also the Graduate and Professional Bulletin.

Dual Degree in Interdisciplinary Liberal Arts, B.A. and Engineering Science, B.S.

College of Liberal Arts

Dean's Office, Clark Building, C138
(970) 491-5421
libartsmajor.colostate.edu (http://libartsmajor.colostate.edu)
Kevin Foskin, Director

Walter Scott, Jr. College of Engineering
Suzanne and Walter Scott, Jr. Bioengineering Building
(970) 491-6220

The Dual Degree in Interdisciplinary Liberal Arts and Engineering Science is a rigorous but flexible five-year program combining an Engineering curriculum with an Interdisciplinary Liberal Arts curriculum. Upon completion students receive degrees in Engineering Science and Interdisciplinary Liberal Arts, having gained 1) a wide degree of exposure to key liberal arts traditions (humanities, social sciences and arts) in a self-designed program of interdisciplinary study, and 2) professional competency and expertise in Engineering Sciences.

Graduates will be able to:

- Write effectively about the knowledge and perspectives of their field of study
- Speak effectively in a wide variety of public speaking situations
- Think critically, analytically and problem solve contemporary issues, particularly within their self-defined liberal arts field of study
- Apply expertly mathematics, the physical sciences, and engineering fundamentals
- Define, analyze, formulate, and synthesize engineering problems associated with their professional position, both independently and in diverse, multidisciplinary and interdisciplinary team environments
- Actively contribute to multi-faceted and multi-disciplinary projects with significant legal, ethical, regulatory, social, cultural, environmental, and economic considerations using a broad systems perspective
- Communicate effectively with colleagues, professional clients, and the public
- Demonstrate commitment and progress in lifelong learning including further graduate education, professional development including active participation in professional societies, and leadership positions
- Actively participate in innovative and entrepreneurial related projects
- Recognize the need for, and an ability to engage in life-long learning
- Achieve a knowledge of contemporary issues
- Master an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Requirements Effective Fall 2019

Freshman

		AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CIVE 102	Introduction to Civil and Environmental Engr		3
CIVE 103	Engineering Graphics and Computing		3
CO 150	College Composition (GT-CO2)	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5

Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
	Total Credits		29

Sophomore

CHEM 113	General Chemistry II		3
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
MATH 261	Calculus for Physical Scientists III		4
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	5
SPCM 200	Public Speaking		3
Select one from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)	2	
CO 302	Writing in Digital Environments (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
LB 300	Specialized Professional Writing	2	
Arts and Humanities		3B	6
Diversity and Global Awareness		3E	3
	Total Credits		31

Junior

CIVE 260	Engineering Mechanics-Statics		3
CIVE 261	Engineering Mechanics-Dynamics		3
LB 392	Junior Seminar		3
MATH 340	Introduction to Ordinary Differential Equations	4A,4B	4
MECH 237	Introduction to Thermal Sciences		3
STAT 315	Statistics for Engineers and Scientists		3
Arts and Humanities/Social Science Electives[1]			12
Upper-Division Arts and Humanities/Social Science Electives[2]			3
	Total Credits		34

Senior

CIVE 300	Fluid Mechanics		3
CIVE 301	Fluid Mechanics Laboratory		1
ECE 204	Introduction to Electrical Engineering		3
LB 490	Interdisciplinary Portfolio Workshop		1
LB 492	Liberal Arts Capstone Seminar	4A,4C	3
Select one from the following:			3
JTC 456/LB 456	Documentary Film as a Liberal Art	4B	
LB 455/SPCM 455	Narrative Fiction Film as a Liberal Art	4B	
AUCC 4B Course (see list below)		4B	
Technical Electives in Engineering[3]			6
Upper-Division Arts and Humanities/Social Science Electives[2]			12
	Total Credits		32

Fifth Year

Select one group from the following:			6-8
Group A			
CBE 451	Chemical and Biological Engineering Design I	4C	

CBE 452	Chemical and Biological Engineering Design II	4C	
Group B			
CIVE 402	Senior Design Principles		
CIVE 403	Senior Project Design	4C	
Group C			
ECE 401	Senior Design Project I		
ECE 402	Senior Design Project II	4C	
Group D			
MECH 486A	Engineering Design Practicum: I	4C	
MECH 486B	Engineering Design Practicum: II	4C	
Technical Electives in Engineering[3]			25-27
	Total Credits		33
	Program Total Credits:		159

AUCC 4B Course List

Code	Title	AUCC	Credits
AMST 300/E 300	American Lives-Methods in American Studies	4B	3
ANTH 400/GR 400	History of Theory-Anthropology and Geography	4B	3
ART 311	Art of West and Central Africa	4B	3
ART 312	Pre-Columbian Art of Mesoamerica	4B	3
ART 314	Women in Art History	4B	3
ART 315	United States Art 1945-1980	4B	3
ART 316	Art of the Pacific	4B	3
ART 410	Greek Art	4B	3
ART 411	History of Medieval Art	4B	3
ART 412	History of Renaissance Art	4B	3
ART 414	History of Baroque and Rococo Art	4B	3
ART 415	History of 19th Century European Art	4B	3
ART 416	History of European Art, 1900 to 1945	4B	3
ART 417	Roman Art	4B	3
D 428	Dance History II	4B	3
E 341	Literary Criticism and Theory	4B	3
ECON 306	Intermediate Microeconomics	4B	3
ECON 492	Seminar	4B	3
HIST 492	Capstone Seminar	4B	3
JTC 415	Communications Law	4B	3
LFRE 492	Seminar-French Language, Literature, and Society	4B	3
LGEN 492	Language, Literature, and Society-General	4B	3
LGER 492	Seminar-German Language, Literature, and Society	4B	3
LSPA 492	Seminar-Spanish Language, Literature, and Society	4B	3
MU 334	Music History I	4B	3
MU 335	Music History II	4B	3
PHIL 462	Capstone Seminar	4B	3
POLS 302	U.S. Political Parties and Elections	4B	3
POLS 303	Politics of Organized Interests	4B	3

POLS 405	Race and Ethnicity in U.S. Politics	4B	3
POLS 420	History of Political Thought	4B	3
POLS 421	Contemporary Political Theories	4B	3
POLS 423	American Political Theories	4B	3
POLS 448	Comparative Racial/Ethnic Politics	4B	3
POLS 449	Middle East Politics	4B	3
SOC 311	Methods of Sociological Inquiry	4B	3
SPCM 311	Historical Speeches on American Issues	4B	3
SPCM 341	Evaluating Contemporary Television	4B	3
SPCM 342	Critical Media Studies	4B	3
SPCM 350	Evaluating Contemporary Film	4B	3
SPCM 411	Contemporary Speeches on American Issues	4B	3
SPCM 412	Evaluating Contemporary Rhetoric	4B	3
TH 355	Directing Seminar	4B	3

[1] Select from the following subject codes: ANTH, ART, CO, D, E, ECON, ETST, GR, HIST, JTC, L***, LB, MU, PHIL, POLS, PSY, SOC, SPCM, TH, WS. Courses used to fulfill All-University Core Curriculum (AUCC) requirements may not be double-counted toward this major requirement.

[2] Select 15 upper-division (300- to 400-level) credits from at least two subject codes in the arts and humanities or social sciences disciplines: ANTH, ART, CO, D, E, ECON, ETST, GR, HIST, JTC, L***, LB, MU, PHIL, POLS, PSY, SOC, SPCM, TH, WS. No more than 6 credits of Psychology (PSY) may count toward this major requirement.

[3] Select from College of Engineering, Engineering Science list of courses.

Major Completion Map

Distinctive Requirements for Degree Program:

TO PREPARE FOR FIRST SEMESTER: The curriculum for this major assumes students enter college prepared to take calculus.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 111	General Chemistry I (GT-SC2)			3A	4
CIVE 102	Introduction to Civil and Environmental Engr				3
MATH 160	Calculus for Physical Scientists I (GT-MA1)		X	1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)		X	3A	5
	Total Credits				16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 112	General Chemistry Lab I (GT-SC1)			3A	1
CIVE 103	Engineering Graphics and Computing				3
CO 150	College Composition (GT-CO2)			1A	3
Historical Perspectives			X	3D	3
Social and Behavioral Sciences			X	3C	3
MATH 160 must be completed by the end of Semester 2.		X			
	Total Credits				13

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II				3
MATH 161	Calculus for Physical Scientists II (GT-MA1)			1B	4
SPCM 200	Public Speaking				3
Arts and Humanities				3B	3
Diversity and Global Awareness			X	3E	3
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 261	Calculus for Physical Scientists III				4
PH 142	Physics for Scientists and Engineers II (GT-SC1)			3A	5

Select one course from the following:				X	3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)			2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)			2	
CO 302	Writing in Digital Environments (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
LB 300	Specialized Professional Writing			2	
Arts and Humanities				X 3B	3
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
CIVE 260	Engineering Mechanics-Statics				3
MATH 340	Introduction to Ordinary Differential Equations			4A,4B	4
STAT 315	Statistics for Engineers and Scientists				3
Arts and Humanities/Social Science Electives (See Requirements Tab)					6
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
CIVE 261	Engineering Mechanics-Dynamics				3
LB 392	Junior Seminar				3
MECH 237	Introduction to Thermal Sciences				3
Arts and Humanities/Social Science Electives (See Requirements Tab)					6
Upper-Division Arts and Humanities/Social Science Electives (See Requirements Tab)					3
	Total Credits				18

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
CIVE 300	Fluid Mechanics				3
CIVE 301	Fluid Mechanics Laboratory				1
LB 490	Interdisciplinary Portfolio Workshop				1
LB 492	Liberal Arts Capstone Seminar			4A,4C	3
Technical Elective in Engineering (See Requirements Tab)					3
Upper-Division Arts and Humanities/Social Science Electives (See Requirements Tab)					6
	Total Credits				17
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
ECE 204	Introduction to Electrical Engineering				3
Select one course from the following:				4B	3
LB 455/ SPCM 455	Narrative Fiction Film as a Liberal Art			4B	
LB 456/ JTC 456	Documentary Film as a Liberal Art			4B	
AUCC 4B Course (See List on Requirements Tab)				4B	
Technical Elective in Engineering (See Requirements Tab)					3
Upper-Division Arts and Humanities/Social Science Electives (See Requirements Tab)					6
	Total Credits				15

Fifth Year

Semester 9		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:		X			3-4
CBE 451	Chemical and Biological Engineering Design I			4C	
CIVE 402	Senior Design Principles				

ECE 401	Senior Design Project I				
MECH 486A	Engineering Design Practicum: I			4C	
Technical Electives in Engineering (See Requirements Tab)		X			12-13
	Total Credits				15-17
Semester 10		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one pairing course:		X		4C	3-4
CBE 452	Chemical and Biological Engineering Design II			4C	
CIVE 403	Senior Project Design			4C	
ECE 402	Senior Design Project II			4C	
MECH 486B	Engineering Design Practicum: II			4C	
Technical Electives in Engineering (See Requirements Tab)		X			13-14
The benchmark courses for the 10th semester are the remaining courses in the entire program of study.		X			
	Total Credits				18
	Program Total Credits:				159

Dual Degree in Engineering Science (B.S.) and International Studies (B.A.)

This is a rigorous and rewarding five-year dual degree program that combines the Engineering Science and International Studies majors. Upon completion, students receive degrees in Engineering Science and International Studies, as well as a foreign language minor. This program is ideal for engineering students with global interests. It provides both the applied expertise as well as the cultural literacy and linguistic competency to succeed in international and multicultural professional environments. In addition to the Engineering Science curriculum, students choose a focus in one of four geographic concentrations (Asia, Europe, Latin America, Middle East/North Africa) as well as a related foreign language. Students in this program are also encouraged to study abroad during their academic career, though it is not a graduation requirement.

Requirements Effective Fall 2018

To qualify for graduation, Engineering Science majors must achieve a minimum 2.000 grade point average at CSU in all courses in engineering, mathematics, computer science, statistics, physics, and chemistry as well as courses taken as technical electives

Freshman

		AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CIVE 102	Introduction to Civil and Environmental Engr		3
CIVE 103	Engineering Graphics and Computing		3
CO 150	College Composition (GT-CO2)	1A	3
GR 100	Introduction to Geography (GT-SS2)	3C	3
L*** 200 Second Year Language I		3B	3-5
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
	Total Credits		31-33

Sophomore

ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
L*** Second Year Language II			3-5
MATH 261	Calculus for Physical Scientists III		4
MATH 340	Introduction to Ordinary Differential Equations		4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	5
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	

JTC 300	Professional and Technical Communication (GT-CO3)	2	
Technical Elective[1]			3
	Total Credits		30-32

Junior

CIVE 260	Engineering Mechanics-Statics		3
CIVE 261	Engineering Mechanics-Dynamics		3
INST 301	International Studies Research Methods	4B	3
Select one Historical Perspectives course that coordinates with chosen International Studies geographic option area:			3
European Studies			
HIST 100	Western Civilization, Pre-Modern (GT-HI1)	3D	
HIST 101	Western Civilization, Modern (GT-HI1)	3D	
Middle East and North Africa			
HIST 115	The Islamic World: Late Antiquity to 1500	3D	
HIST 116	The Islamic World Since 1500	3D	
Asia			
HIST 120	Asian Civilizations I (GT-HI1)	3D	
HIST 121	Asian Civilizations II (GT-HI1)	3D	
Latin America			
HIST 171	World History, 1500-Present (GT-HI1)	3D	
MECH 237	Introduction to Thermal Sciences		3
POLS 241	Comparative Government and Politics (GT-SS1)	3E	3
STAT 315	Statistics for Engineers and Scientists		3
Foreign Language Minor[2]			6
International Studies Course Selection (See List Below)[3, 4]			3
Technical Elective[1]			3
	Total Credits		33

Senior

CIVE 300	Fluid Mechanics		3
CIVE 301	Fluid Mechanics Laboratory		1
ECE 204	Introduction to Electrical Engineering		3
Foreign Language Minor[2]			6
International Studies Course Selection (See List Below)[3, 4]			6
Technical Electives[1]			13-15
	Total Credits		32-34

Fifth Year

INST 492	Seminar	4A,4C	3
Select one group from the following:			6-8
Group A			
CBE 451[3]	Chemical and Biological Engineering Design I	4C	
CBE 452	Chemical and Biological Engineering Design II	4C	
Group B			
CIVE 402[3]	Senior Design Principles		
CIVE 403	Senior Project Design	4C	
Group C			
ECE 401[3]	Senior Design Project I		
ECE 402	Senior Design Project II	4C	
Group D			
MECH 486A[3]	Engineering Design Practicum: I	4C	

MECH 486B	Engineering Design Practicum: II	4C	
Arts and Humanities[5]		3B	3
Foreign Language Minor[2]			3
International Studies Course Selection (See List Below)[3, 4]			9
Technical Electives[1]			6
	Total Credits		30-32
	Program Total Credits:		156-164

International Studies Course Selection

Students must select a geographic option area, and from that select a minimum total of 18 credits, 15 of which must be Upper-Division (300- to 400-level), from at least three subject codes, from the following groups of courses.

- Select at least 6 credits from 1) History and Politics;
- Select at least 3 credits from 2) Thought and Cultures;
- Select at least 6 credits from 3) International Studies (course list applies to all geographic option areas);
- Select an additional minimum of 3 credits from among the three groups to bring the total to 18.

Code	Title	AUCC	Credits
Asia			
1. History and Politics of Asia			
Select a minimum of 6 credits from the following:			
ECON 376	Marxist Economic Thought		3
HIST 440	Modern South Asia: Colonialism and Nationalism		3
HIST 441	South Asia Since Independence		3
HIST 450	Ancient China [3]		3
HIST 451	Medieval China and Central Asia		3
HIST 452	China in the Modern World, 1600-Present		3
HIST 455	Tokugawa and Modern Japan, 1600-Present		3
HIST 456	East Asia in the Age of Empire, 1800-Present		3
HIST 464	Pacific Wars: Philippines-WWII [3]		3
HIST 465	Pacific Wars: Korea and Vietnam [3]		3
HIST 466	U.S.-China Relations Since 1800		3
HIST 533	Reading Seminar: East Asia [3]		3
HIST 534	Reading Seminar: South Asia [3]		3
POLS 445	Comparative Asian Politics		3
2. Thought and Cultures of Asia			
Select a minimum of 3 credits from the following:			
ANTH 312	Modern Indian Culture and Society [3]		3
ANTH 314	Southeast Asian Cultures and Societies [3]		3
ART 316	Art of the Pacific [3]		3
E 356	Asian Literature		3
LCHI 250	Chinese Language, Literature, Culture in Translation (GT-AH2)	3B	3
or LJPN 250	Japanese Language, Literature, Culture in Translation (GT-AH2)		
A maximum of one course may be selected from the following:			
LCHI 365	Introduction to Chinese Cinema Studies [6]		
LGEN 465B	Studies in Foreign Film: Asia [6]		
LJPN 365	Introduction to Japanese Cinema Studies [6]		

LCHI 496	Group Study-Chinese	1-5
LJPN 404	Historical Aspects of the Language and Society	3
LJPN 496	Group Study-Japanese	1-5
PHIL 172	Religions of the East	3
PHIL 349	Philosophies of East Asia	3
PHIL 360	Topics in Asian Philosophy	3
PHIL 371	Contemporary Eastern Religious Thought	3
PHIL 379	Mysticism East and West [3]	3
Europe		
1. History and Politics of Europe		
Select a minimum of 6 credits from the following:		
HIST 300	Ancient Greece to 323 B.C.E. [3]	3
HIST 301	Roman Republic [3]	3
HIST 302	Roman Empire [3]	3
HIST 303	Hellenistic World: Alexander to Cleopatra [3]	3
HIST 304	Women in Ancient Greece and Rome [3]	3
HIST 310	Medieval Europe [3]	3
HIST 311	Medieval England [3]	3
HIST 312	Women in Medieval Europe [3]	3
HIST 315	Tudor Stuart England, 1485-1689 [3]	3
HIST 317	Renaissance and Reformation Europe [3]	3
HIST 318	The Age of the Enlightenment [3]	3
HIST 319	Early Modern France, 1500-1789 [3]	3
HIST 320	Women and Gender in Europe, 1450-1789 [3]	3
HIST 321	Industrial Society in Europe, 1600-1871 [3]	3
HIST 322	Industrial Society in Europe, 1871-1989 [3]	3
HIST 323	Russia Before 1700 [3]	3
HIST 324	Imperial Russia [3]	3
HIST 328	Modern Europe, 1815-1914 [3]	3
HIST 329	Europe in Crisis, 1914-1941 [3]	3
HIST 330	Eastern Europe Since 1918 [3]	3
HIST 331	The Soviet Union [3]	3
HIST 332	Germany Since World War I [3]	3
HIST 333	Contemporary Europe [3]	3
HIST 335	Britain in the 20th Century [3]	3
HIST 336	Germany from Napoleon to WWI [3]	3
HIST 339	World War II in Europe [3]	3
HIST 461	Rise and Fall of British Empire 1600-1947 [3]	3
HIST 469	The Crusades [3]	3
POLS 341	Western European Government and Politics	3
POLS 345	Russian, Central, and East European Politics	3
POLS 420	History of Political Thought	3
POLS 421	Contemporary Political Theories	3

2. Thought and Cultures of Europe			
Select a minimum of 3 credits from the following:			
ART 110	Global Art History I		3
ART 111	Global Art History II		3
ART 212	Global Art History III [3]		3
ART 410	Greek Art [3]		3
ART 411	History of Medieval Art [3]		3
ART 412	History of Renaissance Art [3]		3
ART 414	History of Baroque and Rococo Art [3]		3
ART 415	History of 19th Century European Art [3]		3
ART 416	History of European Art, 1900 to 1945 [3]		3
ART 417	Roman Art [3]		3
ART 420	Travel Abroad-Art History in Italy [3]		3-5
E 276	Survey of British Literature I (GT-AH2)	3B	3
E 277	Survey of British Literature II (GT-AH2)	3B	3
E 337	Western Mythology		3
E 342	Shakespeare I		3
E 343	Shakespeare II		3
E 424	English Renaissance		3
E 426	British Romanticism		3
E 427	Victorian Age		3
E 430	18th-Century English Fiction		3
E 431	19th-Century English Fiction		3
E 432	20th-Century British Fiction		3
E 443	English Renaissance Drama		3
E 444	Restoration and 18th-Century Drama		3
E 445	Modern British and European Drama		3
E 452	Masterpieces of European Literature		3
E 455	European Literature after 1900 [3]		3
E 460	Chaucer [3]		3
E 463	Milton [3]		3
E 475	American Poetry Before 1900 [3]		3
LAND 120	History of the Designed Landscape		3
L*** 250 Language, Literature, Culture in Translation			3
L*** 310 Approaches to Literature [7]			3
L*** 313 Introduction to Translation and Interpreting [7]			3
L*** 335 Issues in Culture [7]			3
L*** 345 Business Language [7]			3
L*** 355 20th Century Literature [8]			3
L*** 413 Advanced Translation and Interpreting [7]			3
L*** 441 Advanced Business Language [7]			3
L*** 450 Selected Literary Movements and Periods [7]			3
L*** 452 Genre Studies [7]			3
L*** 453 Author Studies [7]			3
L*** 454 Topic Studies [7]			3
LFRE 433A	Advanced French/Francophone Culture: Representations [3]		3
LFRE 433B	Advanced French/Francophone Culture: Center and Margins [3]		3

LFRE 460	French/Francophone Women Writers	3
LGEN 465C	Studies in Foreign Film: Europe	3
LGER 434	Advanced German Culture	3
LSPA 437	Advanced Spanish Culture	3
LSPA 443	Spanish Theatre	3
MU 334	Music History I [3]	3
MU 335	Music History II [3]	3
PHIL 300	Ancient Greek Philosophy [3]	3
PHIL 301	17th and 18th Century European Philosophy [3]	3
PHIL 302	19th Century Philosophy [3]	3
PHIL 409	20th Century Philosophy [3]	3
LATIN AMERICA		
1. History and Politics of Latin America		
Select a minimum of 6 credits from the following:		
ETST 370	Caribbean Identities	3
ETST 371	The Modern Caribbean	3
HIST 410	Colonial Latin America	3
HIST 411	Latin America Since Independence	3
HIST 412	Mexico	3
HIST 414	Revolutions in Latin America	3
HIST 460	Slavery in the Americas	3
POLS 331	Politics and Society Along Mexican Border	3
POLS 446	Politics of South America	3
POLS 447	Politics in Mexico, Central America, Caribbean	3
2. Thought and Culture of Latin America		
Select a minimum of 3 credits from the following:		
ANTH 319	Latin American Peasantries [3]	3
ANTH 451	Andean Archaeology and Ethnohistory [3]	3
ANTH 452	Archaeology of Mesoamerica [3]	3
ART 312	Pre-Columbian Art of Mesoamerica [3]	3
DM 470A	International Design and Merchandising: Apparel [3]	2
DM 470B	International Design and Merchandising: Interior Design [3]	2
LSPA 310	Approaches to Spanish Literature	3
LSPA 313	Introduction to Spanish Translation and Interpreting	3
LSPA 335	Issues in Hispanic Culture	3
LSPA 345	Business Spanish	3
LSPA 465B	Studies in Foreign Film: Latin America [3]	3
or LSPA 365	Introduction to Spanish Cinema	
LSPA 435	Caribbean Culture in Hispanic Literature	3
LSPA 436	Advanced Latin American Culture	3
LSPA 437	Advanced Spanish Culture	3
LSPA 441	Advanced Business Spanish	3
LSPA 445	Women Writers in the Hispanic World	3

LSPA 449	Spanish-American Literary Movements and Periods		3
LSPA 452	Genre Studies in Spanish		3
LSPA 453	Author Studies in Spanish		3
LSPA 454	Topic Studies in Spanish		3
SOC 366	Peoples and Institutions of Latin America [3]		3
MIDDLE EAST AND NORTH AFRICA			
1. History and Politics of the Middle East and North Africa			
Select a minimum of 6 credits from the following:			
HIST 303	Hellenistic World: Alexander to Cleopatra		3
HIST 421	Africa: Colonialism to Independence [3]		3
HIST 422	Modern Africa [3]		3
HIST 431	Ancient Israel		3
HIST 432	Sacred History in the Bible and the Qur'an		3
HIST 433	Muhammad and the Origins of Islam		3
HIST 435	Jihad and Reform in Islamic History		3
HIST 469	The Crusades		3
HIST 532	Reading Seminar: Middle East [3]		3
POLS 449	Middle East Politics		3
2. Thought and Culture of the Middle East and North Africa			
Select a minimum of 3 credits from the following:			
LARA 250	Arabic Language, Literature, Culture in Translation (GT-AH2)	3B	3
LGEN 465D	Studies in Foreign Film: Africa		3
PHIL 171	Religions of the West		3
PHIL 335	Islam: Cosmology and Practice		3
PHIL 379	Mysticism East and West		3
PHIL 455	Islamic Philosophy		3
INTERNATIONAL STUDIES			
3. International Studies Courses for all geographic option areas			
Select a minimum of 3 credits from the following:			
AGRI 270/IE 270	World Interdependence-Population and Food (GT-SS3)	3E	3
AM 430	International Retailing [3]		3
AM 460	Historic Textiles		3
ANTH 200	Cultures and the Global System (GT-SS3)	3E	3
ANTH 352	Geoarchaeology [3]		3
ANTH 415	Indigenous Ecologies and the Modern World		3
ANTH 422/SOC 422	Comparative Legal Systems [3]		3
ANTH 441	Method in Cultural Anthropology [3]		3
ANTH 479/IE 479	International Development Theory and Practice		3
AREC 240/ECON 240	Issues in Environmental Economics (GT-SS1)	3C	3
AREC 415	International Agricultural Trade [3]		3
AREC 460	Ag- and Resource-Based Economic Development [3]		3

BUS 350	Travel Abroad-International Comparative Management [3]		3
CON 450/INTD 450	Travel Abroad-Sustainable Building		3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
ECON 332/POLS 332	International Political Economy [3]		3
ECON 370	Comparative Economic Systems		3
ECON 440	Economics of International Trade and Policy [3]		3
ECON 442	Economics of International Finance and Policy [3]		3
ECON 460	Economic Development [3]		3
FIN 475	International Business Finance [3]		3
GR 320	Cultural Geography		3
HIST 463	Science and Technology in Modern History [3]		3
HIST 470	World Environmental History, 1500-Present [3]		3
HIST 471	History of Antarctica, 1800-Present [3]		3
IE 179	Globalization: Exploring Our Global Village (GT-SS3)	3E	3
IE 450/SOWK 450	International Social Welfare and Development		3
IE 470	Women and Development		3
IE 471	Children and Youth in Global Context		3
IE 472	Education for Global Peace		3
JTC 412	International Mass Communication		3
MGT 475	International Business Management [3]		3
MKT 365	International Marketing [3]		3
NRRT 320	International Issues-Recreation and Tourism		3
POLS 362	Global Environmental Politics		3
POLS 431	International Law [3]		3
POLS 433	International Organization [3]		3
POLS 435	United States Foreign Policy [3]		3
POLS 436	Comparative Foreign Policy [3]		3
POLS 437	International Security		3
SOC 364	Food, Agriculture and Global Society [3]		3
SOC 429	Comparative Urban Studies [3]		3
SOC 482A	Travel Abroad: Comparative Criminal Justice [9]		3
SOC 482B	Travel Abroad: Crime and Deviance		3
SPCM 434	Intercultural Communication		3

1 Courses are to be selected with the approval of the Engineering advisor. A minimum of 7 credits must be upper-division (300- to 400-level)

2 Each student is required to complete a minor in a foreign language. Contact the Department of Languages, Literatures and Cultures.

3 Students may need to obtain an override in order to register for some courses. For Engineering courses, students should see the appropriate Engineering department. For International Studies courses, students should contact the instructor.

4 To fulfill the International Studies Course Selection requirement, select a minimum total of 18 credits, of which at least 15 must be upper-division (300- to 400-level), from a minimum of three different subject codes. Students will choose an International Studies geographic option area, and from those course lists select: a minimum of 6 credits from 1) History and Politics; a minimum of 3 credits from 2) Thought and Culture; a minimum of 6 credits from 3) International Studies (list is same for all option areas); and an additional minimum of 3 credits of choice from lists 1, 2, or 3.

[5] Select one course from the list of courses in category 3B of the All-University Core Curriculum (AUCC) except for L*** language courses.

[6] Credit allowed for only one of LCHI 365, LGEN 465B, LJPN 365.

[7] French (LFRE), German (LGER), or Spanish (LSPA) only.

[8] French (LFRE) or German (LGER) only

[9] To count toward the International Studies Course Selection, travel abroad must be to a country or area covered by the chosen geographic option.

Major Completion Map

Distinctive Requirements for Degree Program:

TO DECLARE MAJOR: Engineering is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the Department for more information.

TO PREPARE FOR FIRST SEMESTER: The curriculum for this major assumes students enter college prepared to take calculus.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)			3A	1
CIVE 102	Introduction to Civil and Environmental Engr	X			3
L*** 200 Second Year Language I		X		3B	3-5
MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	4
	Total Credits				15-17
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II	X			3
CIVE 103	Engineering Graphics and Computing	X			3
CO 150	College Composition (GT-CO2)	X		1A	3
GR 100	Introduction to Geography (GT-SS2)	X		3C	3
MATH 161	Calculus for Physical Scientists II (GT-MA1)	X		1B	4
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ECON 202	Principles of Microeconomics (GT-SS1)			3C	3
MATH 261	Calculus for Physical Scientists III	X			4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	X		3A	5
Technical Elective (See Requirements Tab)		X			3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
L*** 201 Second Year Language II		X			3-5
MATH 340	Introduction to Ordinary Differential Equations	X		4A,4B	4
PH 142	Physics for Scientists and Engineers II (GT-SC1)	X		3A	5
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
	Total Credits				15-17

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
CIVE 260	Engineering Mechanics-Statics	X			3
INST 301	International Studies Research Methods			4B	3
MECH 237	Introduction to Thermal Sciences	X			3
STAT 315	Statistics for Engineers and Scientists	X			3
Foreign Language Minor		X			3
International Studies Course Selection (See Requirements Tab)		X			3
	Total Credits				18
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
CIVE 261	Engineering Mechanics-Dynamics	X			3

Select one Historical Perspectives (AUCC 3D) course that coordinates with chose International Studies geographic option area. (See Requirements Tab)				3D	3
POLS 241	Comparative Government and Politics (GT-SS1)	X		3E	3
Foreign Language Minor		X			3
Technical Elective (See Requirements Tab)		X			3
	Total Credits				15

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
CIVE 300	Fluid Mechanics	X			3
CIVE 301	Fluid Mechanics Laboratory	X			1
Foreign Language Minor		X			3
International Studies Course Selection (See Requirements Tab)		X			3
Technical Electives (See Requirements Tab)		X			5-6
	Total Credits				15-16
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
ECE 204	Introduction to Electrical Engineering	X			3
Foreign Language Minor		X			3
International Studies Course Selection (See Requirements Tab)		X			3
Technical Electives (See Requirements Tab)		X			8-9
	Total Credits				17-18

Fifth Year

Semester 9		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one pair of courses from AUCC 4C list. (See Requirements Tab)		X		4C	6-8
Arts and Humanities				3B	3
International Studies Course Selection (See Requirements Tab)		X			3
Technical Elective (See Requirements Tab)		X			3
	Total Credits				15-17
Semester 10		**Critical**	**Recommended**	**AUCC**	**Credits**
INST 492	Seminar	X		4A,4C	3
Foreign Language Minor		X			3
International Studies Course Selection (See Requirements Tab)		X			6
Technical Elective (See Requirements Tab)		X			3
The benchmark courses for the 10th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				156-164

Major in International Studies

Office in Clark Building, Room C214
(970) 491-3295
inst.colostate.edu (http://inst.colostate.edu)

Andrea Duffy, Director

The International Studies major is an interdisciplinary program designed to help students understand the nature of diverse cultures and peoples. There are four concentrations: Asian Studies, European Studies, Latin American Studies, and Middle East and North African Studies. Courses are required in foreign language, geography, political science, economics, history, and international studies, with other elective courses chosen from these and many more disciplines across the college and university.

Learning Outcomes

Graduates of the International Studies major will demonstrate that they are competent and capable in:

- Writing effectively about the themes of International Studies and related fields
- Communicating cross-culturally through written and oral expression
- Thinking critically about international issues
- Applying an interdisciplinary approach to knowledge

Potential Occupations

Graduates in International Studies apply their education in a wide variety of careers, including those in international business, non-profit organizations, academics, public policy, law, government, city planning, engineering, environmental sustainability and clean energy, information systems, journalism, publishing, education, sales and marketing, management and administration, artistic production, mass

media, communications, museums, entertainment, foreign service, and many other areas in need of intelligent, well-rounded, and broadly world-educated people. Some International Studies graduates enter graduate or professional schools for more specialized study in either international studies or one of many other disciplines. To enhance their career opportunities, majors are encouraged to consider participating in paid or volunteer work or internship opportunities, and to study abroad.

Concentrations

- Asian Studies Concentration
- European Studies Concentration
- Latin American Studies Concentration
- Middle East and North African Studies Concentration

Major in International Studies, Asian Studies Concentration

Requirements

Effective Fall 2018

Freshman

		AUCC	Credits
ANTH 200	Cultures and the Global System (GT-SS3)	3E	3
CO 150	College Composition (GT-CO2)	1A	3
GR 100	Introduction to Geography (GT-SS2)	3C	3
Select one course from the following:			3
HIST 120	Asian Civilizations I (GT-HI1)	3D	
HIST 121	Asian Civilizations II (GT-HI1)	3D	
HIST 170	World History, Ancient-1500 (GT-HI1)	3D	
HIST 171	World History, 1500-Present (GT-HI1)	3D	
INST 200	Interdisciplinary Approaches to Globalization	3E	3
Select one group from the following:			10
Group A:			
LCHI 100	First-Year Chinese I		
LCHI 101	First-Year Chinese II		
Group B:			
LJPN 100	First-Year Japanese I		
LJPN 101	First-Year Japanese II		
Select one course from the following:			3
POLS 232	International Relations (GT-SS1)	3E	
POLS 241	Comparative Government and Politics (GT-SS1)	3E	
Mathematics		1B	3
	Total Credits		31

Sophomore

Select one course from the following:			3
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	
ECON 202	Principles of Microeconomics (GT-SS1)	3C	
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	
ECON 211	Gender in the Economy (GT-SS1)	3E	
ECON 240/AREC 240	Issues in Environmental Economics (GT-SS1)	3C	
Select one group from the following:			10
Group A:			
LCHI 200	Second-Year Chinese I (GT-AH4)	3B	
LCHI 201	Second-Year Chinese II (GT-AH4)	3B	
Group B:			
LJPN 200	Second-Year Japanese I (GT-AH4)	3B	
LJPN 201	Second-Year Japanese II (GT-AH4)	3B	
Advanced Writing		2	3

Arts and Humanities		3B	6
Biological and Physical Sciences		3A	7
	Total Credits		29
Junior			
INST 301	International Studies Research Methods	4B	3
Select one group from the following:			6
Group A:			
LCHI 304	Third-Year Chinese I		
LCHI 305	Third-Year Chinese II		
Group B:			
LJPN 304	Third-Year Japanese I		
LJPN 305	Third-Year Japanese II		
International Studies Major Course Selection			12
Electives			9
	Total Credits		30
Senior			
INST 492	Seminar	4A,4C	3
International Studies Major Course Selection			12
Electives[1]			15
	Total Credits		30
	Program Total Credits:		120

International Studies Major Course Selection

Students must select a minimum total of 24 credits, 18 of which must be upper-division (300- to 400-level), from at least three subject codes, from the following groups of courses. Select at least 6 credits from 1. History and Politics of Asia; at least 6 credits from 2. Thought and Cultures of Asia; and at least 3 credits from 3. International Studies. Select an additional minimum of 9 credits from among the three groups to bring the total to 24.

Code	Title	AUCC	Credits
1. History and Politics of Asia			
Select a minimum of 6 credits from the following:			6
ETST 252/HIST 252	Asian American History (GT-HI1)	3D	
ETST 324	Asian-Pacific Americans and the Law		
HIST 116	The Islamic World Since 1500	3D	
HIST 120	Asian Civilizations I (GT-HI1)	3D	
HIST 121	Asian Civilizations II (GT-HI1)	3D	
HIST 440	Modern South Asia: Colonialism and Nationalism		
HIST 441	South Asia Since Independence		
HIST 450	Ancient China		
HIST 451	Medieval China and Central Asia		
HIST 452	China in the Modern World, 1600-Present		
HIST 455	Tokugawa and Modern Japan, 1600-Present		
HIST 456	East Asia in the Age of Empire, 1800-Present		
HIST 464	Pacific Wars: Philippines-WWII		
HIST 465	Pacific Wars: Korea and Vietnam		
HIST 466	U.S.-China Relations Since 1800		
HIST 533	Reading Seminar: East Asia		

HIST 534	Reading Seminar: South Asia		
POLS 445	Comparative Asian Politics		
2. Thought and Cultures of Asia			
Select a minimum of 6 credits from the following:			6
ANTH 312	Modern Indian Culture and Society		
ANTH 314	Southeast Asian Cultures and Societies		
ART 316	Art of the Pacific		
E 356	Asian Literature		
ETST 320	Ethnicity and Film: Asian-American Experience		
LGEN 192	Modern Languages/Cultures: Italian and Japanese		
LCHI 250	Chinese Language, Literature, Culture in Translation (GT-AH2)	3B	
or LJPN 250	Japanese Language, Literature, Culture in Translation (GT-AH2)		
LCHI 309	Contemporary Chinese Literature and the Arts		
LCHI 365	Introduction to Chinese Cinema Studies [2]		
or LGEN 465B	Studies in Foreign Film: Asia		
or LJPN 365	Introduction to Japanese Cinema Studies		
LCHI 496	Group Study-Chinese		
LJPN 404	Historical Aspects of the Language and Society		
LJPN 496	Group Study-Japanese		
PHIL 172	Religions of the East		
PHIL 349	Philosophies of East Asia		
PHIL 360	Topics in Asian Philosophy		
PHIL 371	Contemporary Eastern Religious Thought		
PHIL 379	Mysticism East and West		
3. International Studies			
Select a minimum of 3 credits from the following:			3
AGRI 270/IE 270	World Interdependence-Population and Food (GT-SS3)	3E	
AM 430	International Retailing		
AM 460	Historic Textiles		
ANTH 100	Introductory Cultural Anthropology (GT-SS3)	3C	
ANTH 140	Introduction to Prehistory (GT-HI1)	3D	
ANTH 313	Modernization and Development		
ANTH 322	The Anthropology of Religion		
ANTH 329	Cultural Change		
ANTH 330	Human Ecology		
ANTH 336	Art and Culture		
ANTH 338	Gender and Anthropology		
ANTH 352	Geoarchaeology		
ANTH 413	Indigenous Peoples Today		
ANTH 415	Indigenous Ecologies and the Modern World		
ANTH 416	Gender, Culture, and Health		
ANTH 422/SOC 422	Comparative Legal Systems		

ANTH 438	Approaches to Community-Based Development	
ANTH 441	Method in Cultural Anthropology	
ANTH 447	Gender Equity in Development	
ANTH 448	Development and Empowerment	
ANTH 479/IE 479	International Development Theory and Practice	
AREC 240/ECON 240	Issues in Environmental Economics (GT-SS1)	3C
AREC 415	International Agricultural Trade	
AREC 460	Ag- and Resource-Based Economic Development	
BUS 350	Travel Abroad-International Comparative Management	
BUS 405B	Contemporary Business Topics: International Business	
CON 450/INTD 450	Travel Abroad-Sustainable Building	
E 142	Reading Without Borders (GT-AH2)	3E
E 245	World Drama (GT-AH2)	3E
E 330	Gender in World Literature	
E 339	Literature of the Earth	
E 428	Postcolonial Literature	
ECON 101	Economics of Social Issues (GT-SS1)	3C
ECON 202	Principles of Microeconomics (GT-SS1)	3C
ECON 204	Principles of Macroeconomics (GT-SS1)	3C
ECON 211	Gender in the Economy (GT-SS1)	3E
ECON 332/POLS 332	International Political Economy	
ECON 370	Comparative Economic Systems	
ECON 440	Economics of International Trade and Policy	
ECON 442	Economics of International Finance and Policy	
ECON 460	Economic Development	
ETST 256	Border Crossings: People/Politics/Culture (GT-SS3)	3E
ETST 352/SOWK 352	Indigenous Women, Children, and Tribes	
ETST 365	Global Environmental Justice Movements	
FIN 475	International Business Finance	
GES 101	Foundations of Environmental Sustainability	
GES 192	Global Environmental Sustainability Seminar	
GR 320	Cultural Geography	
GR 330	Urban Geography	
GR 415	The Geography of Commodities	
HIST 463	Science and Technology in Modern History	
HIST 467	Modern Jewish History	
HIST 470	World Environmental History, 1500-Present	
HIST 471	History of Antarctica, 1800-Present	

IE 179	Globalization: Exploring Our Global Village (GT-SS3)	3E
IE 272	World Interdependence - Current Global Issues	
IE 300	Global Studies	
IE 450/SOWK 450	International Social Welfare and Development	
IE 470	Women and Development	
IE 471	Children and Youth in Global Context	
IE 472	Education for Global Peace	
INST 487	Internship [3]	
INST 495	Independent Study [3]	
JTC 412	International Mass Communication	
LB 170	World Literatures to 1500 (GT-AH2)	3E
LB 171	World Literatures-The Modern Period (GT-AH2)	3E
MGT 475	International Business Management	
MKT 365	International Marketing	
MU 131	Introduction to Music History and Literature (GT-AH1)	3B
NRRT 320	International Issues-Recreation and Tourism	
PHIL 170	World Philosophies (GT-AH3)	3E
PHIL 320	Ethics of Sustainability	
PHIL 479	Topics in Comparative Religions	
POLS 131	Current World Problems (GT-SS1)	3E
POLS 232	International Relations (GT-SS1)	3E
POLS 241	Comparative Government and Politics (GT-SS1)	3E
POLS 362	Global Environmental Politics	
POLS 431	International Law	
POLS 433	International Organization	
POLS 435	United States Foreign Policy	
POLS 436	Comparative Foreign Policy	
POLS 437	International Security	
POLS 442	Environmental Politics in Developing World	
POLS 443	Comparative Social Movements	
POLS 448	Comparative Racial/Ethnic Politics	
POLS 462	Globalization, Sustainability, and Justice	
SOC 105	Social Problems (GT-SS3)	3C
SOC 220	Global Environmental Issues (GT-SS3)	3E
SOC 320	Population-Natural Resources and Environment	
SOC 322	Introduction to Environmental Justice	
SOC 323	Soc. of Environmental Cooperation & Conflict	
SOC 364	Food, Agriculture and Global Society	
SOC 429	Comparative Urban Studies	
SOC 482A	Travel Abroad: Comparative Criminal Justice [4]	

SOC 482B	Travel Abroad: Crime and Deviance [4]
SPCM 434	Intercultural Communication

1 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 credits must be upper-division (300- to 400-level).

2 Credit allowed for only one of the following: LCHI 365, LGEN 465B, LJPN 365.

3 Maximum 3 credits.

4 To count toward the International Studies Major Course Selection, travel abroad must be to a country or area covered by this concentration.

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
ANTH 200	Cultures and the Global System (GT-SS3)			3E	3
CO 150	College Composition (GT-CO2)			1A	3
GR 100	Introduction to Geography (GT-SS2)	X		3C	3
Select one course from the following:					5
LCHI 100	First-Year Chinese I				
LJPN 100	First-Year Japanese I				
	Total Credits				14

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
HIST 120	Asian Civilizations I (GT-HI1)			3D	
HIST 121	Asian Civilizations II (GT-HI1)			3D	
HIST 170	World History, Ancient-1500 (GT-HI1)			3D	
HIST 171	World History, 1500-Present (GT-HI1)			3D	
INST 200	Interdisciplinary Approaches to Globalization			3E	3
Select one course from the following:					5
LCHI 101	First-Year Chinese II				
LJPN 101	First-Year Japanese II				
Select one course from the following:					3
POLS 232	International Relations (GT-SS1)			3E	
POLS 241	Comparative Government and Politics (GT-SS1)			3E	
Mathematics				1B	3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				17

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
AREC 202	Agricultural and Resource Economics (GT-SS1)			3C	
ECON 202	Principles of Microeconomics (GT-SS1)			3C	
ECON 204	Principles of Macroeconomics (GT-SS1)			3C	
ECON 211	Gender in the Economy (GT-SS1)			3E	
ECON 240/ AREC 240	Issues in Environmental Economics (GT-SS1)			3C	
Select one course from the following:					5
LCHI 200	Second-Year Chinese I (GT-AH4)			3B	
LJPN 200	Second-Year Japanese I (GT-AH4)			3B	
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
LCHI 100 or LJPN 100 must be completed by the end of Semester 3.		X			
	Total Credits				14

Semester 4		Critical	Recommended	AUCC	Credits
Select one course from the following:					5
LCHI 201	Second-Year Chinese II (GT-AH4)			3B	
LJPN 201	Second-Year Japanese II (GT-AH4)			3B	
Advanced Writing				2	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	4
ECON 202 or AREC 202 and LCHI 101 or LJPN 101 must be completed by the end of Semester 4.		X			
	Total Credits				15

Junior

Semester 5		Critical	Recommended	AUCC	Credits
INST 301	International Studies Research Methods	X		4B	3
Select one course from the following:					3
LCHI 304	Third-Year Chinese I				
LJPN 304	Third-Year Japanese I				
International Studies Major Course Selection (See list on Concentration Requirements Tab)					6
Elective					3
LCHI 200 or LJPN 200 must be completed by the end of Semester 5.		X			
	Total Credits				15

Semester 6		Critical	Recommended	AUCC	Credits
Select one course from the following:					3
LCHI 305	Third-Year Chinese II				
LJPN 305	Third-Year Japanese II				
International Studies Major Course Selection (See list on Concentration Requirements Tab)					6
Elective					6
LCHI 201 or LJPN 201 must be completed by the end of Semester 6.		X			
	Total Credits				15

Senior

Semester 7		Critical	Recommended	AUCC	Credits
INST 492	Seminar		X	4A,4C	3
International Studies Major Course Selection (See list on Concentration Requirements Tab)					6
Electives					6
LCHI 304 or LJPN 304 must be completed by the end of Semester 7.		X			
	Total Credits				15

Semester 8		Critical	Recommended	AUCC	Credits
International Studies Major Course Selection (See list on Concentration Requirements Tab)		X			6
Electives		X			9
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in International Studies, European Studies Concentration

Requirements

Effective Fall 2018

Freshman

		AUCC	Credits
ANTH 200	Cultures and the Global System (GT-SS3)	3E	3
CO 150	College Composition (GT-CO2)	1A	3
GR 100	Introduction to Geography (GT-SS2)	3C	3
Select one course from the following:			3
HIST 100	Western Civilization, Pre-Modern (GT-HI1)	3D	
HIST 101	Western Civilization, Modern (GT-HI1)	3D	
HIST 170	World History, Ancient-1500 (GT-HI1)	3D	
HIST 171	World History, 1500-Present (GT-HI1)	3D	
INST 200	Interdisciplinary Approaches to Globalization	3E	3
L*** 100 First-Year Language I[1]			5
L*** 101 First-Year Language II[1]			5
Select one course from the following:			3
POLS 232	International Relations (GT-SS1)	3E	
POLS 241	Comparative Government and Politics (GT-SS1)	3E	
Mathematics		1B	3
	Total Credits		31

Sophomore

Select one course from the following:			3
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	
ECON 202	Principles of Microeconomics (GT-SS1)	3C	
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	
ECON 211	Gender in the Economy (GT-SS1)	3E	
ECON 240/AREC 240	Issues in Environmental Economics (GT-SS1)	3C	
L*** 200 Second-Year Language I[1]			3-4
L*** 201 Second-Year Language II[1]			3-4
Advanced Writing		2	3
Arts and Humanities		3B	6
Biological and Physical Sciences		3A	7
Electives			2-4
	Total Credits		29

Junior

INST 301	International Studies Research Methods	4B	3
L*** 300 Third-Year Language I[2]			3
L*** 301 Third-Year Language II[2]			3
International Studies Major Course Selection			12
Electives			9
	Total Credits		30

Senior

INST 492	Seminar	4A,4C	3
International Studies Major Course Selection			12
Electives[3]			15
	Total Credits		30
	Program Total Credits:		120

International Studies Major Course Selection

Students must select a minimum total of 24 credits, 18 of which must be upper-division (300- to 400-level), from at least three subject codes, from the following groups of courses. Select at least 6 credits from 1. History and Politics in Europe; at least 6 credits from 2. Thought and Cultures in Europe; and at least 3 credits from 3. International Studies. Select an additional minimum of 9 credits from among the three groups to bring the total to 24.

Code	Title	AUCC	Credits
1. History and Politics in Europe			
Select a minimum of 6 credits from the following:			6
ECON 372	History of Economic Institutions and Thought		
ECON 376	Marxist Economic Thought		
HIST 300	Ancient Greece to 323 B.C.E.		
HIST 301	Roman Republic		
HIST 302	Roman Empire		
HIST 303	Hellenistic World: Alexander to Cleopatra		
HIST 304	Women in Ancient Greece and Rome		
HIST 308	Ancient Christianity to 500 A.D.		
HIST 309	Medieval Christianity, 500-1500		
HIST 310	Medieval Europe		
HIST 311	Medieval England		
HIST 312	Women in Medieval Europe		
HIST 315	Tudor Stuart England, 1485-1689		
HIST 317	Renaissance and Reformation Europe		
HIST 318	The Age of the Enlightenment		
HIST 319	Early Modern France, 1500-1789		
HIST 320	Women and Gender in Europe, 1450-1789		
HIST 321	Industrial Society in Europe, 1600-1871		
HIST 322	Industrial Society in Europe, 1871-1989		
HIST 323	Russia Before 1700		
HIST 324	Imperial Russia		
HIST 328	Modern Europe, 1815-1914		
HIST 329	Europe in Crisis, 1914-1941		
HIST 330	Eastern Europe Since 1918		
HIST 331	The Soviet Union		
HIST 332	Germany Since World War I		
HIST 333	Contemporary Europe		
HIST 334	European Culture in the 20th Century		
HIST 335	Britain in the 20th Century		
HIST 336	Germany from Napoleon to WWI		
HIST 338	The Holocaust in Historical Perspective		
HIST 339	World War II in Europe		
HIST 461	Rise and Fall of British Empire 1600-1947		
HIST 467	Modern Jewish History		
HIST 469	The Crusades		
HIST 471	History of Antarctica, 1800-Present		

POLS 341	Western European Government and Politics		
POLS 345	Russian, Central, and East European Politics		
POLS 420	History of Political Thought		
POLS 421	Contemporary Political Theories		
2. Thought and Cultures in Europe			
Select a minimum of 6 credits from the following:			6
ART 110	Global Art History I		
ART 111	Global Art History II		
ART 212	Global Art History III		
ART 410	Greek Art		
ART 411	History of Medieval Art		
ART 412	History of Renaissance Art		
ART 414	History of Baroque and Rococo Art		
ART 415	History of 19th Century European Art		
ART 416	History of European Art, 1900 to 1945		
ART 417	Roman Art		
ART 420	Travel Abroad-Art History in Italy		
E 276	Survey of British Literature I (GT-AH2)	3B	
E 277	Survey of British Literature II (GT-AH2)	3B	
E 337	Western Mythology		
E 342	Shakespeare I		
E 343	Shakespeare II		
E 424	English Renaissance		
E 426	British Romanticism		
E 427	Victorian Age		
E 430	18th-Century English Fiction		
E 431	19th-Century English Fiction		
E 432	20th-Century British Fiction		
E 443	English Renaissance Drama		
E 444	Restoration and 18th-Century Drama		
E 445	Modern British and European Drama		
E 452	Masterpieces of European Literature		
E 455	European Literature after 1900		
E 460	Chaucer		
E 463	Milton		
E 475	American Poetry Before 1900		
ETST 382/LGEN 382	Italian Ethnic Identity, Culture, and Gender		
LAND 120	History of the Designed Landscape		
L*** 250	Language, Literature, Culture in Translation	3B	
L*** 310	Approaches to Literature [4]		
L*** 313	Introduction to Translation and Interpreting [4]		
L*** 335	Issues in Culture [4]		
L*** 345	Business Language [4]		
L*** 355	20th Century Literature [5]		
L*** 413	Advanced Translation and Interpreting [4]		

L*** 441	Advanced Business Language [4]	
L*** 450	Selected Literary Movements and Periods [4]	
L*** 452	Genre Studies [4]	
L*** 453	Author Studies [4]	
L*** 454	Topic Studies [4]	
LFRE 433A	Advanced French/Francophone Culture: Representations	
LFRE 433B	Advanced French/Francophone Culture: Center and Margins	
LFRE 460	French/Francophone Women Writers	
LGEN 192	Modern Languages/Cultures: Italian and Japanese	
LGEN 465C	Studies in Foreign Film: Europe	
LGER 434	Advanced German Culture	
LSPA 437	Advanced Spanish Culture	
LSPA 443	Spanish Theatre	
MU 334	Music History I	
MU 335	Music History II	
PHIL 120	History and Philosophy of Scientific Thought (GT-AH3)	3B
PHIL 171	Religions of the West	
PHIL 300	Ancient Greek Philosophy	
PHIL 301	17th and 18th Century European Philosophy	
PHIL 302	19th Century Philosophy	
PHIL 370	Contemporary Western Religious Thought	
PHIL 375	Science and Religion	
PHIL 409	20th Century Philosophy	
3. International Studies		
Select a minimum of 3 credits from the following:		3
AGRI 270/IE 270	World Interdependence-Population and Food (GT-SS3)	3E
AM 430	International Retailing	
AM 460	Historic Textiles	
ANTH 100	Introductory Cultural Anthropology (GT-SS3)	3C
ANTH 140	Introduction to Prehistory (GT-HI1)	3D
ANTH 313	Modernization and Development	
ANTH 322	The Anthropology of Religion	
ANTH 329	Cultural Change	
ANTH 330	Human Ecology	
ANTH 336	Art and Culture	
ANTH 338	Gender and Anthropology	
ANTH 352	Geoarchaeology	
ANTH 413	Indigenous Peoples Today	
ANTH 415	Indigenous Ecologies and the Modern World	
ANTH 416	Gender, Culture, and Health	
ANTH 422/SOC 422	Comparative Legal Systems	
ANTH 438	Approaches to Community-Based Development	
ANTH 441	Method in Cultural Anthropology	

ANTH 447	Gender Equity in Development	
ANTH 448	Development and Empowerment	
ANTH 479/IE 479	International Development Theory and Practice	
AREC 240/ECON 240	Issues in Environmental Economics (GT-SS1)	3C
AREC 415	International Agricultural Trade	
AREC 460	Ag- and Resource-Based Economic Development	
BUS 350	Travel Abroad-International Comparative Management	
BUS 405B	Contemporary Business Topics: International Business	
CON 450/INTD 450	Travel Abroad-Sustainable Building	
E 142	Reading Without Borders (GT-AH2)	3E
E 245	World Drama (GT-AH2)	3E
E 330	Gender in World Literature	
E 339	Literature of the Earth	
E 428	Postcolonial Literature	
ECON 101	Economics of Social Issues (GT-SS1)	3C
ECON 202	Principles of Microeconomics (GT-SS1)	3C
ECON 204	Principles of Macroeconomics (GT-SS1)	3C
ECON 211	Gender in the Economy (GT-SS1)	3E
ECON 332/POLS 332	International Political Economy	
ECON 370	Comparative Economic Systems	
ECON 440	Economics of International Trade and Policy	
ECON 442	Economics of International Finance and Policy	
ECON 460	Economic Development	
ETST 256	Border Crossings: People/Politics/Culture (GT-SS3)	3E
ETST 352/SOWK 352	Indigenous Women, Children, and Tribes	
ETST 365	Global Environmental Justice Movements	
FIN 475	International Business Finance	
GES 101	Foundations of Environmental Sustainability	
GES 192	Global Environmental Sustainability Seminar	
GR 320	Cultural Geography	
GR 330	Urban Geography	
GR 415	The Geography of Commodities	
HIST 463	Science and Technology in Modern History	
HIST 467	Modern Jewish History	
HIST 470	World Environmental History, 1500-Present	
HIST 471	History of Antarctica, 1800-Present	
IE 179	Globalization: Exploring Our Global Village (GT-SS3)	3E

IE 272	World Interdependence - Current Global Issues	
IE 300	Global Studies	
IE 450/SOWK 450	International Social Welfare and Development	
IE 470	Women and Development	
IE 471	Children and Youth in Global Context	
IE 472	Education for Global Peace	
INST 487	Internship [6]	
INST 495	Independent Study [6]	
JTC 412	International Mass Communication	
LB 170	World Literatures to 1500 (GT-AH2)	3E
LB 171	World Literatures-The Modern Period (GT-AH2)	3E
MGT 475	International Business Management	
MKT 365	International Marketing	
MU 131	Introduction to Music History and Literature (GT-AH1)	3B
NRRT 320	International Issues-Recreation and Tourism	
PHIL 170	World Philosophies (GT-AH3)	3E
PHIL 320	Ethics of Sustainability	
PHIL 479	Topics in Comparative Religions	
POLS 131	Current World Problems (GT-SS1)	3E
POLS 232	International Relations (GT-SS1)	3E
POLS 241	Comparative Government and Politics (GT-SS1)	3E
POLS 362	Global Environmental Politics	
POLS 431	International Law	
POLS 433	International Organization	
POLS 435	United States Foreign Policy	
POLS 436	Comparative Foreign Policy	
POLS 437	International Security	
POLS 442	Environmental Politics in Developing World	
POLS 443	Comparative Social Movements	
POLS 448	Comparative Racial/Ethnic Politics	
POLS 462	Globalization, Sustainability, and Justice	
SOC 105	Social Problems (GT-SS3)	3C
SOC 220	Global Environmental Issues (GT-SS3)	3E
SOC 320	Population-Natural Resources and Environment	
SOC 322	Introduction to Environmental Justice	
SOC 323	Soc. of Environmental Cooperation & Conflict	
SOC 364	Food, Agriculture and Global Society	
SOC 429	Comparative Urban Studies	
SOC 482A	Travel Abroad: Comparative Criminal Justice [7]	
SOC 482B	Travel Abroad: Crime and Deviance [7]	
SPCM 434	Intercultural Communication	

1 French (LFRE), German (LGER), Italian (LITA), Russian (LRUS), or Spanish (LSPA) only.

2 For students of Italian language, see advisor about fulfilling the 300-level language requirement. For students of Russian language, take LRUS 304 and LRUS 305.

3 Select enough elective credits to bring the program total to 120 credits, of which at least 42 must be upper-division (300- to 400-level).

4 French (LFRE), German (LGER), or Spanish (LSPA) only.

5 French (LFRE) or German (LGER) only.

6 Maximum 3 credits.

7 To count toward the International Studies Major Course Selection, travel abroad must be to a country or area covered by this concentration.

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
ANTH 200	Cultures and the Global System (GT-SS3)			3E	3
CO 150	College Composition (GT-CO2)			1A	3
GR 100	Introduction to Geography (GT-SS2)	X		3C	3
L*** 100 First-Year European Language I (See allowable subject codes on Concentration Requirements Tab)					5
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
HIST 100	Western Civilization, Pre-Modern (GT-HI1)			3D	
HIST 101	Western Civilization, Modern (GT-HI1)			3D	
HIST 170	World History, Ancient-1500 (GT-HI1)			3D	
HIST 171	World History, 1500-Present (GT-HI1)			3D	
INST 200	Interdisciplinary Approaches to Globalization			3E	3
L*** 101 First-Year European Language II (See allowable subject codes on Concentration Requirements Tab)					5
Select one course from the following:					3
POLS 232	International Relations (GT-SS1)			3E	
POLS 241	Comparative Government and Politics (GT-SS1)	X		3E	
Mathematics			X	1B	3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				17

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
AREC 202	Agricultural and Resource Economics (GT-SS1)			3C	
ECON 202	Principles of Microeconomics (GT-SS1)			3C	
ECON 204	Principles of Macroeconomics (GT-SS1)			3C	
ECON 211	Gender in the Economy (GT-SS1)			3E	
ECON 240/ AREC 240	Issues in Environmental Economics (GT-SS1)			3C	
L*** 200 Second-Year European Language I (See allowable subject codes on Concentration Requirements Tab)					3-4
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	4
L***100 must be completed by the end of Semester 3.		X			
	Total Credits				14
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
L*** 201 Second-Year European Language II (See allowable subject codes on Concentration Requirements Tab)					3-4
Advanced Writing				2	3

Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
Electives					2-4
L*** 101 must be completed by the end of Semester 4.		X			
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
INST 301	International Studies Research Methods		X	4B	3
L*** 300 Third-Year European Language I (See allowable subject codes on Concentration Requirements Tab)					3
International Studies Major Course Selection (See Department List on Concentration Requirements tab)					6
Elective					3
L*** 200 must be completed by the end of Semester 5.		X			
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
L*** 301 Third-Year European Language II (See allowable subject codes on Concentration Requirements Tab)					3
International Studies Major Course Selection (See Department List on Concentration Requirements tab)					6
Elective					6
L*** 201 must be completed by the end of Semester 6.		X			
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
INST 492	Seminar		X	4A,4C	3
International Studies Major Course Selection (See Department List on Concentration Requirements tab)					6
Electives					6
L*** 300 must be completed by the end of Semester 7.		X			
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
International Studies Major Course Selection (See Department List on Concentration Requirements tab)		X			6
Electives		X			9
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in International Studies, Latin American Studies Concentration

Requirements

Effective Fall 2018

Freshman

		AUCC	Credits
ANTH 200	Cultures and the Global System (GT-SS3)	3E	3
CO 150	College Composition (GT-CO2)	1A	3
GR 100	Introduction to Geography (GT-SS2)	3C	3
Select one course from the following:			3

HIST 100	Western Civilization, Pre-Modern (GT-HI1)	3D	
HIST 101	Western Civilization, Modern (GT-HI1)	3D	
HIST 170	World History, Ancient-1500 (GT-HI1)	3D	
HIST 171	World History, 1500-Present (GT-HI1)	3D	
INST 200	Interdisciplinary Approaches to Globalization	3E	3
LSPA 100	First-Year Spanish I		5
LSPA 101	First-Year Spanish II		5
Select one course from the following:			3
POLS 232	International Relations (GT-SS1)	3E	
POLS 241	Comparative Government and Politics (GT-SS1)	3E	
Mathematics		1B	3
	Total Credits		31

Sophomore

Select one course from the following:			3
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	
ECON 202	Principles of Microeconomics (GT-SS1)	3C	
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	
ECON 211	Gender in the Economy (GT-SS1)	3E	
ECON 240/AREC 240	Issues in Environmental Economics (GT-SS1)	3C	
LSPA 200	Second-Year Spanish I (GT-AH4)	3B	3
LSPA 201	Second-Year Spanish II (GT-AH4)	3B	3
Advanced Writing		2	3
Arts and Humanities		3B	6
Biological and Physical Sciences		3A	7
Electives			4
	Total Credits		29

Junior

INST 301	International Studies Research Methods	4B	3
LSPA 300	Reading and Writing for Communication-Spanish		3
LSPA 301	Oral Communication-Spanish		3
International Studies Major Course Selection			12
Electives			9
	Total Credits		30

Senior

INST 492	Seminar	4A,4C	3
International Studies Major Course Selection			12
Electives[1]			15
	Total Credits		30
	Program Total Credits:		120

International Studies Major Course Selection

Students must select a minimum total of 24 credits, 18 of which must be upper-division (300- to 400-level), from at least three subject codes, from the following groups of courses. Select at least 6 credits from 1. History and Politics of Latin America; at least 6 credits from 2. Thought and Cultures of Latin America; and at least 3 credits from 3. International Studies. Select an additional minimum of 9 credits from among the three groups to bring the total to 24.

Code	Title	AUCC	Credits
1. History and Politics of Latin America			
Select a minimum of 6 credits from the following:			6

ETST 253	Chicanx History and Culture (GT-HI1) 3E	
ETST 261	Latinx Populations in the U.S.	
ETST 370	Caribbean Identities	
ETST 371	The Modern Caribbean	
HIST 353	U.S.-Mexico Borderlands	
HIST 410	Colonial Latin America	
HIST 411	Latin America Since Independence	
HIST 412	Mexico	
HIST 414	Revolutions in Latin America	
HIST 460	Slavery in the Americas	
HIST 471	History of Antarctica, 1800-Present	
POLS 331	Politics and Society Along Mexican Border	
POLS 446	Politics of South America	
POLS 447	Politics in Mexico, Central America, Caribbean	
2. Thought and Culture of Latin America		
Select a minimum of 6 credits from the following:		6
ANTH 319	Latin American Peasantries	
ANTH 411	Indians of South America	
ANTH 451	Andean Archaeology and Ethnohistory	
ANTH 452	Archaeology of Mesoamerica	
ART 312	Pre-Columbian Art of Mesoamerica	
DM 470A	International Design and Merchandising: Apparel	
or DM 470B	International Design and Merchandising: Interior Design	
ETST 239/E 239	Introduction to Chicano Literature	
ETST 254	La Chicana in Society	
ETST 332	Contemporary Chicanx Issues	
LSPA 310	Approaches to Spanish Literature	
LSPA 313	Introduction to Spanish Translation and Interpreting	
LSPA 335	Issues in Hispanic Culture	
LSPA 345	Business Spanish	
LSPA 365	Introduction to Spanish Cinema	
or LSPA 465B	Studies in Foreign Film: Latin America	
LSPA 435	Caribbean Culture in Hispanic Literature	
LSPA 436	Advanced Latin American Culture	
LSPA 437	Advanced Spanish Culture	
LSPA 441	Advanced Business Spanish	
LSPA 445	Women Writers in the Hispanic World	
LSPA 449	Spanish-American Literary Movements and Periods	
LSPA 452	Genre Studies in Spanish	
LSPA 453	Author Studies in Spanish	
LSPA 454	Topic Studies in Spanish	
SOC 366	Peoples and Institutions of Latin America	
3. International Studies		
Select a minimum of 3 credits from the following:		3

AGRI 270/IE 270	World Interdependence-Population and Food (GT-SS3)	3E
AM 430	International Retailing	
AM 460	Historic Textiles	
ANTH 100	Introductory Cultural Anthropology (GT-SS3)	3C
ANTH 140	Introduction to Prehistory (GT-HI1)	3D
ANTH 313	Modernization and Development	
ANTH 322	The Anthropology of Religion	
ANTH 329	Cultural Change	
ANTH 330	Human Ecology	
ANTH 336	Art and Culture	
ANTH 338	Gender and Anthropology	
ANTH 352	Geoarchaeology	
ANTH 413	Indigenous Peoples Today	
ANTH 415	Indigenous Ecologies and the Modern World	
ANTH 416	Gender, Culture, and Health	
ANTH 422/SOC 422	Comparative Legal Systems	
ANTH 438	Approaches to Community-Based Development	
ANTH 441	Method in Cultural Anthropology	
ANTH 447	Gender Equity in Development	
ANTH 448	Development and Empowerment	
ANTH 479/IE 479	International Development Theory and Practice	
AREC 240/ECON 240	Issues in Environmental Economics (GT-SS1)	3C
AREC 415	International Agricultural Trade	
AREC 460	Ag- and Resource-Based Economic Development	
BUS 350	Travel Abroad-International Comparative Management	
BUS 405B	Contemporary Business Topics: International Business	
CON 450/INTD 450	Travel Abroad-Sustainable Building	
E 142	Reading Without Borders (GT-AH2)	3E
E 245	World Drama (GT-AH2)	3E
E 330	Gender in World Literature	
E 339	Literature of the Earth	
E 428	Postcolonial Literature	
ECON 101	Economics of Social Issues (GT-SS1)	3C
ECON 202	Principles of Microeconomics (GT-SS1)	3C
ECON 204	Principles of Macroeconomics (GT-SS1)	3C
ECON 211	Gender in the Economy (GT-SS1)	3E
ECON 332/POLS 332	International Political Economy	
ECON 370	Comparative Economic Systems	
ECON 440	Economics of International Trade and Policy	
ECON 442	Economics of International Finance and Policy	
ECON 460	Economic Development	

ETST 256	Border Crossings: People/Politics/ Culture (GT-SS3)	3E
ETST 352/SOWK 352	Indigenous Women, Children, and Tribes	
ETST 365	Global Environmental Justice Movements	
FIN 475	International Business Finance	
GES 101	Foundations of Environmental Sustainability	
GES 192	Global Environmental Sustainability Seminar	
GR 320	Cultural Geography	
GR 330	Urban Geography	
GR 415	The Geography of Commodities	
HIST 463	Science and Technology in Modern History	
HIST 467	Modern Jewish History	
HIST 470	World Environmental History, 1500-Present	
HIST 471	History of Antarctica, 1800-Present	
IE 179	Globalization: Exploring Our Global Village (GT-SS3)	3E
IE 272	World Interdependence - Current Global Issues	
IE 300	Global Studies	
IE 450/SOWK 450	International Social Welfare and Development	
IE 470	Women and Development	
IE 471	Children and Youth in Global Context	
IE 472	Education for Global Peace	
INST 487	Internship [2]	
INST 495	Independent Study [2]	
JTC 412	International Mass Communication	
LB 170	World Literatures to 1500 (GT-AH2)	3E
LB 171	World Literatures-The Modern Period (GT-AH2)	3E
MGT 475	International Business Management	
MKT 365	International Marketing	
MU 131	Introduction to Music History and Literature (GT-AH1)	3B
NRRT 320	International Issues-Recreation and Tourism	
PHIL 170	World Philosophies (GT-AH3)	3E
PHIL 320	Ethics of Sustainability	
PHIL 479	Topics in Comparative Religions	
POLS 131	Current World Problems (GT-SS1)	3E
POLS 232	International Relations (GT-SS1)	3E
POLS 241	Comparative Government and Politics (GT-SS1)	3E
POLS 362	Global Environmental Politics	
POLS 431	International Law	
POLS 433	International Organization	
POLS 435	United States Foreign Policy	
POLS 436	Comparative Foreign Policy	

POLS 437	International Security	
POLS 442	Environmental Politics in Developing World	
POLS 443	Comparative Social Movements	
POLS 448	Comparative Racial/Ethnic Politics	
POLS 462	Globalization, Sustainability, and Justice	
SOC 105	Social Problems (GT-SS3)	3C
SOC 220	Global Environmental Issues (GT-SS3)	3E
SOC 320	Population-Natural Resources and Environment	
SOC 322	Introduction to Environmental Justice	
SOC 323	Soc. of Environmental Cooperation & Conflict	
SOC 364	Food, Agriculture and Global Society	
SOC 429	Comparative Urban Studies	
SOC 482A	Travel Abroad: Comparative Criminal Justice [3]	
SOC 482B	Travel Abroad: Crime and Deviance [3]	
SPCM 434	Intercultural Communication	

[1] Select enough elective credits to bring the program total to 120, of which at least 42 must be upper-division (300- to 400-level).

[2] Maximum 3 credits.

[3] To count toward the International Studies Major Course Selection, travel abroad must be to a country or area covered by this concentration.

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
ANTH 200	Cultures and the Global System (GT-SS3)			3E	3
CO 150	College Composition (GT-CO2)			1A	3
GR 100	Introduction to Geography (GT-SS2)	X		3C	3
LSPA 100	First-Year Spanish I		X		5
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
HIST 100	Western Civilization, Pre-Modern (GT-HI1)			3D	
HIST 101	Western Civilization, Modern (GT-HI1)			3D	
HIST 170	World History, Ancient-1500 (GT-HI1)			3D	
HIST 171	World History, 1500-Present (GT-HI1)			3D	
INST 200	Interdisciplinary Approaches to Globalization			3E	3
LSPA 101	First-Year Spanish II		X		5
Select one course from the following:					3
POLS 232	International Relations (GT-SS1)			3E	
POLS 241	Comparative Government and Politics (GT-SS1)			3E	
Mathematics		X		1B	3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				17

Sophomore

Semester 3	**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:				3

AREC 202	Agricultural and Resource Economics (GT-SS1)		X	3C	
ECON 202	Principles of Microeconomics (GT-SS1)		X	3C	
ECON 204	Principles of Macroeconomics (GT-SS1)			3C	
ECON 211	Gender in the Economy (GT-SS1)			3E	
ECON 240/ AREC 240	Issues in Environmental Economics (GT-SS1)			3C	
LSPA 200	Second-Year Spanish I (GT-AH4)			3B	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
Elective					3
LSPA 100 must be completed by the end of Semester 3.		X			
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
LSPA 201	Second-Year Spanish II (GT-AH4)			3B	3
Advanced Writing				2	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	4
Elective					1
LSPA 101 must be completed by the end of Semester 4.		X			
	Total Credits				14
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
INST 301	International Studies Research Methods			4B	3
LSPA 300	Reading and Writing for Communication-Spanish		X		3
International Studies Major Course Selection (See Department List on Concentration Requirements tab)					6
Elective					3
LSPA 200 must be completed by the end of Semester 5.		X			
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
LSPA 301	Oral Communication-Spanish		X		3
International Studies Major Course Selection (See Department List on Concentration Requirements tab)					6
Electives					6
LSPA 201 must be completed by the end of Semester 6.		X			
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
INST 492	Seminar		X	4A,4C	3
International Studies Major Course Selection (See Department List on Concentration Requirements tab)					6
Electives					6
LSPA 300 must be completed by the end of Semester 7.		X			
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
International Studies Major Course Selection (See Department List on Concentration Requirements tab)		X			6
Electives		X			9
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in International Studies, Middle East and North African Studies Concentration

Requirements

Effective Fall 2018

Freshman

		AUCC	Credits
ANTH 200	Cultures and the Global System (GT-SS3)	3E	3
CO 150	College Composition (GT-CO2)	1A	3
GR 100	Introduction to Geography (GT-SS2)	3C	3
Select one course from the following:			3
HIST 115	The Islamic World: Late Antiquity to 1500	3D	
HIST 116	The Islamic World Since 1500	3D	
HIST 170	World History, Ancient-1500 (GT-HI1)	3D	
HIST 171	World History, 1500-Present (GT-HI1)	3D	
INST 200	Interdisciplinary Approaches to Globalization	3E	3
LARA 100	First-Year Arabic I		5
LARA 101	First-Year Arabic II		5
Select one course from the following:			3
POLS 232	International Relations (GT-SS1)	3E	
POLS 241	Comparative Government and Politics (GT-SS1)	3E	
Mathematics		1B	3
	Total Credits		31

Sophomore

Select one course from the following:			3
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	
ECON 202	Principles of Microeconomics (GT-SS1)	3C	
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	
ECON 211	Gender in the Economy (GT-SS1)	3E	
ECON 240/AREC 240	Issues in Environmental Economics (GT-SS1)	3C	
LARA 200	Second-Year Arabic I (GT-AH4)	3B	4
LARA 201	Second-Year Arabic II (GT-AH4)	3B	4
Advanced Writing		2	3
Arts and Humanities		3B	6
Biological and Physical Sciences		3A	7
Elective			3
	Total Credits		30

Junior

INST 301	International Studies Research Methods	4B	3
LARA 300	Third Year Arabic		3
LARA 301	Oral Communication - Arabic		3
International Studies Major Course Selection			12
Electives			9
	Total Credits		30

Senior

INST 492	Seminar	4A,4C	3
International Studies Major Course Selection			12
Electives[1]			14
	Total Credits		29
	Program Total Credits:		120

International Studies Major Course Selection

Students must select a minimum total of 24 credits, 18 of which must be upper-division (300- to 400-level), from at least three subject codes, from the following groups of courses. Select at least 6 credits from 1. History and Politics of the Middle East and North Africa; at least 6 credits from 2. Thought and Cultures of the Middle East and North Africa; and at least 3 credits from 3. International Studies. Select an additional minimum of 9 credits from among the three groups to bring the total to 24.

Code	Title	AUCC	Credits
1. History and Politics of the Middle East and North Africa			
Select a minimum of 6 credits from the following:			6
HIST 303	Hellenistic World: Alexander to Cleopatra		
HIST 420	Africa: Precolonial States and Empires		
HIST 421	Africa: Colonialism to Independence		
HIST 422	Modern Africa		
HIST 423	South African History		
HIST 424	East African History		
HIST 430	Ancient Near East		
HIST 431	Ancient Israel		
HIST 432	Sacred History in the Bible and the Qur'an		
HIST 433	Muhammad and the Origins of Islam		
HIST 435	Jihad and Reform in Islamic History		
HIST 438	The Modern Middle East		
HIST 467	Modern Jewish History		
HIST 469	The Crusades		
HIST 532	Reading Seminar: Middle East		
POLS 443	Comparative Social Movements		
POLS 444	Comparative African Politics		
POLS 449	Middle East Politics		
2. Thought and Culture of the Middle East and North Africa			
Select a minimum of 6 credits from the following:			6
ANTH 310	Peoples and Cultures of Africa		
ANTH 351	Archaeology of Europe and Africa		
ETST 130	West Africa in Global and Local Perspective		
ETST 412	Africa and African Diaspora		
LARA 250	Arabic Language, Literature, Culture in Translation (GT-AH2)	3B	
LGEN 465D	Studies in Foreign Film: Africa		
PHIL 171	Religions of the West		
PHIL 173	Philosophy of Traditional Judaism		
PHIL 335	Islam: Cosmology and Practice		
PHIL 379	Mysticism East and West		
PHIL 455	Islamic Philosophy		

3. International Studies			
Select a minimum of 3 credits from the following:			3
AGRI 270/IE 270	World Interdependence-Population and Food (GT-SS3)	3E	
AM 430	International Retailing		
AM 460	Historic Textiles		
ANTH 100	Introductory Cultural Anthropology (GT-SS3)	3C	
ANTH 140	Introduction to Prehistory (GT-HI1)	3D	
ANTH 313	Modernization and Development		
ANTH 322	The Anthropology of Religion		
ANTH 329	Cultural Change		
ANTH 330	Human Ecology		
ANTH 336	Art and Culture		
ANTH 338	Gender and Anthropology		
ANTH 352	Geoarchaeology		
ANTH 413	Indigenous Peoples Today		
ANTH 415	Indigenous Ecologies and the Modern World		
ANTH 416	Gender, Culture, and Health		
ANTH 422/SOC 422	Comparative Legal Systems		
ANTH 438	Approaches to Community-Based Development		
ANTH 441	Method in Cultural Anthropology		
ANTH 447	Gender Equity in Development		
ANTH 448	Development and Empowerment		
ANTH 479/IE 479	International Development Theory and Practice		
AREC 240/ECON 240	Issues in Environmental Economics (GT-SS1)	3C	
AREC 415	International Agricultural Trade		
AREC 460	Ag- and Resource-Based Economic Development		
BUS 350	Travel Abroad-International Comparative Management		
BUS 405B	Contemporary Business Topics: International Business		
CON 450/INTD 450	Travel Abroad-Sustainable Building		
E 142	Reading Without Borders (GT-AH2)	3E	
E 245	World Drama (GT-AH2)	3E	
E 330	Gender in World Literature		
E 339	Literature of the Earth		
E 428	Postcolonial Literature		
ECON 101	Economics of Social Issues (GT-SS1)	3C	
ECON 202	Principles of Microeconomics (GT-SS1)	3C	
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	
ECON 211	Gender in the Economy (GT-SS1)	3E	
ECON 332/POLS 332	International Political Economy		
ECON 370	Comparative Economic Systems		
ECON 440	Economics of International Trade and Policy		

ECON 442	Economics of International Finance and Policy	
ECON 460	Economic Development	
ETST 256	Border Crossings: People/Politics/ Culture (GT-SS3)	3E
ETST 352/SOWK 352	Indigenous Women, Children, and Tribes	
ETST 365	Global Environmental Justice Movements	
FIN 475	International Business Finance	
GES 101	Foundations of Environmental Sustainability	
GES 192	Global Environmental Sustainability Seminar	
GR 320	Cultural Geography	
GR 330	Urban Geography	
GR 415	The Geography of Commodities	
HIST 463	Science and Technology in Modern History	
HIST 467	Modern Jewish History	
HIST 470	World Environmental History, 1500-Present	
HIST 471	History of Antarctica, 1800-Present	
IE 179	Globalization: Exploring Our Global Village (GT-SS3)	3E
IE 272	World Interdependence - Current Global Issues	
IE 300	Global Studies	
IE 450/SOWK 450	International Social Welfare and Development	
IE 470	Women and Development	
IE 471	Children and Youth in Global Context	
IE 472	Education for Global Peace	
INST 487	Internship [2]	
INST 495	Independent Study [2]	
JTC 412	International Mass Communication	
LB 170	World Literatures to 1500 (GT-AH2)	3E
LB 171	World Literatures-The Modern Period (GT-AH2)	3E
MGT 475	International Business Management	
MKT 365	International Marketing	
MU 131	Introduction to Music History and Literature (GT-AH1)	3B
NRRT 320	International Issues-Recreation and Tourism	
PHIL 170	World Philosophies (GT-AH3)	3E
PHIL 320	Ethics of Sustainability	
PHIL 479	Topics in Comparative Religions	
POLS 131	Current World Problems (GT-SS1)	3E
POLS 232	International Relations (GT-SS1)	3E
POLS 241	Comparative Government and Politics (GT-SS1)	3E
POLS 362	Global Environmental Politics	
POLS 431	International Law	

POLS 433	International Organization	
POLS 435	United States Foreign Policy	
POLS 436	Comparative Foreign Policy	
POLS 437	International Security	
POLS 442	Environmental Politics in Developing World	
POLS 443	Comparative Social Movements	
POLS 448	Comparative Racial/Ethnic Politics	
POLS 462	Globalization, Sustainability, and Justice	
SOC 105	Social Problems (GT-SS3)	3C
SOC 220	Global Environmental Issues (GT-SS3)	3E
SOC 320	Population-Natural Resources and Environment	
SOC 322	Introduction to Environmental Justice	
SOC 323	Soc. of Environmental Cooperation & Conflict	
SOC 364	Food, Agriculture and Global Society	
SOC 429	Comparative Urban Studies	
SOC 482A	Travel Abroad: Comparative Criminal Justice [3]	
SOC 482B	Travel Abroad: Crime and Deviance [3]	
SPCM 434	Intercultural Communication	

1 Select enough elective credits to bring program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

2 Maximum 3 credits.

3 To count toward the International Studies Major Course Selection, travel abroad must be to a country or area covered by this concentration.

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
ANTH 200	Cultures and the Global System (GT-SS3)			3E	3
CO 150	College Composition (GT-CO2)			1A	3
GR 100	Introduction to Geography (GT-SS2)	X		3C	3
LARA 100	First-Year Arabic I				5
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
HIST 115	The Islamic World: Late Antiquity to 1500			3D	
HIST 116	The Islamic World Since 1500			3D	
HIST 170	World History, Ancient-1500 (GT-HI1)			3D	
HIST 171	World History, 1500-Present (GT-HI1)			3D	
INST 200	Interdisciplinary Approaches to Globalization			3E	3
LARA 101	First-Year Arabic II				5
Select one course from the following:					3
POLS 232	International Relations (GT-SS1)			3E	
POLS 241	Comparative Government and Politics (GT-SS1)			3E	
Mathematics		X		1B	3

CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				17
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
AREC 202	Agricultural and Resource Economics (GT-SS1)			3C	
ECON 202	Principles of Microeconomics (GT-SS1)			3C	
ECON 204	Principles of Macroeconomics (GT-SS1)			3C	
ECON 211	Gender in the Economy (GT-SS1)			3E	
ECON 240/ AREC 240	Issues in Environmental Economics (GT-SS1)			3C	
LARA 200	Second-Year Arabic I (GT-AH4)			3B	4
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
Elective					3
LARA 100 must be completed by the end of Semester 3.		X			
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
LARA 201	Second-Year Arabic II (GT-AH4)			3B	4
Advanced Writing				2	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	4
AREC 202 or ECON 202, LARA 101 must be completed by the end of Semester 4.		X			
	Total Credits				14
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
INST 301	International Studies Research Methods		X	4B	3
LARA 300	Third Year Arabic				3
International Studies Major Course Selection (See Department List on Concentration Requirements tab)					6
Elective					3
LARA 200 must be completed by the end of Semester 5.		X			
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
LARA 301	Oral Communication - Arabic				3
International Studies Major Course Selection (See Department List on Concentration Requirements tab)					6
Electives					6
LARA 201 must be completed by the end of Semester 6.		X			
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
INST 492	Seminar		X	4A,4C	3
International Studies Major Course Selection (See Department List on Concentration Requirements tab)					6
Electives					5
LARA 300 must be completed by the end of Semester 7.		X			
	Total Credits				14
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
International Studies Major Course Selection (See Department List on Concentration Requirements tab)		X			6
Electives		X			9

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X	
	Total Credits	15
	Program Total Credits:	120

Major in Interdisciplinary Liberal Arts

Dean's Office
Clark Building, Room C138
(970) 491-5421
libartsmajor.colostate.edu (http://libartsmajor.colostate.edu)

Kevin Foskin, Director

The Major in Interdisciplinary Liberal Arts is a B.A. degree program combining humanities, arts, languages, performance, media, communication, literature, and social sciences so as to foster interdisciplinary knowledge, core career competencies, personal development, professional excellence, interpersonal confidence and expertise, and a richer understanding of the complex world in which we live. Students create their own program of study, choosing courses within the College of Liberal Arts based upon their academic interests, personal curiosity, and future career goals.

Interdisciplinary Liberal Arts majors can select between the Interdisciplinary Liberal Arts major and a five-year joint program with dual degrees in Liberal Arts (B.A.) and Engineering Science (B.S.).

To further increase depth and focus, and to enhance expertise and career opportunities, Interdisciplinary Liberal Arts students are required to complete a minor or an interdisciplinary minor from within the College of Liberal Arts.

Learning Outcomes

Students will demonstrate the following skills:

- Writing effectively about the knowledge and perspectives of their field of study, including
  a. organization in a manner that aids the readers' comprehension as well as the writer's purpose;
  b. use of accepted grammatical form, spelling, and punctuation;
  c. use of language in a style that is appropriate to the writer's purpose;
  d. effective support of claims; and
  e. clear citation of information sources.
- Speaking effectively, including
  a. creation of a logically constructed message;
  b. adaptation of that message to a particular audience;
  c. use of accepted grammatical forms of standard American English dialect;
  d. use of appropriate and engaging language; and
  e. use of effective delivery skills.
- Communicating information effectively, including
  a. understanding of data and digital humanities;
  b. utilization of various media and visual/aural formats;
  c. creative employment of design & information integration.
- Thinking critically about contemporary issues, particularly within various interdisciplinary perspectives and contexts, including
  a. description of a policy, position, or artifact;
  b. analysis of the policy, position, or artifact by identifying issues or articulating and then applying a critical framework or perspective;
  c. clear articulation and support of conclusions based on that analysis/identification of issues; and
  d. successful communication via 21st century media competency and creative-skill-sets.
- Working collaboratively with others, employing
  a. interdisciplinary critical tools and practices;
  b. research as a foundation for evidence-based analysis; and
- Problem-solving and innovation in real-world contexts and existing realities.

Potential Occupations

Graduates in Interdisciplinary Liberal Arts apply their education in a wide variety of careers and/or academic professions, including public policy, politics, healthcare, artistic production, mass media, engineering, law, city planning, business, information systems, international business, journalism, publishing, education, sales and marketing, management and administration, government, communications, museum work, entertainment, foreign service, and many others. Many continue on to graduate or professional schools for more specialized study. To enhance their career, academic or professional opportunities, majors are encouraged to participate in paid or volunteer work or internship opportunities.

Requirements

Effective Fall 2018

Second Field Requirement

Students in the Interdisciplinary Liberal Arts major must complete one of the following choices:

- A minor
- An interdisciplinary minor
- A second major
- 21 credits in a single language to include at least 6 upper-division (300- to 400-level) credits. At least 6 upper-division credits in this choice must be completed at CSU. (Completion of this choice is not transcripted.)

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
SPCM 200	Public Speaking		3
Arts and Humanities		3B	6
Biological and Physical Sciences		3A	3
Historical Perspectives		3D	3
Quantitative Reasoning		1B	3
Social and Behavioral Sciences		3C	3
Electives			6
	Total Credits		30

Sophomore

Additional Arts and Humanities or Social Sciences[1]			6
Second Field Requirements			7
Biological and Physical Sciences		3A	4
Diversity and Global Awareness		3E	3
Electives			10
	Total Credits		30

Junior

LB 392	Junior Seminar		3
Additional Arts and Humanities or Social Sciences[1]			6
Second Field Requirements			9
Upper-Division Arts and Humanities or Social Sciences[2]			9
Advanced Writing		2	3
	Total Credits		30

Senior

LB 490	Interdisciplinary Portfolio Workshop		1
LB 492	Liberal Arts Capstone Seminar	4A,4C	3
Second Field Requirement			6
AUCC 4B Course (see list below)		4B	3
Upper-Division Arts and Humanities or Social Sciences[2]			6
Electives[3]			11
	Total Credits		30
	Program Total Credits:		120

AUCC 4B Course List

Code	Title	AUCC	Credits
AMST 300/E 300	American Lives-Methods in American Studies	4B	3
ANTH 400/GR 400	History of Theory-Anthropology and Geography	4B	3
ART 310	History of American Art to 1945	4B	3
ART 311	Art of West and Central Africa	4B	3
ART 312	Pre-Columbian Art of Mesoamerica	4B	3
ART 314	Women in Art History	4B	3
ART 315	United States Art 1945-1980	4B	3
ART 316	Art of the Pacific	4B	3
ART 410	Greek Art	4B	3

ART 411	History of Medieval Art	4B	3
ART 412	History of Renaissance Art	4B	3
ART 414	History of Baroque and Rococo Art	4B	3
ART 415	History of 19th Century European Art	4B	3
ART 416	History of European Art, 1900 to 1945	4B	3
ART 417	Roman Art	4B	3
E 341	Literary Criticism and Theory	4B	3
ECON 306	Intermediate Microeconomics	4B	3
ECON 492	Seminar	4B	3
HIST 492	Capstone Seminar	4B	3
JTC 415	Communications Law	4B	3
JTC 456/LB 456	Documentary Film as a Liberal Art	4B	3
LB 455/SPCM 455	Narrative Fiction Film as a Liberal Art	4B	3
LFRE 492	Seminar-French Language, Literature, and Society	4B	3
LGEN 492	Language, Literature, and Society-General	4B	3
LGER 492	Seminar-German Language, Literature, and Society	4B	3
LSPA 492	Seminar-Spanish Language, Literature, and Society	4B	3
MU 334	Music History I	4B	3
MU 335	Music History II	4B	3
PHIL 462	Capstone Seminar	4B	3
POLS 302	U.S. Political Parties and Elections	4B	3
POLS 303	Politics of Organized Interests	4B	3
POLS 405	Race and Ethnicity in U.S. Politics	4B	3
POLS 420	History of Political Thought	4B	3
POLS 421	Contemporary Political Theories	4B	3
POLS 423	American Political Theories	4B	3
POLS 448	Comparative Racial/Ethnic Politics	4B	3
POLS 449	Middle East Politics	4B	3
SOC 311	Methods of Sociological Inquiry	4B	3
SPCM 341	Evaluating Contemporary Television	4B	3
SPCM 342	Critical Media Studies	4B	3
SPCM 350	Evaluating Contemporary Film	4B	3
SPCM 411	Contemporary Speeches on American Issues	4B	3
SPCM 412	Evaluating Contemporary Rhetoric	4B	3

[1] Choose courses not fulfilling another requirement in this major or the second field requirements from the following subject codes: ANTH, ART, CO, D, E, ECON, ETST, GR, HIST, JTC, L***, LB, MU, PHIL, POLS, PSY, SOC, SPCM, TH.

[2] Select a total of 15 upper-division (300- to 400-level) credits not fulfilling another requirement in this major or the second field requirements from at least two of the following subject codes: ANTH, ART, CO, D, E, ECON, ETST, GR, HIST, JTC, L***, LB, MU, PHIL, POLS, PSY (only 6 credits may come from PSY), SOC, SPCM, TH, WS.

[3] Select enough elective credits to bring the program total to 120, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

Second Field Requirement

Students in the Interdisciplinary Liberal Arts major must complete one of the following choices:

- A minor
- An interdisciplinary minor
- A second major
- 21 credits in a single language to include at least 6 upper-division (300- to 400-level) credits. At least 6 upper-division credits in this choice must be completed at CSU. (Completion of this choice is not transcripted.)

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
Quantitative Reasoning			X	1B	3
Elective					3
	Total Credits				15

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
SPCM 200	Public Speaking	X			3
Arts and Humanities				3B	3
Historical Perspectives				3D	3
Social and Behavioral Sciences				3C	3
Elective					3
CO 150 and AUCC 1B (Quantitative Reasoning) must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
Biological and Physical Sciences				3A	4
Additional Arts and Humanities or Social Sciences (See Requirements Tab)					3
Second Field Course (See Requirements Tab)					3
Electives					5
	Total Credits				15

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Additional Arts and Humanities or Social Sciences (See Requirements Tab)					3
Diversity and Global Awareness				3E	3
Second Field Course(s)					4
Electives					5
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
LB 392	Junior Seminar	X			3
Additional Arts and Humanities or Social Sciences (See Requirements Tab)					3
Advanced Writing		X		2	3
Upper-Division Arts and Humanities or Social Sciences (See Requirements Tab)					3
Second Field Course					3
	Total Credits				15

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Additional Arts and Humanities or Social Sciences (See Requirements Tab)					3
Upper-Division Arts and Humanities or Social Sciences (See Requirements Tab)					6
Second Field Courses					6
	Total Credits				15

Senior

Semester 7		Critical	Recommended	AUCC	Credits
AUCC 4B Course (See List on Major Requirements Tab)		X		4B	3
Upper-Division Arts and Humanities or Social Sciences (See Requirements Tab)					3
Second Field Course					3
Electives					6
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
LB 490	Interdisciplinary Portfolio Workshop	X			1
LB 492	Liberal Arts Capstone Seminar	X		4A,4C	3
Upper-Division Arts and Humanities or Social Sciences (See Requirements Tab)		X			3
Second Field Course		X			3
Electives		X			5
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Media Studies Minor

Journalism and Media Communication (students with last names A-M)
Clark Building, Room C244
(970) 491-6310

Communication Studies (students with last names N-Z)
Behavioral Sciences Building, Room A203
(970) 491-6140

The Media Studies minor provides a foundation for understanding the impacts and roles of mass media in society. Courses focus on media and film history, criticism, law, ethics, social effects, cultural consequences, and multicultural and international media issues. The minor is offered jointly by the Department of Journalism and Media Communication and the Department of Communication Studies. Students in these majors may not declare the Media Studies minor.

Requirements
Effective Spring 2014

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Lower Division		
JTC 100	Media in Society (GT-SS3)	3
or SPCM 100	Communication and Popular Culture (GT-AH1)	
Upper Division		
JTC 415	Communications Law	3
or SPCM 349	Freedom of Speech	
Select 15 credits from the following:		15
JTC 311	History of Media	
JTC 316	Multiculturalism and the Media	
JTC 350	Public Relations	
JTC 355	Advertising	
JTC 411	Media Ethics and Issues	
JTC 412	International Mass Communication	
JTC 413	New Communication Technologies and Society	
JTC 414	Media Effects	
JTC 456/LB 456	Documentary Film as a Liberal Art	
SPCM 341	Evaluating Contemporary Television	
SPCM 342	Critical Media Studies	
SPCM 346	Virtual Culture and Communication	
SPCM 350	Evaluating Contemporary Film	
SPCM 354	History and Appreciation of Film	
SPCM 356	Asians in the U.S. Media	
SPCM 357	Film and Social Change	
SPCM 358	Gender and Genre in Film	
SPCM 454/ ETST 454	Chicanx Film and Video	
SPCM 455/LB 455	Narrative Fiction Film as a Liberal Art	
Program Total Credits:		21

Minor in Arts Leadership and Administration

The minor in Arts Leadership and Administration is open to all undergraduate students. The minor is designed to enhance the skills of current undergraduates who seek careers in the creative industries, or in related fields that require knowledge of leadership skills, arts entrepreneurship, arts advocacy, and arts-based community and civic engagement.

Students interested in this area of study should contact LEAP Institute for the Arts for additional information.

Coordinator and Program Advisor: Janice McFadden
Phone: (970) 491-3746

Email: janice.mcfadden@colostate.edu

Requirements

Effective Fall 2019

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Lower Division		
ACT 205	Fundamentals of Accounting	3
ECON 101	Economics of Social Issues (GT-SS1)	3
LEAP 200	Advocacy in the Visual and Performing Arts	3
LEAP 220	Technology and the Arts in the 21st Century	3
Upper Division		
LEAP 300	Arts Outreach and Community Engagement	3
LEAP 310	Creative Industries Career Management	3
LEAP 487	Internship	2
LEAP 492	Internship Seminar	1
MGT 340	Fundamentals of Entrepreneurship	3
Program Total Credits:		24

Master in Arts Leadership and Cultural Management, Plan C (M.A.L.C.M.)

University Center for the Arts, Room 303
(970) 491-3746
leap.colostate.edu (http://leap.colostate.edu)

Michelle Stanley, Director

LEAP Institute for the Arts believes that knowledge of the arts and cultures of our world are the foundation for career and life, opening possibilities for leadership, entrepreneurship, successful advocacy, and transformative public engagement. This Special Academic Unit (SAU) in the College of Liberal Arts offers the degree of Master in Arts Leadership and Cultural Management. Students completing the degree will be able to meet the rising demand for skilled leaders and experienced management professionals who possess acumen in creative enterprise. The program covers a broad range of knowledge areas in entrepreneurship, events management, project planning, community engagement, financial decision-making, and policy advocacy applicable to careers in multiple career sectors. Emphasis is on development of higher level, transferrable skills for lifelong career advancement.

The Master in Arts Leadership and Cultural Management is a 4 semester, 32-credit program. The degree is offered as both a residential and a fully online program. Information about the program is at leap.colostate.edu (http://leap.colostate.edu). Contact LEAP Institute for the Arts (http://leap.colostate.edu) for information on admissions at leap.colostate.edu (http://leap.colostate.edu) or (970) 491-3746.

Requirements Effective Summer 2016

First Year		Credits
LEAP 500	Leadership in the Arts	3
LEAP 600	Arts Policy and Advocacy	3
LEAP 660	Arts Collaboration and the Community	3
LEAP 687	Internship	3
LEAP 692	Internship Seminar	1
Selected courses (see list below)		3
	Total Credits	16
Second Year		
LEAP 650	Arts Events Management	3
LEAP 670	Law and the Arts	3
LEAP 687	Internship	3
LEAP 692	Internship Seminar	1
Selected courses (see list below)		6
	Total Credits	16
	Program Total Credits:	32

Code	Title	Credits
Select course(s) from the following list of approved courses in consultation with advisor and committee.		
BUS 500	Business Systems and Processes	2
BUS 614	Accounting Concepts	2
BUS 615	Managerial Accounting	2
BUS 620	Leadership and Teams	2
BUS 625	Organizational Communication	2
BUS 626	Managing Human Capital	2
BUS 655	Marketing Management	2
CIS 570	Business Intelligence	3
ECON 304	Intermediate Macroeconomics	3
ECON 376	Marxist Economic Thought	3
EDOD 506	Human Resource Development	3
EDOD 672	Change Facilitation	3
EDOD 673	Plan and Implement Change Interventions	3
EDOD 675	Design, Develop, Implement Workplace Learning	3
EDOD 678	Assess Change Interventions	3
EDRM 600	Introduction to Research Methods	3
EDRM 702	Foundations of Educational Research	3
EDUC 619	Curriculum Development	3
EDUC 651	Multicultural and Special Populations	3
EDUC 670	Grant Writing	3
ETST 503	Contemporary Ethnic Studies Issues	3
FIN 601	Financial Management and Markets	3
HDFS 609	Prevention Program Evaluation	3
JTC 550	Public Relations	3
JTC 650	Strategic Communications	3
LEAP 310	Creative Industries Career Management	3

MGT 340	Fundamentals of Entrepreneurship	3
MGT 360	Social and Sustainable Venturing	3
MGT 420	New Venture Creation	3
MGT 679	Principles of Strategic Management	3
MKT 479	Marketing Strategy and Management	3
MKT 600	Marketing Management and Strategy	3
MKT 621	Search Engine Marketing and Optimization	1
MKT 667	Services Marketing Management	1
PHIL 318	Aesthetics-Visual Arts	3
PHIL 348	Philosophy of Literature and the Arts	3
POLS 351	Public Administration	3
POLS 460	Public Policy Process	3
POLS 465	Public Policy Analysis	3
POLS 550	Advanced Public Administration	3
POLS 652	Public Organization Theory	3
POLS 665	Public Policy Analysis	3
SOC 302	Contemporary Sociological Theory	3
SOC 540	Community Sociology	3
SPCM 632	Theories of Interpersonal Communication	3
SPCM 633	Discourse, Work, and Organization	3
SPCM 634	Communication and Cultural Diversity	3
SPCM 639	Communication Theory	3
SPCM 647	Media Industries	3
SPCM 650	Contemporary Issues in Media	3

Department of Anthropology and Geography

Office in Clark Building, Room B216
(970) 491-4635
anthropology.colostate.edu (http://anthropology.colostate.edu)

Professor Michelle Glantz, Chair

Undergraduate

Majors

- Major in Anthropology
  - Archaeology Concentration
  - Biological Anthropology Concentration
  - Cultural Anthropology Concentration
- Major in Geography

Minors

- Minor in Anthropology
- Minor in Geography

Graduate

Graduate Programs in Anthropology

The department offers graduate programs leading to a Master of Arts degree (Plan A thesis option or Plan B portfolio option). It also has a Master of Arts specialization in each of four programmatic areas: Health and Well-Being, Humans and the Environment, International Development and Globalization, and Professional Methods and Techniques. Students may develop a research project or professional program in these programmatic areas, or in any area related to our faculty's research interests.

Health and Well-Being—studies the ways that human health and wellness are influenced by past and present sociocultural, environmental, biological, and biocultural forces, by drawing from broad and holistic perspectives on human well-being.

Humans and the Environment—investigates how past and present human activities influence the environment; the ways ecological and other processes affect human evolution and the human condition today; and the resilience of social and ecological systems.

International Development and Globalization—examines how local societies respond to global influences; the extent to which cultural meanings, beliefs, institutions, structures of inequality, and social relations between genders and among kin are changing as a result; and how processes of economic and community development can improve basic aspects of human welfare.

Professional Methods and Techniques—develops skills in a wide range of methods and techniques used by professionals in applied anthropology, federal and state natural resource agencies, and other arenas of social, historical, biological and spatial research about humans. These include qualitative research and interview protocols, quantitative analysis, GIS and remote sensing, archaeological field survey, historic archaeological methods, culture and heritage resource management, and paleoanthropological methods.

Students interested in graduate work should refer to the Graduate and Professional Bulletin,and the department's website (http://anthropology.colostate.edu).

Master's Programs

- Master of Arts in Anthropology
- Master of Arts in Anthropology, The Anthropology of Health and Well-Being Specialization, Plan A and Plan B
- Master of Arts in Anthropology, Humans and the Environment Specialization, Plan A and Plan B

- Master of Arts in Anthropology, International Development Specialization, Plan A and Plan B
- Master of Arts in Anthropology, Professional Methods and Techniques Specialization, Plan A and Plan B

Ph.D.

- Ph.D. in Anthropology

Courses

Subjects in this department include: Anthropology (ANTH) and Geography (GR).

Anthropology (ANTH)

ANTH 100 Introductory Cultural Anthropology (GT-SS3) Credits: 3 (3-0-0)
Course Description: Human societies and their cultural setting; variation in beliefs, social customs, and technologies; human differences in anthropological terms.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).

ANTH 101 Practicing Anthropology Credit: 1 (0-0-1)
Course Description: Familiarizes majors with the sub-fields of anthropology and provides an overview via practical exercises of foundational skills necessary for success in the anthropology major, CSU, and beyond. Topics include critical thinking and writing, conducting research, scholarly communication, and professional career development, with attention to how these apply to anthropology in particular.
Prerequisite: None.
Registration Information: Anthropology majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 120 Human Origins and Variation (GT-SC2) Credits: 3 (3-0-0)
Course Description: Mechanisms of evolution; genetics. Living primate biology, behavior, and history. Human evolutionary history. Human variation and adaptation.
Prerequisite: None.
Registration Information: Mixed face-to-face is a partial semester course. Sections may be offered: Online. Credit not allowed for both ANTH 180A1 and ANTH 120.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

ANTH 121 Human Origins and Variation Laboratory (GT-SC1) Credit: 1 (0-2-0)
Course Description: Labs demonstrating genetic and evolutionary processes, comparative skeletal anatomy, human evolution through fossil casts, and modern human variation.
Prerequisite: ANTH 120, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

ANTH 140 Introduction to Prehistory (GT-HI1) Credits: 3 (3-0-0)
Course Description: Origins of human society from the Stone Age to urban civilization using architecture, art, tools, and other material remains.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

ANTH 150 Imagining Sustainability Credits: 3 (3-0-0)
Also Offered As: ESS 150.
Course Description: Science alone cannot imagine the revolutionary changes necessary to sustain future life on our planet. Explore key concepts and practices of sustainability as represented in contemporary fiction, film, and the news media. Interdisciplinary approach will be anthropological and historical, charting the development of sustainability thinking through different epochs of capitalism.
Prerequisite: None.
Registration Information: Credit allowed for only one of the following: ANTH 150, ANTH 181A1, ESS 150, or ESS 181A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 200 Cultures and the Global System (GT-SS3) Credits: 3 (3-0-0)
Course Description: Analyze diversity, cultural responses, and adaptations of smaller-scale societies to emerging global trends.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

ANTH 225 Anthropology of the Arts Credits: 3 (3-0-0)
Course Description: Explores the arts (both visual and performing) from the perspective of cultural anthropology. What is art and how is the category differently constructed cross-culturally? Why and how do people make, consume, and identify with expressive culture? How can the visual and performing arts help us to develop a deeper understanding of how human beings make meaning? Read a variety of ethnographic texts that illuminate these and related questions.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 232 Soundscapes-Music as Human Practice Credits: 3 (3-0-0)
Also Offered As: MU 232.
Course Description: Musical communities and soundscapes from around the world provide exploration points for how music and sound inform human life. Study everything from playlists to music of distant lands. Ability to read notated music not required.
Prerequisite: None.
Registration Information: Previous music experience not required. Credit allowed for only one of the following: ANTH 232, MU 232, or MU 280A2.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C.

ANTH 235 Indigenous Peoples of North America Credits: 3 (3-0-0)
Course Description: Explores Native groups of North America from an anthropological perspective, and utilizes a culture area framework as a basis for investigation. Culture area framework is largely based on historical material—how these people have lived in the recent past. Evaluating how these groups live in the present. Contemporary issues, globalization, and local responses to local concerns.
Prerequisite: None.
Registration Information: Sections may be offered: Online. Credit not allowed for both ANTH 235 and ANTH 280A2.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 260 Introduction to Field Archaeology Credits: 2 (1-2-0)
Course Description: Field methods including map preparation and interpretation, site location and recording, site excavation, and stratigraphy.
Prerequisite: ANTH 140.
Registration Information: Must register for lecture and laboratory.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 274 Human Diversity Credits: 3 (3-0-0)
Course Description: Explore human diversity, both physical and genetic, within an evolutionary framework. The scientific method is applied to the sociocultural contexts that give rise to prejudices in order to critically evaluate misconceptions regarding race, gender, and human behaviors deemed 'natural'. Approaching human diversity from an evolutionary perspective dismantles biases that justify prejudice and result in unequal access to power and resources as well as negative health impacts.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 275 Introduction to Forensic Anthropology Credits: 3 (3-0-0)
Also Offered As: SOC 275.
Course Description: Forensic anthropological theory and methods including estimation of age-at-death, sex, stature, ancestry, and trauma analysis.
Prerequisite: None.
Registration Information: Credit not allowed for both ANTH 275 and SOC 275. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANTH 295 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 310 Peoples and Cultures of Africa Credits: 3 (3-0-0)
Course Description: Sub-Saharan lifestyles including marriage and family, traditional government, religion and magic, ecology and economy, art, music, and literature.
Prerequisite: ANTH 100.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 312 Modern Indian Culture and Society Credits: 3 (3-0-0)
Course Description: Anthropological contributions to the understanding of contemporary India.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 313 Modernization and Development Credits: 3 (3-0-0)
Course Description: Processes by which cultures change and modernize, 1989 to the present.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 314 Southeast Asian Cultures and Societies Credits: 3 (3-0-0)
Course Description: Colonial and post-colonial cultures, globalization processes, and changing ethnic and gender identities in Southeast Asian societies.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 315 Global Mobilities–The African Diaspora Credits: 3 (3-0-0)
Course Description: Globalization and transnationalism with a focus on the circulation of people, ideas, and cultural products and practices between Africa and the rest of the world. By situating Africans as both producers and consumers of transnational ideas and products, we will develop an understanding of Africa beyond popular representations of violence and crisis.
Prerequisite: ANTH 100 or ANTH 200 or GR 100 or SOC 100.
Registration Information: Junior standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 317 Anthropology of Human Rights Credits: 3 (3-0-0)
Course Description: Human rights from the perspective of cultural anthropology through its theoretical and practical dimensions. Contemporary human rights debates within the context of cultural plurality in a globalized world. Engages the intersection between global dynamics and community experiences by addressing the human rights dimensions of refugees and migration, indigenous communities, women and children, health, religious practices, among others.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 319 Latin American Peasantries Credits: 3 (3-0-0)
Course Description: Sociocultural, economic, and political responses of Latin American peasantries to poverty and global processes.
Prerequisite: ANTH 100 or ANTH 200 or ETST 100.
Registration Information: Credit not allowed for both ANTH 319 and ETST 319.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 322 The Anthropology of Religion Credits: 3 (3-0-0)
Course Description: Major anthropological theories and descriptions of religious beliefs and practices. Religion in a cross-cultural and evolutionary perspective.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 329 Cultural Change Credits: 3 (3-0-0)
Course Description: Cultural change and effects of directed global forces; colonial origins of underdevelopment on small-scale societies.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 330 Human Ecology Credits: 3 (3-0-0)
Course Description: Roles of technology, economics, social organization, and ideology in human adaptations to and survival in natural and cultural environments.
Prerequisite: (ANTH 100 or ANTH 200) and (ANTH 120 or BZ 101 or LAND 220 or LIFE 220).
Registration Information: Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 333 Anthropology of Sex and Reproduction Credits: 3 (3-0-0)
Course Description: Contemporary scholarship on issues in the anthropology of reproduction, including the relationship between production and reproduction and between the corporeal body and the body politic, the disciplinary power of the state, public controversies such as abortion and maternal-fetal conflict, and the symbolism and metaphors of procreation and parenthood. We will use "reproduction" as an analytic strategy to shed light on the cultural politics of gender, power, and sexuality.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sophomore standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 334 Narrative Traditions and Social Experience Credits: 4 (3-2-0)
Course Description: Relationship between narrative traditions and social contexts of their creation.
Prerequisite: ANTH 100 or ANTH 200 or E 140 or SOC 100.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 335 Language and Culture Credits: 3 (3-0-0)
Course Description: Human language and primate communication, nonverbal channels, sociolinguistics, and language change.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 336 Art and Culture Credits: 3 (3-0-0)
Course Description: Art expression is a defining factor in cultural identity and representation in a modern world where geographical and political borders are diminishing.
Prerequisite: ANTH 100 or ANTH 200.
Restriction: .
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 338 Gender and Anthropology Credits: 3 (3-0-0)
Course Description: Theory, themes, and debates in anthropological gender studies, ethnographic survey of women and men cross-culturally.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 340 Medical Anthropology Credits: 3 (3-0-0)
Course Description: Cultural adaptation to disease; non-Western theories of health and disease; categories, causes, cures; learned roles of patients and healers.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 343 Applied Medical Anthropology Credits: 3 (3-0-0)
Course Description: How and why we get sick and what sickness means from biological, social and cultural perspectives.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 350 Archaeology of North America Credits: 3 (3-0-0)
Course Description: Native American life, tools, architecture, religion, food-getting from cultures of 12,000 years ago or earlier until European contact.
Prerequisite: ANTH 140.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 351 Archaeology of Europe and Africa Credits: 3 (3-0-0)
Course Description: Human culture, tools, art, religion, social life, subsistence, and paleoecology from 4 million B.C. to 1200 B.C. in the Old World.
Prerequisite: ANTH 140.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 352 Geoarchaeology Credits: 3 (3-0-0)
Course Description: Analytical techniques, concepts, and field methodologies from the earth sciences to better understand the archaeological record.
Prerequisite: ANTH 140.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 353 Archaeology of Rock Art Credits: 3 (3-0-0)
Course Description: Study of prehistoric and recent rock art worldwide from an anthropological and cross-cultural perspective. Provide a strong understanding of what rock art is, how it is recorded, analyzed, and interpreted by archaeologists, and why ancient symbolism and sites are considered important in contemporary society.
Prerequisite: None.
Registration Information: Sophomore standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 358 Archaeologies of Graffiti Credits: 3 (3-0-0)
Course Description: An in-depth examination of graffiti as a human social behavior and form of material culture in the past and present. Examines the form, function, and context of graffiti across cultures and through time, with regard to the circumstances of its creation. Addresses what lies behind the human urge to leave a mark.
Prerequisite: ANTH 100 or ANTH 120 or ANTH 140 or ANTH 200.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 359 Colorado Prehistory Credits: 3 (2-0-1)
Course Description: Human behavioral responses to environmental diversity, cultural adaptation, Pleistocene and recent climates, anthropogenic environmental change.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 360 Archaeological Investigation Credits: 3 (2-2-0)
Course Description: Investigation of the archaeological record, how the record was formed, and how archaeological data are analyzed and interpreted.
Prerequisite: ANTH 140.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 365 Quantifying Anthropology Credits: 3 (3-0-0)
Course Description: Managing, quantifying and illustrating anthropological data-sets with appropriate software.
Prerequisite: ANTH 100 or ANTH 120 or ANTH 140 or ANTH 200.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 370 Primates Credits: 3 (3-0-0)
Course Description: Behavioral patterns, ecological relationships, and communication of nonhuman primates.
Prerequisite: ANTH 120 or BZ 101.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 371 Growing Up Primate Credits: 3 (3-0-0)
Course Description: Primates generally have extended periods of growth compared to other mammals; however, there is considerable variation across the Primate Order. Evolution of primate growth and reproductive strategies, critically evaluates current models of life history variation, examines the ways that primate taxa negotiate trade offs (e.g. current versus future reproduction), and explains the role of human sociality in the evolution of our unique life history parameters.
Prerequisite: ANTH 120 or BZ 101.
Registration Information: Junior standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 372 Human Osteology Credits: 3 (2-2-0)
Course Description: Human bones and teeth in a review of functional human evolution.
Prerequisite: ANTH 120 or BZ 101 or BZ 110 or LIFE 102.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 373 Human Evolution Credits: 3 (3-0-0)
Course Description: Current topics and debates in human evolution concentrating on biocultural changes in the human lineage.
Prerequisite: ANTH 120 or BZ 110.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANTH 374 Human Biological Variation Credits: 3 (2-0-1)
Course Description: Biological diversity of human populations; history of development of race concept.
Prerequisite: ANTH 120 or BZ 101 or BZ 110 or LIFE 102.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 375 Evolution of Primate Behavior Credits: 3 (3-0-0)
Course Description: Primate behavior from an evolutionary perspective, drawing on a variety of studies of humans, primates, and mammals.
Prerequisite: ANTH 120 or BZ 110 or LIFE 102.
Registration Information: Junior standing. Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 376 Evolution of Human Adaptation Credits: 3 (2-0-1)
Course Description: Unique characteristics of humans: bipedalism, encephalization, dentition, birth process, an attenuated period of development.
Prerequisite: ANTH 120 or BZ 110 or LIFE 102.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 377 Anthropology Perspectives-Evolution, Society Credits: 3 (3-0-0)
Course Description: Evolutionary science in educating the public is investigated and anthropological knowledge of human evolutionary biology is examined.
Prerequisite: ANTH 120.
Registration Information: Credit not allowed for both ANTH 377 and ANTH 380A2.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 378 Bipedal Apes Credits: 3 (3-0-0)
Course Description: Human bipedal walking within a comparative framework of primate locomotion and anatomy. Specific focus is on kinematics and kinetics of soft- and hard-tissues including analysis of extant primate locomotion, morphology, and development. Discussions focus on debates in primate functional anatomy and locomotion including hypotheses surrounding the origins and evolution bipedal walking and running and possible maladaptations of being a human biped.
Prerequisite: ANTH 120 or BZ 101.
Registration Information: Junior standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 379 Evolutionary Medicine and Human Health Credits: 3 (3-0-0)
Course Description: Evolutionary medicine refers to the application of evolutionary theory to the study of human health, disease, and modern medicine. This theoretical perspective provides a deeper lens with which to investigate health, moves us beyond mechanistic explanations of disease, and constructs an anthropological framework for interpreting the evolution of human physiological diversity.
Prerequisite: ANTH 120 or BZ 101 or BZ 110 or LIFE 102.
Registration Information: Sophomore standing.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 400 History of Theory-Anthropology and Geography Credits: 3 (3-0-0)
Also Offered As: GR 400.
Course Description: Anthropological/Geographical theory from its beginnings with Aristotle through recent developments into the 20th century.
Prerequisite: (ANTH 100 or ANTH 200) and (ANTH 140 and ANTH 120 and ANTH 121 or GR 100).
Registration Information: Junior or senior standing. Sections may be offered: Online. Credit not allowed for both ANTH 400 and GR 400.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 401 Psychological Anthropology Laboratory Credit: 1 (0-2-0)
Course Description: Practical research techniques drawn from psychological and cognitive anthropology for investigating the relationship between shared group culture and individual thought and practice. Mixed qualitative and quantitative methods, including using field observations, interviews, and surveys to illuminate "cultural domains" of thought. Emphasis on collaborative group research and hands-on training involving actual field research and data collection and analysis via appropriate software packages.
Prerequisite: ANTH 322, may be taken concurrently or ANTH 423, may be taken concurrently or ANTH 444, may be taken concurrently or ANTH 445, may be taken concurrently.
Registration Information: Junior standing. Repeatable for credit.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 405 Public Anthropology and Global Challenges Credits: 3 (3-0-0)
Course Description: Value of taking scholarship to the communities. Public scholarship is pointed at many publics and intended to engage actively in the process of solving urgent problems in contrast to traditional scholarship. Focus on the public discourse that addresses disasters, climate change, and global health issues. Critical look at how academic knowledge in these realms serves the public interest.
Prerequisite: ANTH 300 to 499 - at least 3 credits or SOC 300 to 499 - at least 3 credits.
Registration Information: Junior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 411 Indians of South America Credits: 3 (0-0-3)
Course Description: Ethnographic and cultural characteristics of South American indigenous groups and the current critical issues they face.
Prerequisite: ANTH 100 or ANTH 200 or ANTH 413 or ANTH 414 or ETST 414.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 412 Indians of North America Credits: 3 (3-0-0)
Course Description: Native American peoples, their cultural variation across the continent, and cultural encounters with colonial expansion.
Prerequisite: ANTH 100 or ANTH 200 or ANTH 413 or ANTH 414 or ETST 414.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 413 Indigenous Peoples Today Credits: 3 (3-0-0)
Course Description: Contemporary cultural and social issues of indigenous peoples around the globe, including North and South American Indians and Australian Aborigines.
Prerequisite: ANTH 200 or ANTH 412 or ANTH 414 or ETST 414.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 414 Development in Indian Country Credits: 3 (3-0-0)
Also Offered As: ETST 414.
Course Description: Critical examination of history, public policy, and tribal strategies for economic development and natural resource management in Indian Country.
Prerequisite: None.
Registration Information: Credit not allowed for both ANTH 414 and ETST 414.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 415 Indigenous Ecologies and the Modern World Credits: 3 (3-0-0)
Course Description: Impact of the modern world in indigenous peoples' relationship to their environments and natural resources.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 416 Gender, Culture, and Health Credits: 3 (3-0-0)
Course Description: Examine the role of anthropology in current global health issues paying particular attention to culture and gender.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 417 Indigenous Environmental Stewardship Credits: 3 (3-0-0)
Course Description: Sustainability and environmental stewardship are not necessarily modern day concepts. Indigenous peoples of North America have established traditions and beliefs about harmony and kinship with nature. Focus upon stories and belief systems and their influence upon culture, economics, politics, American history, environmental justice and law.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 420 Digital Digging--Geophysics in Archaeology Credits: 3 (3-0-0)
Course Description: Introduction to the geophysical methods archaeologists use to prospect for new sites, and develop new questions for known sites. Examines how common geophysical methods work to detect subsurface signatures for human activity. Provides hands-on experience in data collection, processing, and analysis for multiple instruments. Presents diverse theoretical perspectives from the social sciences that can be applied to interpret subsurface spatial signatures at archaeological sites.
Prerequisite: ANTH 100 or ANTH 120 or ANTH 140 or ANTH 200.
Registration Information: Sophomore standing.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 422 Comparative Legal Systems Credits: 3 (3-0-0)
Also Offered As: SOC 422.
Course Description: Traditional approaches to law, competing concepts of law in the global system, and experiences of minorities in state legal systems.
Prerequisite: ANTH 100 or SOC 100.
Registration Information: Credit not allowed for both ANTH 422 and SOC 422.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 423 Cultural Psychiatry Credits: 3 (3-0-0)
Course Description: Social determinants of mental health. Cross-cultural health and healing. Cultural contexts of U.S./Western and Indigenous/non-Western psychiatries.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 438 Approaches to Community-Based Development Credits: 3 (0-0-3)
Course Description: Explores the structure and practice of community development globally, engaging in critical analysis of different approaches and their impact.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 439 Community Mobilization Credits: 3 (0-0-3)
Course Description: Structural, social, and psychological barriers that inhibit cooperation and collective action.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 440 Theory in Cultural Anthropology Credits: 3 (3-0-0)
Course Description: Theoretical paradigms used to explain culture including evolutionary, functional, ecological, political economy, postmodernism, and hegemony.
Prerequisite: ANTH 100 or ANTH 200.
Terms Offered: Fall, Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 441 Method in Cultural Anthropology Credits: 3 (3-0-0)
Course Description: Methodological orientations and research techniques. Ethnographic and cross-cultural approaches including quantitative and formal models.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 442 Ethnographic Field School Credits: Var[3-8] (0-0-0)
Course Description: Directed fieldwork with American Indian communities; methodology, protocols, and social relations of ethnographic field research.
Prerequisite: ANTH 100 or ANTH 200 or ANTH 100 to 99999 - at least 9 credits.
Registration Information: Required field trips.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

ANTH 443 Ethnographic Field Methods Credits: 3 (0-6-0)
Course Description: Directed experiential preparation for applied ethnographic field methods and research questions.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 444 Cultures of Virtual Worlds—Research Methods Credits: 3 (3-0-0)
Course Description: Methodologies and directed research related to virtual worlds and internet, gaming, play, and fan communities.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Junior standing.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 445 Psychological Anthropology Credits: 3 (3-0-0)
Course Description: Cross-cultural exploration of the human mind by studying the ideas, desires, and practices of individuals in various sociocultural settings.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 446 New Orleans and the Caribbean Credits: 3 (3-0-0)
Course Description: New Orleans and the Caribbean connections through colonization, slavery, modernity, legacies of race, gender and class, the expressive arts.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 447 Gender Equity in Development Credits: 3 (0-0-3)
Course Description: Various forms of women's power, and potentials for disempowerment within the context of international development.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 448 Development and Empowerment Credits: 3 (0-0-3)
Course Description: Development as an economic process of wealth accumulation, as well as a socio-political process of empowerment.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 449 Community Development from the Ground Up Credits: 3 (3-0-0)
Course Description: Participatory methods in the monitoring and evaluation of development projects, where multiple stakeholders are involved in the process.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 450 Hunter-Gatherer Ecology Credits: 3 (0-0-3)
Course Description: Development of anthropological method and theory; study of contemporary and prehistoric foraging peoples.
Prerequisite: ANTH 100 and ANTH 120 and ANTH 121 and ANTH 140.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 451 Andean Archaeology and Ethnohistory Credits: 3 (3-0-0)
Course Description: Prehistory and colonial experiences of native Andean peoples.
Prerequisite: ANTH 100 or ANTH 140.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 452 Archaeology of Mesoamerica Credits: 3 (3-0-0)
Course Description: Ancient cultures and civilizations in Middle America.
Prerequisite: ANTH 140.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 453 Impacts on Ancient Environments Credits: 3 (3-0-0)
Course Description: Major issues and case studies in the archaeology of ancient human societies and their environmental impacts.
Prerequisite: ANTH 140.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 454 Anthropological Perspectives on Food Credits: 3 (3-0-0)
Course Description: A long term perspective on the political economy of human food ways from ancient hunter-gatherers to the present. Topics will include foraging practices, domestication, feasting and emergent social complexity, the role of food in ancient states, and globalization, as well as the modern food economy. Lectures and readings will be based on research in archaeology, cultural anthropology, and biological anthropology.
Prerequisite: ANTH 100 and ANTH 120 or ANTH 100 and ANTH 140 or ANTH 100 and ANTH 200 or ANTH 120 and ANTH 140 or ANTH 120 and ANTH 200 or ANTH 140 and ANTH 200.
Registration Information: Junior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 455 Great Plains Archaeology Credits: 3 (3-0-0)
Course Description: Prehistoric people on Great Plains from earliest hunter-gatherers to historic contact; cultural responses to changing conditions.
Prerequisite: ANTH 140.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 456 Archaeology and the Public Credits: 3 (3-0-0)
Course Description: Applied archaeology in public settings, including publication, museum display, education, the illicit artifact trade, and other ethical issues.
Prerequisite: (ANTH 140) and (ANTH 252 or ANTH 350 or ANTH 351 or ANTH 352 or ANTH 451 or ANTH 452 or ANTH 453 or ANTH 455 or ANTH 460 or ANTH 465).
Registration Information: 3 additional credits of archaeology required. Required field trips.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 457 Lithic Technology Credits: 3 (2-2-0)
Course Description: Method and theory behind production, use, and discard of stone tools by prehistoric peoples. Hands-on application in laboratory setting.
Prerequisite: ANTH 140.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 458 Archaeology and Cultural Resource Management Credits: 3 (3-0-0)
Course Description: Cultural Resource Management as a career, the network of regulations that form the backbone of the industry, and the process for conducting a CRM investigation as an archaeologist. Topics include cultural resource legislation, project planning, execution, management, client communications, site analysis and evaluation, effects determinations, and agency and tribal consultations. Topical issues including case studies and industry trends will be explored.
Prerequisite: ANTH 100 to 499 - at least 6 credits.
Registration Information: Offered as an online course only.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 459 Mediterranean Archaeology Credits: 3 (3-0-0)
Course Description: Contextualization of historical and socio-political trends, influences, and impetuses converge to a holistic understanding of what it meant to be a Greek or Roman from c. 1300 BCE – 330 CE. Basic sets of evidence available to scholars of this world (archaeology, epigraphy, philology, glyptic, etc.), and how Mediterranean archaeologists have historically approached this evidence.
Prerequisite: ANTH 140.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 460 Field Class in Archaeology Credits: Var[3-8] (0-0-0)
Course Description: Directed fieldwork in local archaeology, site survey, and excavation; recovery, preservation, cataloging, analysis of artifactual and skeletal materials.
Prerequisite: None.
Registration Information: Written consent of instructor. Required field trips.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ANTH 461 Anthropological Report Preparation Credits: 3 (0-0-3)
Course Description: Producing written and oral presentations for anthropological research, employment, or graduate work. Grant writing and manuscript preparation.
Prerequisite: ANTH 460.
Registration Information: Written consent of instructor.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 462 Anthropology Curation and Exhibition Methods Credits: 3 (3-0-0)
Course Description: Current methods and ethics in museum curation, conservation, collections management policies and procedures, exhibition development, and other tasks associated with managing, preserving and displaying anthropological collections (both artifacts and their associated documentation). Practical, hands-on experience in artifact care, management, preservation, and exhibition development.
Prerequisite: None.
Registration Information: Sophomore standing. 3 credits of ANTH or ART or HIST.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 465 Zooarchaeology Credits: 3 (2-2-0)
Course Description: Analysis of animal bones from archaeological sites to develop interpretations of past human behavior.
Prerequisite: ANTH 120 and ANTH 140.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

ANTH 469 Archaeology Seminar in Mesopotamian Prehistory Credits: 3 (0-0-3)
Course Description: Origins of human society from the stone age to urban civilizations using architecture, art, tools, and other material remains.
Prerequisite: ANTH 100 to 99999 - at least 6 credits.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 470 Paleontology Field School Credits: 4 (2-4-0)
Course Description: Field methods in fossil excavation, preservation, and curation; the evolution of the primate order.
Prerequisite: ANTH 120 or BZ 110 or LIFE 102.
Registration Information: Required field trips.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANTH 472 Human Biology Credits: 3 (3-0-0)
Course Description: Human biological responses to environmental conditions and constraints including diet, nutrition, disease, climate, culture change, and urbanization.
Prerequisite: ANTH 120 or BZ 110 or LIFE 102.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 473 The Neandertals Credits: 3 (2-0-1)
Course Description: Socio-historical foundations of questions regarding Neandertal paleobiology and culture and the Neandertal role in the evolution of Homo sapiens.
Prerequisite: (ANTH 120 or BZ 110) and (ANTH 372 or ANTH 373 or ANTH 374 or ANTH 375 or ANTH 376).
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 474 Human Skeleton Analysis Credits: 3 (2-2-0)
Course Description: Focus on methods and techniques used to reconstruct identity and behavior from the human skeleton applicable to all areas of skeletal biology, including bioarchaeology, paleoanthropology, and forensic anthropology.
Prerequisite: (ANTH 120 or BZ 101) and (ANTH 372).
Registration Information: Senior standing. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 475 Methods of Analysis in Paleoanthropology Credits: 3 (3-0-0)
Course Description: Practical discussion of techniques used to reconstruct dietary and locomotor behavior and evolutionary relationships in human fossil remains.
Prerequisite: ANTH 373.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 478 Heritage Resource Management Credits: 3 (3-0-0)
Also Offered As: HIST 478.
Course Description: Cultural resource laws and policy; practices commonly employed in management and preservation of these diverse resources.
Prerequisite: None.
Restriction: .
Registration Information: Junior or senior standing. Credit not allowed for both ANTH 478 and HIST 478.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 479 International Development Theory and Practice Credits: 3 (3-0-0)
Also Offered As: IE 479.
Course Description: Contemporary issues in international community and economic development, with practical and theoretical analysis from interdisciplinary perspectives.
Prerequisite: None.
Restriction: Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Junior or senior standing. Credit not allowed for both ANTH 479 and IE 479.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 482A Study Abroad: Communities and Conservation in South Africa Credits: 6 (0-0-6)
Also Offered As: ESS 482A.
Course Description: Travel to the wildest areas of savanna South Africa to work and learn from rural and urbanizing communities. Insights into the innovative forms of community-based natural resource management emerging in South Africa. Understand the new landscapes of conservation associated with post-apartheid South Africa. Explore the problems faced by the millions of people living in poverty at the edge of protected areas.
Prerequisite: None.
Registration Information: Written consent of instructor. Pre-South Africa: during the spring semester prior to the actual study abroad experience, students will meet in March and April for workshops and guest lectures on the CSU campus. In South Africa: travel approximately June 10 – July 2. Post-South Africa: students and instructors will schedule 20 hours of consulting time while students work on group projects over 6 weeks. Credit not allowed for both ANTH 482A and ESS 482A.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 484 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANTH 486 Practicum Credits: Var[1-6] (0-0-0)
Course Description: Application of anthropological methods under actual project conditions.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 487 Internship Credits: Var[1-9] (0-0-0)
Course Description: Academic-based work experience with selected organizations or agencies. Supervised application of anthropological principles.
Prerequisite: ANTH 100 to 499 - at least 9 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 492A Seminar: Archaeology Credits: 3 (0-0-3)
Course Description:
Prerequisite: ANTH - at least 6 credits.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 492B Seminar: Biological Anthropology Credits: 3 (0-0-3)
Course Description:
Prerequisite: ANTH - at least 6 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 493 Capstone Seminar Credit: 1 (0-0-1)
Course Description: Linkages between anthropological subfields and how professional anthropologists approach issues.
Prerequisite: None.
Registration Information: Concurrent registration in a 4A course (see department list). Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 496 Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 500 Development of Anthropological Theory Credits: 3 (3-0-0)
Course Description: Contemporary development of anthropological thought.
Prerequisite: None.
Restriction: Must not be a: Undergraduate.
Registration Information: Undergraduates must have written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 501 Psychiatric Anthropology Laboratory Credit: 1 (0-2-0)
Course Description: Use tools from psychiatric anthropology to construct culturally-sensitive scales for assessing mental health and subjective well-being. Mixed qualitative and quantitative methods, including using field observations, interviews, and surveys to build and assess well-being measures. Emphasis on collaborative group research and hands-on training involving field research and data collection and analysis via appropriate software packages.
Prerequisite: ANTH 543, may be taken concurrently or ANTH 545, may be taken concurrently or ANTH 546, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Repeatable for credit.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 505 Resilience, Well-Being, and Social Justice Credits: 3 (3-0-0)
Course Description: Concepts of resilience, well-being, and social justice in the context of a rapidly changing planet. These concepts are rarely integrated yet each is understood to help diagnose, measure, and solve global-scale problems. Engagement with many views from many fields, including the anthropological lens of a community-level scale, cross-cultural comparison, and holistic analyses.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 515 Culture and Environment Credits: 3 (3-0-0)
Course Description: Theoretical accounts of societies' variable relationships to their environments, indigenous peoples' interactions with nature in context of modernity.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 520 Women, Health, and Culture Credits: 3 (3-0-0)
Course Description: Women's experiences and interpretations of their health; cultural, political, and economic forces affecting women's health.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 521 Gender, Sexuality, and Culture Credits: 3 (3-0-0)
Course Description: Gender and sexuality cross-culturally; theory, cultural constructions, colonialism, class, race, ethnicity, health, violence.
Prerequisite: None.
Restriction: Must not be a: Undergraduate.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 528 Economic Anthropology Credits: 3 (0-0-3)
Course Description: Theoretical approaches to the cultural context of economic activity.
Prerequisite: ANTH - at least 9 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 529 Anthropology and Sustainable Development Credits: 3 (0-0-3)
Course Description: Global development goals, poverty and hunger, environmental sustainability, education, and equity.
Prerequisite: ANTH - at least 9 credits.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 530 Human-Environment Interactions Credits: 3 (3-0-0)
Course Description: Paradigms and concepts in ecological anthropology with an emphasis on adaptation and resilience.
Prerequisite: ANTH 000 to 99999 - at least 9 credits.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 532 The Culture of Disaster Credits: 3 (0-0-3)
Course Description: Study of how the human impacts of disaster and the process of recovery are shaped by cultural as well as structural realities.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 535 Globalization and Culture Change Credits: 3 (0-0-3)
Course Description: Evolving paradigms and patterns of globalization and international development; cultural responses -- resistance, dependency, fragmented identities.
Prerequisite: ANTH - at least 9 credits.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 538 Food, Hunger, and Culture Credits: 3 (0-0-3)
Course Description: Explores cultural and social understandings of food cross-culturally, including the symbolic meanings that people attribute to food and its consumption. Critically investigates the intersecting political, economic, social, and cultural influences on hunger, malnutrition, and other health concerns associated with food and nutrition globally. Assesses applied anthropological approaches to reducing hunger and other nutrition related health problems.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program.
Registration Information: Graduate standing. Credit not allowed for both ANTH 538 or ANTH 581A2.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 539 Anthropology of Modernity Credits: 3 (3-0-0)
Course Description: Critical examination of the institutions, values, and processes which constitute the modern world. Impact of modern forces on "traditional" peoples.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 540 Medical Anthropology Credits: 3 (0-0-3)
Course Description: Cultural and biocultural approaches to health, illness, and the body; theory and application in medical anthropology.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 541 Seminar in Archaeological Method Credits: 3 (1-0-2)
Course Description: Methods of archaeological recovery and interpretation, and process of archaeological analysis and reporting.
Prerequisite: ANTH - at least 9 credits.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 542 Seminar in Archaeological Theory Credits: 3 (1-0-2)
Course Description: Theories of recovery, reconstruction, and interpretation of the archaeological record.
Prerequisite: ANTH - at least 9 credits.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 543 Foundations of Ethnographic Research Credits: 3 (3-0-0)
Course Description: Mixed qualitative and quantitative field methods to address practical real-world issues. Emphasis on linking theory and method, project formulation, hands-on experience with data collection and analysis, and practical applications such as preparing thesis/dissertation proposals and writing grants. Discussion of a range of anthropological approaches to field research, including applied, public, collaborative, participatory, and community-based ethnographic research.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program.
Registration Information: Graduate standing. Credit not allowed for both ANTH 543 and ANTH 643.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 544 From Death to Discovery Credits: 3 (1-0-2)
Course Description: Theoretical perspectives on the decay and fossilization of organisms between their death and discovery.
Prerequisite: ANTH 000 to 99999 - at least 9 credits.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 545 Global Mental Health--Theory and Method Credits: 3 (3-0-0)
Course Description: Cross-cultural study of mental health and healing; cultural, clinical, and biological perspectives; integration of theory and method.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 546 Culture, Mind, and Cognitive Science Credits: 3 (3-0-0)
Course Description: Anthropological contributions to cognitive science. Culture, mind, and social context. Theory building and practical applications.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 547 Mind, Medicine, and Culture Credits: 4 (3-2-0)
Course Description: Cultural-psychological influences on health and healing; mind-body medicine; complementary and alternative medicine; indigenous and spiritual healing.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 548 Theoretical Topics in Cultural Anthropology Credits: 3 (3-0-0)
Course Description: Major theoretical currents in cultural anthropology from the 19th-century to the present. Classical theory alongside contemporary texts that revise or revisit early works. Focus on some major theories and themes that are important in cultural anthropology since the 1960s.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 550A Regional Prehistory: Great Plains Credits: 3 (0-0-3)
Course Description:
Prerequisite: ANTH 350.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 550B Regional Prehistory: Great Basin Credits: 3 (0-0-3)
Course Description:
Prerequisite: ANTH 350.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 550C Regional Prehistory: Southwestern Credits: 3 (0-0-3)
Course Description:
Prerequisite: ANTH - at least 9 credits.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 551 Historical Archaeology Credits: 3 (3-0-0)
Course Description: Theory, methods, and issues in historical archaeology.
Prerequisite: None.
Restriction: Must not be a: Undergraduate.
Registration Information: Graduate standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 553 Archaeology of Complex Societies Credits: 3 (0-0-3)
Course Description: Issues in development and organization of complex societies with emphasis on the Americas.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 554 Ecological and Social Agent-based Modeling Credits: 3 (2-2-0)
Also Offered As: NR 554.
Course Description: Exploring the use and making of agent-based models featuring interacting individuals in ecological and social simulation, with examples and projects.
Prerequisite: None.
Restriction: .
Registration Information: Junior or senior standing. Credit not allowed for both ANTH 554 and NR 554.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 555 Paleoindian Archaeology Credits: 3 (0-0-3)
Course Description: Archaeology of the Americas during late Pleistocene/early Holocene; background and development of contemporary models.
Prerequisite: ANTH 140.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 566 Field Methods Training in Online Environments Credits: 3 (2-2-0)
Course Description: Collaborative analysis of ethnographic field data collected in online virtual worlds; mixed methods applicable to other built and natural places.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 570 Contemporary Issues-Biological Anthropology Credits: 3 (0-0-3)
Course Description: Theory and applications in biological anthropology focusing on syntheses and interpretations of human biology, variation, adaptability, and evolution.
Prerequisite: None.
Registration Information: Six credits in biological anthropology.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 571 Anthropology and Global Health Credits: 3 (3-0-0)
Course Description: Global health concerns and problems including poverty, urbanization, malnutrition, diet, war and refugees, climate, and environment.
Prerequisite: None.
Restriction: Must not be a: Undergraduate.
Registration Information: Graduate standing.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 572 Human Origins Credits: 3 (0-0-3)
Course Description: Major trends in human evolution through use of detailed case studies and regionally focused primary research.
Prerequisite: None.
Restriction: Must not be a: Undergraduate.
Registration Information: Graduate standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 573 Paleoclimate and Human Evolution Credits: 3 (3-0-0)
Course Description: Methods used to reconstruct past environments and understand the effects of past climate on the major trends of human evolution.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 617 Place, Space and Adaptation Credits: 3 (3-0-0)
Course Description: Critical evaluation of the nexus between space, society and environment. An interdisciplinary approach to studying the ways biological, material, historical, political-economic and cultural processes combine to shape human-environment relationships in place-based contexts.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 660 Field Archaeology Credits: Var[2-10] (0-0-0)
Course Description: Field applications of nondestructive survey methods, advanced cartographic and excavation methods, project supervision skills.
Prerequisite: ANTH 460.
Restriction: Must be a: Graduate, Professional.
Registration Information: Two seasons of field experience may substitute for ANTH 460. Required field trips.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ANTH 679 Applications of International Development Credits: 3 (3-0-0)
Also Offered As: IE 679.
Course Description: In-depth interdisciplinary analysis of theoretical and practical issues in implementing economic and community-based international development programs.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Credit not allowed for both ANTH 679 and IE 679.
Terms Offered: Fall, Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 686 Practicum-Field Archaeology Credits: Var[1-18] (0-0-0)
Course Description: Direction of anthropological fieldwork under professional supervision.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 692 Seminar Credits: 3 (0-0-3)
Course Description: Current trends of research in archaeology; cultural and physical anthropology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 696 Group Study-Anthropological Theory Credits: Var[1-3] (0-0-0)
Course Description: Intensive analysis of selected topics and theories in anthropology, both historical and contemporary.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 792 Special Topics in Anthropology Credits: 3 (0-0-3)
Course Description: A seminar course offering special topics each time the course is taught. Recent readings from the literature will be used to foster discussion.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 795 Independent Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Geography (GR)

GR 100 Introduction to Geography (GT-SS2) Credits: 3 (3-0-0)
Course Description: Major geographic themes applied to selected regions; physical environment, human-land relationships, regional analysis.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Geography (GT-SS2).

GR 102 Geography of Europe and the Americas (GT-SS2) Credits: 3 (3-0-0)
Course Description: Examines the physical and human geographies of Europe, including the former Soviet Union, and the Americas from the Southern Cone to Canada. Focus is on the content of these geographies, why they exist, and their current significance; supported by extensive map analysis.
Prerequisite: None.
Registration Information: Credit not allowed for both GR 102 and GR 180A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Geography (GT-SS2).

GR 210 Physical Geography Credits: 3 (3-0-0)
Also Offered As: ESS 210.
Course Description: Energy, mass budget, and human impacts on atmosphere, hydrosphere, and continental land surfaces.
Prerequisite: None.
Registration Information: Credit not allowed for both GR 210 and ESS 210.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 213 Climate Migrants Credits: 3 (3-0-0)
Course Description: Explore the various drivers of migration, emphasizing climate and others including biogeographic, political, economic, and social factors.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GR 220 Mapping, Cartography, and Spatial Thinking Credits: 3 (2-2-0)
Course Description: Spatial thinking is the science and art of making maps that play a key role in enabling geographers to visualize space and spatial patterns, as well as, convey spatial information to others. Introduction to the science of spatial thinking, including collecting spatial information and making maps, modern geographic information sciences (GIS) that have evolved from cartography, and spatial analysis techniques that are fundamental to Geography.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 303 Mountain Geography Credits: 3 (3-0-0)
Course Description: The physical and human dimensions of mountains. Examples from mountains around the world with case studies from Colorado.
Prerequisite: GR 100 to 499 - at least 3 credits.
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GR 304 Sustainable Watersheds Credits: 3 (3-0-0)
Also Offered As: WR 304.
Course Description: Effects of climate, land use, and water use on the sustainability of water quantity and quality.
Prerequisite: None.
Registration Information: Completion of the AUCC 1B Quantitative Reasoning requirement. Credit not allowed for both GR 304 and WR 304.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A.

GR 305 Geography of Global Health Credits: 3 (3-0-0)
Course Description: Study, research and practice of global health using an ecological approach that integrates health with spatial thinking. Focuses on a common set of issues which transcends boundaries, both domestic and international, and a set of actions to address the geographic burden of disease. Key principles and concepts, history of global health transitions, common and emerging health issues.
Prerequisite: ANTH 200 or GR 100 or INST 200.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 311 GIS for Social Scientists Credits: 3 (1-4-0)
Course Description: Applications of GIS techniques useful to the social sciences. Mapping techniques and GIS toolkits are practiced in lab.
Prerequisite: GR 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

GR 315 Quantitative Geographical Methods Credits: 3 (3-0-0)
Course Description: Methods to collect, analyze, display, and model geographic data.
Prerequisite: GR 100.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 320 Cultural Geography Credits: 3 (3-0-0)
Course Description: Geographic analysis of cultural phenomena, elements emphasizing human-land relationships and spatial patterns of agriculture, cities, language, religion.
Prerequisite: GR 100.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

GR 323 Remote Sensing and Image Interpretation Credits: 3 (2-2-0)
Also Offered As: NR 323.
Course Description: Remote sensing systems and applications; characteristics of photographic, scanner and radar images; imagery interpretations.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: GR 323, GR 503, NR 323, NR 503.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GR 330 Urban Geography Credits: 3 (3-0-0)
Course Description: Spatial distribution of urban areas and the geographic similarities and contrasts that exist between and within them.
Prerequisite: GR 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

GR 331 Geography of Farming Systems Credits: 3 (3-0-0)
Course Description: Geographic analysis of farming systems worldwide and by region; their development over time, human-land relationships, and spatial patterns.
Prerequisite: GR 100.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 333 Glaciers and Climate Change Credits: 3 (3-0-0)
Course Description: Glacier mass balance, dynamics, past fluctuations, and glaciers' relation to climate change.
Prerequisite: GR 100 or GR 210 or GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150.
Registration Information: Credit allowed for only one of the following: GEOL 381A2, GR 333 and GR 381A2.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GR 345 Geography of Hazards Credits: 3 (3-0-0)
Course Description: Causes, effects, distributional patterns, and human adjustments to environmental hazards.
Prerequisite: GR 210.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 348 Biogeography Credits: 3 (3-0-0)
Course Description: Species distribution of plants and animals in relation to earth history and environments, evolution, and ecology.
Prerequisite: GR 000 to 99999 - at least 3 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GR 400 History of Theory-Anthropology and Geography Credits: 3 (3-0-0)
Also Offered As: ANTH 400.
Course Description: Anthropological/Geographical theory from its beginnings with Aristotle through recent developments into the 20th century.
Prerequisite: (ANTH 100 or ANTH 200) and (ANTH 120 and ANTH 121 and ANTH 140 or GR 100).
Registration Information: Junior or senior standing. Sections may be offered: Online. Credit not allowed for both ANTH 400 and GR 400.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GR 410 Climate Change: Science, Policy, Implications Credits: 3 (3-0-0)
Course Description: Implications and consequences for earth systems including the cryosphere, hydrosphere, biosphere, and human systems.
Prerequisite: GR 100 to 499 - at least 3 credits.
Registration Information: Junior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GR 415 The Geography of Commodities Credits: 3 (3-0-0)
Course Description: Social relations, international trade, and environmental impacts surrounding the production, transportation, exchange, and consumption of commodities.
Prerequisite: GR 100.
Registration Information: Junior standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

GR 420 Spatial Analysis with GIS Credits: 4 (3-2-0)
Course Description: Theory, application of geographic information systems for spatial analysis; conceptual basis of GIS, nature and use of geographic data, case studies.
Prerequisite: GR 000 to 99999 - at least 3 credits.
Registration Information: Credit not allowed for both GR 420 and NR 322.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GR 430 Land Change Science and Remote Sensing Credits: 3 (3-0-0)
Course Description: Local case studies and global cases of land-use/land-cover changes in rural, peri-urban, and urban areas.
Prerequisite: GR 100.
Registration Information: Junior standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 431 Land Change Science Lab Credit: 1 (0-3-0)
Course Description: Utilize advanced remote sensing techniques and satellite images, air photos, and ancillary data to investigate land-use and land-cover changes.
Prerequisite: GR 323 or NR 323 or GR 503 or NR 503.
Registration Information: Must have concurrent registration in GR 430.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 440 Political Geography Credits: 3 (3-0-0)
Also Offered As: POLS 440.
Course Description: Examines the meaning of political space; states and nations; competition for territory, including methods and justifications; the structure of political space focusing on states; geopolitics; and the state in an era of globalization. Concepts are illustrated by real-world situations.
Prerequisite: GR 100 or POLS 101.
Registration Information: Sophomore standing. Sections may be offered: Online or Mixed Face-to-Face. Credit not allowed for both GR 440 and POLS 440.
Grade Mode: Traditional.
Special Course Fee: No.

GR 448 Forest Biogeography and Climate Change Credits: 3 (3-0-0)
Course Description: Forest adaptation and conservation in relation to global change with a focus on climate change.
Prerequisite: ESS 211 or ESS 311 or F 311 or GR 100 or GR 210 or ESS 210 or GR 303 or GR 348 or GR 410.
Registration Information: Junior standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 487 Internship Credits: Var[1-9] (0-0-0)
Course Description: Academic-based work experience with selected organizations or agencies. Supervised application of principles of geography.
Prerequisite: GR 100 to 499 - at least 9 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

GR 493 Capstone Seminar Credit: 1 (0-0-1)
Course Description: Exploration of the linkages among the human and physical geography sub-fields, geographic techniques, and other natural and social sciences as well as how professional geographers approach issues.
Prerequisite: None.
Registration Information: Junior standing. Concurrent registration in one of the following AUCC Category 4A courses for the Major in Geography: GR 303, GR 410, GR 415, or GR 430.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GR 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

GR 503 Remote Sensing and Image Analysis Credits: 4 (3-3-0)
Also Offered As: NR 503.
Course Description: Interpretation and analysis of photographic, multispectral scanner, and radar data; sensor systems; applications to resource management.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: GR 323, GR 503, NR 323, or NR 503.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GR 548 Biogeography Credits: 3 (3-0-0)
Course Description: Species distribution of plants and animals in relation to earth history and environments, evolution, and ecology.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate Standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 592 Special Topics in Geography Credits: 3 (0-0-3)
Course Description: Recent papers from the literature will be used to foster discussion among participants.
Prerequisite: None.
Registration Information: Graduate standing.
Grade Mode: Traditional.
Special Course Fee: No.

Major in Anthropology

The mission of the Department of Anthropology and Geography is to:

1) offer and maintain instructional programs that provide a comprehensive overview and analyses of people and their cultures, both past and present;

2) conduct research in order to advance and expand knowledge of the fields of anthropology and geography;

3) participate actively in programs of interdisciplinary research.

The Department of Anthropology and Geography houses a faculty of cultural anthropologists, archaeologists, biological anthropologists, and geographers whose scholarship spans the breadth of the human experience. The program prepares undergraduate students to describe, analyze, and interpret the human condition. An examination of the social, environmental, and evolutionary contexts in which the human species is embedded defines most course work in the discipline. The program is integrative, drawing from geography, biology, the humanities, and other social and natural sciences. Geography figures prominently in our program and provides an important spatial lens through which human groups are examined over time. Four programmatic areas define faculty research and scholarship with which students can engage: humans and the environment, international development and globalization, health and well-being, and professional methods and techniques. In the education of undergraduates, the department values and promotes experiential training, primary research as well as public engagement and education.

The research endeavors of the anthropology faculty are trans-disciplinary and international. They are interested in diverse topics including but not limited to contemporary culture, ethnicity, linguistics, comparative religion, virtual worlds, subsistence patterns, archaeology, human ecology, human anatomy, human evolution, biogeography, land cover/land use patterns, and the behavior of non-human primates.

Anthropology majors follow a liberal arts curriculum that provides a broad education with an emphasis on learning how to learn. The department has ten research and teaching laboratories and three summer field schools; the Ethnographic Field School, the Archaeology Field School, and the Paleontology Field School.

Undergraduate students can pursue a general anthropology degree focused on an appreciation human diversity, past and present, from a broad and holistic perspective. Students can also declare a concentration within the program. Declaring a concentration allows for a focused course of study, specializing in the particular subfield of interest. Within each concentration (Archaeology, Biological Anthropology, and Cultural Anthropology), specific categories of classes guide students in learning the major theories, methods, and applications related to the modern practice of our discipline. Along with our offerings of world class field schools, course work in archaeological, biological, and ethnographic methods and geographical techniques are encouraged in order to further gain experience and perspective. Upon graduation, students are prepared for a diverse array of jobs or advanced training in graduate school. Students come away with a respect and appreciation for the diversity of human existence.

Learning Outcomes

Students will:

- Employ anthropological theory and qualitative/quantitative research methods to describe and analyze human biological and cultural variation over time and across space.
- Describe and evaluate the inter-relationships between environments, health and well-being, and human cultural and biological evolution.
- Synthesize anthropological theory, methods, and data to formulate arguments both orally and in written format.
- Articulate anthropology to non-specialists and explain anthropological concepts across subfields and/or with other social sciences and humanities disciplines.
- Transfer knowledge gained in anthropology program to a career trajectory after graduation.

Potential Occupations

Anthropology, like many majors in the liberal arts, provides students with a broad academic background suitable for a variety of jobs in the public and private sectors. Anthropology majors are trained to think independently and critically, communicate effectively, and function in a multicultural world. Employers appreciate liberal arts majors for their multiple skills and their ability to adapt to a variety of tasks and work environments. Participating in internships and cooperative education opportunities is highly recommended to enhance students' practical training and development. Careers for graduates are available in international development, health care, education, business, natural resource management, and government. Graduates who go on for advanced studies can pursue careers in anthropology or attain advanced positions with the possibility of rising to top professional levels.

Some career opportunities for Anthropology graduates include, but are not limited to: museum curator/researcher, genealogist, international relief representative, salvage archaeologist, collections assistant, resource specialist, classical or historical anthropologist, cultural affairs officer, diplomatic service representative, immigration or foreign service officer, linguist, educational television researcher, forensic osteologist, biographical writer, scientific/technical writer, reporter, ethnographic photographer, anthropological linguist, rural development worker, ethnic groups' special concerns advocate, intercultural educator, medical anthropologist, grant writer, psychological anthropologist, international development administrator, public relations representative, public opinion pollster, sales/marketing representative, consultant for cross-cultural relations, personnel worker, geographic information systems specialist.

Concentrations

- Archaeology Concentration
- Biological Anthropology Concentration
- Cultural Anthropology Concentration

Requirements

Effective Fall 2019

Freshman

		AUCC	Credits
ANTH 100	Introductory Cultural Anthropology (GT-SS3)	3C	3
ANTH 101	Practicing Anthropology		1
ANTH 120	Human Origins and Variation (GT-SC2)	3A	3
ANTH 121	Human Origins and Variation Laboratory (GT-SC1)	3A	1
ANTH 140	Introduction to Prehistory (GT-HI1)	3D	3
CO 150	College Composition (GT-CO2)	1A	3
Quantitative Reasoning		1B	3
Electives			13
	Total Credits		30

Sophomore

GR 100	Introduction to Geography (GT-SS2)	3C	3
Arts and Humanities		3B	6
Biological and Physical Sciences		3A	3
Diversity and Global Awareness		3E	3
Anthropology electives (ANTH subject code) not taken in another category			3
Electives			12
	Total Credits		30

Junior

ANTH 400/GR 400	History of Theory-Anthropology and Geography	4B	3
Complete a minimum of 3 credits in archaeology not taken in another category:			3
ANTH 350	Archaeology of North America		
ANTH 352	Geoarchaeology		
ANTH 353	Archaeology of Rock Art		
ANTH 358	Archaeologies of Graffiti		
ANTH 359	Colorado Prehistory		
ANTH 360	Archaeological Investigation		
ANTH 420	Digital Digging–Geophysics in Archaeology		
ANTH 451	Andean Archaeology and Ethnohistory	4A	
ANTH 452	Archaeology of Mesoamerica	4A	
ANTH 453	Impacts on Ancient Environments	4A	
ANTH 454	Anthropological Perspectives on Food		
ANTH 455	Great Plains Archaeology	4A	
ANTH 456	Archaeology and the Public	4A	
ANTH 457	Lithic Technology		
ANTH 458	Archaeology and Cultural Resource Management		
ANTH 459	Mediterranean Archaeology		
ANTH 460	Field Class in Archaeology		
ANTH 461	Anthropological Report Preparation	4A	
ANTH 462	Anthropology Curation and Exhibition Methods		
ANTH 465	Zooarchaeology		

ANTH 478/HIST 478	Heritage Resource Management		
ANTH 492A	Seminar: Archaeology		
Complete a minimum of 3 credits in biological anthropology not taken in another category:			3
ANTH 274	Human Diversity		
ANTH 275/SOC 275	Introduction to Forensic Anthropology		
ANTH 330	Human Ecology	4A	
ANTH 365	Quantifying Anthropology		
ANTH 370	Primates		
ANTH 371	Growing Up Primate		
ANTH 372	Human Osteology		
ANTH 373	Human Evolution	4A	
ANTH 374	Human Biological Variation	4A	
ANTH 375	Evolution of Primate Behavior		
ANTH 376	Evolution of Human Adaptation	4A	
ANTH 377	Anthropology Perspectives-Evolution, Society		
ANTH 378	Bipedal Apes		
ANTH 379	Evolutionary Medicine and Human Health		
ANTH 465	Zooarchaeology		
ANTH 470	Paleontology Field School		
ANTH 472	Human Biology	4A	
ANTH 473	The Neandertals	4A	
ANTH 474	Human Skeleton Analysis		
ANTH 475	Methods of Analysis in Paleoanthropology		
ANTH 492B	Seminar: Biological Anthropology		
Complete a minimum of 3 credits in cultural anthropology not taken in another category:			3
ANTH 225	Anthropology of the Arts		
ANTH 232/MU 232	Soundscapes-Music as Human Practice	3C	
ANTH 310	Peoples and Cultures of Africa		
ANTH 312	Modern Indian Culture and Society		
ANTH 313	Modernization and Development		
ANTH 314	Southeast Asian Cultures and Societies	4A	
ANTH 315	Global Mobilities—The African Diaspora		
ANTH 317	Anthropology of Human Rights		
ANTH 322	The Anthropology of Religion	4A	
ANTH 330	Human Ecology	4A	
ANTH 333	Anthropology of Sex and Reproduction		
ANTH 334	Narrative Traditions and Social Experience	4A	
ANTH 335	Language and Culture	4A	
ANTH 336	Art and Culture		
ANTH 338	Gender and Anthropology	4A	
ANTH 340	Medical Anthropology	4A	
ANTH 343	Applied Medical Anthropology		
ANTH 401	Psychological Anthropology Laboratory		
ANTH 405	Public Anthropology and Global Challenges		
ANTH 413	Indigenous Peoples Today	4A	
ANTH 414/ETST 414	Development in Indian Country	4A	
ANTH 416	Gender, Culture, and Health		
ANTH 417	Indigenous Environmental Stewardship		
ANTH 423	Cultural Psychiatry	4A	
ANTH 440	Theory in Cultural Anthropology		
ANTH 441	Method in Cultural Anthropology		
ANTH 442	Ethnographic Field School		

ANTH 444	Cultures of Virtual Worlds–Research Methods	4A	
ANTH 445	Psychological Anthropology	4A	
ANTH 479/IE 479	International Development Theory and Practice	4A	
Complete a minimum of 3 credits in geography (GR subject code) not taken in another category			3
Anthropology electives (ANTH subject code) not taken in another category			9
Advanced Writing		2	3
Electives			3
	Total Credits		30

Senior

Students must take ANTH 493 concurrently with one of the courses listed in the selection below it:			
ANTH 493[1]	Capstone Seminar	4C	1
Select one AUCC 4A course from the following not taken in another category:[1]			3-4
Cultural Anthropology:			
ANTH 314	Southeast Asian Cultures and Societies	4A	
ANTH 322	The Anthropology of Religion	4A	
ANTH 334	Narrative Traditions and Social Experience	4A	
ANTH 335	Language and Culture	4A	
ANTH 338	Gender and Anthropology	4A	
ANTH 340	Medical Anthropology	4A	
ANTH 412	Indians of North America	4A	
ANTH 413	Indigenous Peoples Today	4A	
ANTH 414/ETST 414	Development in Indian Country	4A	
ANTH 415	Indigenous Ecologies and the Modern World	4A	
ANTH 423	Cultural Psychiatry	4A	
ANTH 443	Ethnographic Field Methods	4A	
ANTH 444	Cultures of Virtual Worlds–Research Methods	4A	
ANTH 445	Psychological Anthropology	4A	
ANTH 479/IE 479	International Development Theory and Practice	4A	
Archaeology:			
ANTH 451	Andean Archaeology and Ethnohistory	4A	
ANTH 452	Archaeology of Mesoamerica	4A	
ANTH 453	Impacts on Ancient Environments	4A	
ANTH 455	Great Plains Archaeology	4A	
ANTH 456	Archaeology and the Public	4A	
ANTH 461	Anthropological Report Preparation	4A	
Biological Anthropology:			
ANTH 330	Human Ecology	4A	
ANTH 373	Human Evolution	4A	
ANTH 374	Human Biological Variation	4A	
ANTH 376	Evolution of Human Adaptation	4A	
ANTH 472	Human Biology	4A	
ANTH 473	The Neandertals	4A	
Anthropology electives (ANTH subject code) not taken in another category			9
Electives[2]			16-17
	Total Credits		30
	Program Total Credits:		120

[1] ANTH 493 must be taken concurrently with one of the AUCC 4A anthropology courses listed with ANTH 493 in the senior year. Using Competencies (AUCC 4A) must be taken concurrently with ANTH 493. Courses approved for AUCC category 4A taken in the sophomore, junior, or senior year and not concurrently with ANTH 493 and not included in the approved list in the program will not count toward completion of the 4A requirement for this major. Students taking Senior Honors Thesis (HONR 499, 3 credits) are also required to register for ANTH 493 (1 credit).

[2] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
ANTH 100	Introductory Cultural Anthropology (GT-SS3)	X		3C	3
ANTH 101	Practicing Anthropology	X			1
CO 150	College Composition (GT-CO2)		X	1A	3
Quantitative Reasoning		X		1B	3
Electives					5
	Total Credits				15

Semester 2		Critical	Recommended	AUCC	Credits
ANTH 120	Human Origins and Variation (GT-SC2)	X		3A	3
ANTH 121	Human Origins and Variation Laboratory (GT-SC1)	X		3A	1
ANTH 140	Introduction to Prehistory (GT-HI1)	X		3D	3
Electives					8
AUCC 1B (Quantitative Reasoning) and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		Critical	Recommended	AUCC	Credits
GR 100	Introduction to Geography (GT-SS2)			3C	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
Electives					6
	Total Credits				15

Semester 4		Critical	Recommended	AUCC	Credits
Arts and Humanities				3B	3
Diversity and Global Awareness		X		3E	3
Anthropology elective (ANTH subject code) not taken in another category					3
Electives					6
	Total Credits				15

Junior

Semester 5		Critical	Recommended	AUCC	Credits
Anthropology electives (ANTH subject code) not taken in another category					3
Complete a minimum of 3 credits in archaeology not taken in another category (See List on Concentration Requirements Tab)					3
Complete a minimum of 3 credits in biological anthropology not taken in another category (See List on Concentration Requirements Tab)					3
Advanced Writing				2	3
Elective					3
	Total Credits				15

Semester 6		Critical	Recommended	AUCC	Credits
ANTH 400/ GR 400	History of Theory-Anthropology and Geography			4B	3
Complete a minimum of 3 credits in cultural anthropology not taken in another category (See List on Concentration Requirements Tab)					3
Complete a minimum of 3 credits in geography (GR subject code) not taken in another category					3
Anthropology electives (ANTH subject code) not taken in another category					6
	Total Credits				15

Senior

Semester 7		Critical	Recommended	AUCC	Credits
ANTH 493	Capstone Seminar		X	4C	1
AUCC 4A: Select one course not taken elsewhere from the AUCC 4A List on the Concentration Requirements Tab			X	4A	3-4
Anthropology electives (ANTH subject code) not taken in another category					9
Electives					1-2
	Total Credits				15

Semester 8		Critical	Recommended	AUCC	Credits
Electives		X			15
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Anthropology, Archaeology Concentration

The Archaeology concentration focuses on the Americas, and includes prehistoric and historic archaeology. The faculty members of this sub-discipline have expertise in:

Rocky Mountain and Plains archaeology
Paleo-Indian studies
Hunter-gatherer ecology
Taphonomy
Zooarchaeology
Public archaeology
Andean archaeology
Inca and Spanish empires
Mining communities
Mesoamerican archaeology
Landscape archaeology
Geoarchaeology
Legacies of Resilience Project (LORE-LPG)

Special resources include the Center for Mountain and Plains Archaeology, the MesoAmerican lab, the Center for Archaeogeophysics and Geoarchaeology, and the Cultural Resources section of the Center for the Ecological Study of Military Lands. The archaeology program sponsors an annual field school each summer and houses the CSU Archaeological Repository.

Requirements Effective Fall 2019

Freshman

		AUCC	Credits
ANTH 100	Introductory Cultural Anthropology (GT-SS3)	3C	3
ANTH 101	Practicing Anthropology		1
ANTH 120	Human Origins and Variation (GT-SC2)	3A	3
ANTH 121	Human Origins and Variation Laboratory (GT-SC1)	3A	1
ANTH 140	Introduction to Prehistory (GT-HI1)	3D	3
CO 150	College Composition (GT-CO2)	1A	3
Quantitative Reasoning		1B	3
Electives			12
	Total Credits		29

Sophomore

GEOL 121	Introductory Geology Laboratory (GT-SC1)	3A	1
GR 100	Introduction to Geography (GT-SS2)	3C	3
Select one course from the following:			3
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)	3A	
GEOL 122	The Blue Planet - Geology of Our Environment (GT-SC2)	3A	
GEOL 124	Geology of Natural Resources (GT-SC2)	3A	
Arts and Humanities		3B	6
Diversity and Global Awareness		3E	3
Electives			15
	Total Credits		31

Junior

ANTH 400/GR 400	History of Theory-Anthropology and Geography	4B	3
Select one course from the following:			3
ANTH 365	Quantifying Anthropology		
ECON 235/LB 235	Working With Data		
SOC 210	Quantitative Sociological Analysis		
SOC 314	Sociological Approaches to Quantitative Data		
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
Select a minimum of six credits from the following Archaeological Concepts and Practice courses not taken in another category:			6-8
ANTH 353	Archaeology of Rock Art		
ANTH 453	Impacts on Ancient Environments	4A	
ANTH 454	Anthropological Perspectives on Food		
ANTH 456	Archaeology and the Public	4A	
ANTH 460	Field Class in Archaeology		
ANTH 461	Anthropological Report Preparation	4A	
ANTH 478/HIST 478	Heritage Resource Management		
Select a minimum of six credits from the following Archaeological Methods courses not taken in another category:			6
ANTH 352	Geoarchaeology		
ANTH 360	Archaeological Investigation		
ANTH 372	Human Osteology		
ANTH 420	Digital Digging–Geophysics in Archaeology		
ANTH 457	Lithic Technology		
ANTH 458	Archaeology and Cultural Resource Management		
ANTH 462	Anthropology Curation and Exhibition Methods		
ANTH 465	Zooarchaeology		
Biological Anthropology (see list below)			3-4
Cultural Anthropology (see list below)			3-8
Advanced Writing		2	3
	Total Credits		27-35

Senior

Students must take ANTH 493 concurrently with one of the courses listed in the selection below it:			
ANTH 493[1]	Capstone Seminar	4C	1
Select one of the following AUCC 4A courses not taken in another category:[1]			3
ANTH 451	Andean Archaeology and Ethnohistory	4A	
ANTH 452	Archaeology of Mesoamerica	4A	
ANTH 453	Impacts on Ancient Environments	4A	
ANTH 455	Great Plains Archaeology	4A	
ANTH 456	Archaeology and the Public	4A	
ANTH 461	Anthropological Report Preparation	4A	
Select two of the following Place and Space in Archaeology courses not taken in another category:			6
ANTH 350	Archaeology of North America		
ANTH 358	Archaeologies of Graffiti		
ANTH 359	Colorado Prehistory		
ANTH 451	Andean Archaeology and Ethnohistory	4A	
ANTH 452	Archaeology of Mesoamerica	4A	
ANTH 455	Great Plains Archaeology	4A	
ANTH 459	Mediterranean Archaeology		

ANTH 492A	Seminar: Archaeology	
Electives[2]		15-23
	Total Credits	25-33
	Program Total Credits:	120

Biological Anthropology

Code	Title	Credits
Select a minimum of 3 credits from the following not taken in another category:		
ANTH 274	Human Diversity	3
ANTH 275/SOC 275	Introduction to Forensic Anthropology	3
ANTH 330	Human Ecology	3
ANTH 365	Quantifying Anthropology	3
ANTH 370	Primates	3
ANTH 371	Growing Up Primate	3
ANTH 372	Human Osteology	3
ANTH 373	Human Evolution	3
ANTH 374	Human Biological Variation	3
ANTH 375	Evolution of Primate Behavior	3
ANTH 376	Evolution of Human Adaptation	3
ANTH 377	Anthropology Perspectives-Evolution, Society	3
ANTH 378	Bipedal Apes	3
ANTH 379	Evolutionary Medicine and Human Health	3
ANTH 465	Zooarchaeology	3
ANTH 470	Paleontology Field School	4
ANTH 472	Human Biology	3
ANTH 473	The Neandertals	3
ANTH 474	Human Skeleton Analysis	3
ANTH 475	Methods of Analysis in Paleoanthropology	3
ANTH 492B	Seminar: Biological Anthropology	3

Cultural Anthropology

Code	Title	Credits
Select a minimum of 3 credits from the following not taken in another category:		
ANTH 225	Anthropology of the Arts	3
ANTH 232/MU 232	Soundscapes-Music as Human Practice	3
ANTH 310	Peoples and Cultures of Africa	3
ANTH 312	Modern Indian Culture and Society	3
ANTH 313	Modernization and Development	3
ANTH 314	Southeast Asian Cultures and Societies	3
ANTH 315	Global Mobilities—The African Diaspora	3
ANTH 317	Anthropology of Human Rights	3
ANTH 322	The Anthropology of Religion	3
ANTH 330	Human Ecology	3
ANTH 333	Anthropology of Sex and Reproduction	3
ANTH 334	Narrative Traditions and Social Experience	4
ANTH 335	Language and Culture	3
ANTH 336	Art and Culture	3
ANTH 338	Gender and Anthropology	3
ANTH 340	Medical Anthropology	3
ANTH 343	Applied Medical Anthropology	3
ANTH 401	Psychological Anthropology Laboratory	1
ANTH 405	Public Anthropology and Global Challenges	3

ANTH 412	Indians of North America	3
ANTH 413	Indigenous Peoples Today	3
ANTH 414/ETST 414	Development in Indian Country	3
ANTH 415	Indigenous Ecologies and the Modern World	3
ANTH 416	Gender, Culture, and Health	3
ANTH 417	Indigenous Environmental Stewardship	3
ANTH 423	Cultural Psychiatry	3
ANTH 440	Theory in Cultural Anthropology	3
ANTH 441	Method in Cultural Anthropology	3
ANTH 442	Ethnographic Field School	3-8
ANTH 443	Ethnographic Field Methods	3
ANTH 444	Cultures of Virtual Worlds–Research Methods	3
ANTH 445	Psychological Anthropology	3
ANTH 479/IE 479	International Development Theory and Practice	3

[1] ANTH 493 must be taken concurrently with one of the AUCC 4A cultural anthropology courses listed with ANTH 493 in the senior year. Using Competencies (AUCC 4A) must be taken concurrently with ANTH 493. Courses approved for AUCC category 4A taken in the sophomore, junior, or senior year and not concurrently with ANTH 493 and not included in the approved list in the program will not count toward completion of the 4A requirement for this major. Students taking Senior Honors Thesis (HONR 499, 3 credits) also are required to register for ANTH 493 (1 credit).

[2] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300 to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
ANTH 100	Introductory Cultural Anthropology (GT-SS3)	X		3C	3
ANTH 101	Practicing Anthropology				1
CO 150	College Composition (GT-CO2)		X	1A	3
Quantitative Reasoning			X	1B	3
Elective					3
	Total Credits				13
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
ANTH 120	Human Origins and Variation (GT-SC2)	X		3A	3
ANTH 121	Human Origins and Variation Laboratory (GT-SC1)	X		3A	1
ANTH 140	Introduction to Prehistory (GT-HI1)	X		3D	3
Electives					9
AUCC 1B (Quantitative Reasoning) and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
GEOL 121	Introductory Geology Laboratory (GT-SC1)			3A	1
GR 100	Introduction to Geography (GT-SS2)			3C	3
Select one course from the following:					3
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)			3A	
GEOL 122	The Blue Planet - Geology of Our Environment (GT-SC2)			3A	
GEOL 124	Geology of Natural Resources (GT-SC2)			3A	
Arts and Humanities				3B	3
Electives					6
	Total Credits				16

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Arts and Humanities				3B	3
Diversity and Global Awareness		X		3E	3
Electives					9
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
ANTH 365	Quantifying Anthropology				
ECON 235/ LB 235	Working With Data				
SOC 210	Quantitative Sociological Analysis				
SOC 314	Sociological Approaches to Quantitative Data				
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
Select a minimum of six credits from the Archaeological Concepts and Practice courses (See List on Concentration Requirements Tab)					6-8
Select a minimum of six credits from the Archaeological Methods courses not taken in another category (See List on Concentration Requirements Tab)					6
	Total Credits				15-17
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
ANTH 400/ GR 400	History of Theory-Anthropology and Geography	X		4B	3
Select one Biological Anthropology course not taken in another category (See List on Concentration Requirements Tab)					3-4
Select one Cultural Anthropology course not taken in another category (See List on Concentration Requirements Tab)					3-8
Advanced Writing				2	3
	Total Credits				12-18
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Electives					12-15
	Total Credits				12-15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
ANTH 493	Capstone Seminar	X		4C	1
AUCC 4A: Select one course not taken elsewhere from the AUCC 4A List on the Concentration Requirements Tab		X		4A	3
Select two Place and Space in Archaeology courses not taken in another category (See List on Concentration Requirements Tab)		X			6
Electives		X			3-8
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				13-18
	Program Total Credits:				120

Major in Anthropology, Biological Anthropology Concentration

Over the past half century, Biological Anthropology has undergone tremendous change from a discipline that was defined by a descriptive, typological approach to human morphology (the study of shape) to one that includes both experimental and comparative analyses in a population-based framework.

Biological anthropologists continue to cross traditional disciplinary boundaries and interact with both the physical and natural sciences including biology, anatomy, genetics, chemistry, biometry, and endocrinology as well as the social sciences.

The expertise of existing faculty in Biological Anthropology at CSU includes:

Human skeletal biology
Forensic anthropology
Evolutionary theory

Neanderthal paleobiology and paleobiogeography
Dental anthropology
Early hominin feeding ecology
Taphonomy
Plio-Pleistocene Africa
Pleistocene Asia
Primate origins, biology, and locomotion

Two broad themes exist within biological anthropology. The first emphasizes evolutionary theory and morphological transformations, and the second is concerned with adaptations that are the product of the interaction between human biology and culture. Current faculty research addresses both of these themes.

Special resources include the Bone Lab, the Zooarchaeology Lab, the Human Osteology Lab, the 3-D Imaging and Analysis lab, and the Primate Origins lab. The biological anthropology program sponsors an annual paleontology field school each summer in Wyoming. Existing faculty also have geographic foci significant to their research. Research areas include Uzbekistan, Kazakhstan, Croatia, Kenya, and Tanzania.

Requirements
Effective Fall 2019

Freshman

		AUCC	Credits
ANTH 100	Introductory Cultural Anthropology (GT-SS3)	3C	3
ANTH 101	Practicing Anthropology		1
ANTH 120	Human Origins and Variation (GT-SC2)	3A	3
ANTH 121	Human Origins and Variation Laboratory (GT-SC1)	3A	1
ANTH 140	Introduction to Prehistory (GT-HI1)	3D	3
CO 150	College Composition (GT-CO2)	1A	3
Quantitative Reasoning		1B	3
Electives			13
	Total Credits		30

Sophomore

ANTH 274	Human Diversity		3
GR 100	Introduction to Geography (GT-SS2)	3C	3
Select one statistics course from the following:			3
ANTH 365	Quantifying Anthropology		
ECON 235/LB 235	Working With Data		
SOC 210	Quantitative Sociological Analysis		
SOC 314	Sociological Approaches to Quantitative Data		
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
STAT 311	Statistics for Behavioral Sciences I		
Arts and Humanities		3B	6
Biological and Physical Sciences		3A	3
Diversity and Global Awareness		3E	3
Electives			9
	Total Credits		30

Junior

ANTH 400/GR 400	History of Theory-Anthropology and Geography	4B	3
Complete a minimum of 3 credits in archaeology from the following not taken in another category:			3
ANTH 350	Archaeology of North America		
ANTH 352	Geoarchaeology		
ANTH 353	Archaeology of Rock Art		
ANTH 358	Archaeologies of Graffiti		
ANTH 359	Colorado Prehistory		
ANTH 360	Archaeological Investigation		
ANTH 420	Digital Digging–Geophysics in Archaeology		
ANTH 451	Andean Archaeology and Ethnohistory		

ANTH 452	Archaeology of Mesoamerica		
ANTH 453	Impacts on Ancient Environments		
ANTH 454	Anthropological Perspectives on Food		
ANTH 455	Great Plains Archaeology		
ANTH 456	Archaeology and the Public		
ANTH 457	Lithic Technology		
ANTH 458	Archaeology and Cultural Resource Management		
ANTH 459	Mediterranean Archaeology		
ANTH 460	Field Class in Archaeology		
ANTH 461	Anthropological Report Preparation		
ANTH 462	Anthropology Curation and Exhibition Methods		
ANTH 465	Zooarchaeology		
ANTH 478/HIST 478	Heritage Resource Management		
ANTH 492A	Seminar: Archaeology		
Complete a minimum of 3 credits in cultural anthropology from the following not taken in another category:			3
ANTH 225	Anthropology of the Arts		
ANTH 232/MU 232	Soundscapes-Music as Human Practice	3C	
ANTH 310	Peoples and Cultures of Africa		
ANTH 312	Modern Indian Culture and Society		
ANTH 313	Modernization and Development		
ANTH 314	Southeast Asian Cultures and Societies		
ANTH 315	Global Mobilities—The African Diaspora		
ANTH 317	Anthropology of Human Rights		
ANTH 322	The Anthropology of Religion		
ANTH 330	Human Ecology	4A	
ANTH 333	Anthropology of Sex and Reproduction		
ANTH 334	Narrative Traditions and Social Experience		
ANTH 335	Language and Culture		
ANTH 336	Art and Culture		
ANTH 338	Gender and Anthropology		
ANTH 340	Medical Anthropology		
ANTH 343	Applied Medical Anthropology		
ANTH 401	Psychological Anthropology Laboratory		
ANTH 405	Public Anthropology and Global Challenges		
ANTH 412	Indians of North America		
ANTH 413	Indigenous Peoples Today		
ANTH 414/ETST 414	Development in Indian Country		
ANTH 415	Indigenous Ecologies and the Modern World		
ANTH 416	Gender, Culture, and Health		
ANTH 417	Indigenous Environmental Stewardship		
ANTH 423	Cultural Psychiatry		
ANTH 440	Theory in Cultural Anthropology		
ANTH 441	Method in Cultural Anthropology		
ANTH 442	Ethnographic Field School		
ANTH 443	Ethnographic Field Methods		
ANTH 444	Cultures of Virtual Worlds—Research Methods		
ANTH 445	Psychological Anthropology		
ANTH 479/IE 479	International Development Theory and Practice		
Complete a minimum of 6 credits in biological anthropology electives from the following not taken in another category:			6
ANTH 275/SOC 275	Introduction to Forensic Anthropology		

ANTH 330	Human Ecology	4A	
ANTH 365	Quantifying Anthropology		
ANTH 370	Primates		
ANTH 371	Growing Up Primate		
ANTH 372	Human Osteology		
ANTH 373	Human Evolution	4A	
ANTH 374	Human Biological Variation	4A	
ANTH 375	Evolution of Primate Behavior		
ANTH 376	Evolution of Human Adaptation	4A	
ANTH 377	Anthropology Perspectives-Evolution, Society		
ANTH 378	Bipedal Apes		
ANTH 379	Evolutionary Medicine and Human Health		
ANTH 465	Zooarchaeology		
ANTH 470	Paleontology Field School		
ANTH 472	Human Biology	4A	
ANTH 473	The Neandertals	4A	
ANTH 474	Human Skeleton Analysis		
ANTH 475	Methods of Analysis in Paleoanthropology		
ANTH 492B	Seminar: Biological Anthropology		
Complete a minimum of 3 credits in geography (GR subject code) not taken in another category			3
Advanced Writing		2	3
Electives			9
	Total Credits		30

Senior

Students must take ANTH 493 concurrently with one of the courses listed in the selection below it:			
ANTH 493[1]	Capstone Seminar	4C	1
Select one AUCC 4A biological anthropology course from the following not taken in another semester or category:[1]			3
ANTH 330	Human Ecology	4A	
ANTH 373	Human Evolution	4A	
ANTH 374	Human Biological Variation	4A	
ANTH 376	Evolution of Human Adaptation	4A	
ANTH 472	Human Biology	4A	
ANTH 473	The Neandertals	4A	
Select 12 credits from one of the following options not taken in another category:			12
General Biological Anthropology Option			
ANTH 275/SOC 275	Introduction to Forensic Anthropology		
ANTH 330	Human Ecology	4A	
ANTH 370	Primates		
ANTH 371	Growing Up Primate		
ANTH 372	Human Osteology		
ANTH 373	Human Evolution	4A	
ANTH 374	Human Biological Variation	4A	
ANTH 375	Evolution of Primate Behavior		
ANTH 376	Evolution of Human Adaptation	4A	
ANTH 377	Anthropology Perspectives-Evolution, Society		
ANTH 378	Bipedal Apes		
ANTH 379	Evolutionary Medicine and Human Health		
ANTH 465	Zooarchaeology		
ANTH 470	Paleontology Field School		
ANTH 472	Human Biology	4A	

ANTH 473	The Neandertals	4A
ANTH 474	Human Skeleton Analysis	
ANTH 475	Methods of Analysis in Paleoanthropology	
ANTH 492B	Seminar: Biological Anthropology	
Forensic Anthropology Option – complete all courses below		
ANTH 275/SOC 275	Introduction to Forensic Anthropology	
ANTH 372	Human Osteology	
ANTH 465	Zooarchaeology	
ANTH 474	Human Skeleton Analysis	
Electives[2]		14
	Total Credits	30
	Program Total Credits:	120

1 Capstone topic must focus on biological anthropology. ANTH 493 must be taken concurrently with one of the AUCC 4A biological anthropology courses listed with ANTH 493 in the senior year. Using Competencies (AUCC 4A) must be taken concurrently with ANTH 493. Courses approved for AUCC category 4A taken in the sophomore, junior, or senior year and not concurrently with ANTH 493 and not included in the approved list in the program will not count toward completion of the 4A requirement for this major. Students taking Senior Honors Thesis (HONR 499, 3 credits) are also required to register for ANTH 493 (1 credit).

2 Select enough elective credits to bring program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
ANTH 100	Introductory Cultural Anthropology (GT-SS3)	X		3C	3
ANTH 101	Practicing Anthropology	X			1
CO 150	College Composition (GT-CO2)		X	1A	3
Quantitative Reasoning			X	1B	3
Electives			X		5
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
ANTH 120	Human Origins and Variation (GT-SC2)	X		3A	3
ANTH 121	Human Origins and Variation Laboratory (GT-SC1)	X		3A	1
ANTH 140	Introduction to Prehistory (GT-HI1)	X		3D	3
Electives					8
AUCC 1B (Quantitative Reasoning) and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ANTH 274	Human Diversity	X			3
GR 100	Introduction to Geography (GT-SS2)			3C	3
Arts and Humanities				3B	6
Biological and Physical Sciences		X			3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one of the following statistics courses (see list on concentration requirements tab)					3
Diversity and Global Awareness		X		3E	3
Electives					9
	Total Credits				15

Junior

Semester 5		Critical	Recommended	AUCC	Credits
Complete a minimum of 3 credits in archaeology not taken in another category (See List on Concentration Requirements Tab)					3
Complete a minimum of 6 credits in biological anthropology not taken in another category (See List on Concentration Requirements Tab)					6
Advanced Writing				2	3
Elective					3
	Total Credits				15

Semester 6		Critical	Recommended	AUCC	Credits
ANTH 400/ GR 400	History of Theory-Anthropology and Geography	X		4B	3
Complete a minimum of 3 credits in cultural anthropology not taken in another category (See List on Concentration Requirements Tab)					3
Complete a minimum of 3 credits in geography (GR subject code) not taken in another category					3
Electives					6
	Total Credits				15

Senior

Semester 7		Critical	Recommended	AUCC	Credits
ANTH 493	Capstone Seminar		X	4C	1
AUCC 4A: Select one biological anthropology course not taken elsewhere from the AUCC 4A List on the Concentration Requirements Tab			X	4A	3
Select 6 credits from one of the available options (See List on Concentration Requirements Tab)					6
Elective					5
	Total Credits				15

Semester 8		Critical	Recommended	AUCC	Credits
Select 6 credits from one of the available options (See List on Concentration Requirements Tab)		X			6
Electives		X			9
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Anthropology, Cultural Anthropology Concentration

The Cultural Anthropology concentration focuses on contemporary experiences of culturally distinct communities encountering a rapidly globalizing political economy. Students are provided with robust training in mixed methods, community-based approaches, and applied anthropology. Topically, faculty investigate issues related to the transformation of individual experience and community relations within the context of economic development, governmental and nongovernmental policy, and environmental change. Increasingly, faculty seek to understand the way subjective and material well-being are impacted by the rapidly changing contexts of modernity. Topics of research interest include:

Human-environment interactions
Community and economic development
Health and well-being
Cultural psychiatry
Disasters and resilience
Gender
Culture continuity and change

The faculty are passionate about teaching, and they strive to bring excitement and relevance to the classroom by infusing it with their practical field experiences. Cultural faculty conduct their research in India, Southeast Asia, Central Asia, Africa, the Caribbean, New Orleans, Native North America, and in virtual reality. Students concentrating in Cultural Anthropology explore issues of place and space, cultural theory, cultural content and methods.

Requirements
Effective Fall 2019

Freshman

		AUCC	Credits
ANTH 100	Introductory Cultural Anthropology (GT-SS3)	3C	3
ANTH 101	Practicing Anthropology		1
ANTH 120	Human Origins and Variation (GT-SC2)	3A	3
ANTH 121	Human Origins and Variation Laboratory (GT-SC1)	3A	1
ANTH 140	Introduction to Prehistory (GT-HI1)	3D	3
CO 150	College Composition (GT-CO2)	1A	3
Quantitative Reasoning		1B	3
Electives			13
	Total Credits		30

Sophomore

ANTH 200	Cultures and the Global System (GT-SS3)	3E	3
GR 100	Introduction to Geography (GT-SS2)	3C	3
Complete a minimum of 3 credits in Cultural Anthropology Theory from the following not taken in another category:			3
ANTH 322	The Anthropology of Religion	4A	
ANTH 338	Gender and Anthropology		
ANTH 340	Medical Anthropology		
ANTH 440	Theory in Cultural Anthropology		
ANTH 445	Psychological Anthropology	4A	
Select one statistics course from the following:			3
ANTH 365	Quantifying Anthropology		
ECON 235/LB 235	Working With Data		
SOC 210	Quantitative Sociological Analysis		
SOC 314	Sociological Approaches to Quantitative Data		
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
STAT 311	Statistics for Behavioral Sciences I		
Arts and Humanities		3B	6
Biological and Physical Sciences		3A	3
Electives			9
	Total Credits		30

Junior

Complete a minimum of 3 upper-division credits in geography (GR subject code) not taken from another category			3
ANTH 400/GR 400	History of Theory-Anthropology and Geography	4B	3
Complete a minimum of 3 credits in archaeology from the following not taken in another category:			3
ANTH 350	Archaeology of North America		
ANTH 352	Geoarchaeology		
ANTH 353	Archaeology of Rock Art		
ANTH 358	Archaeologies of Graffiti		
ANTH 359	Colorado Prehistory		
ANTH 360	Archaeological Investigation		
ANTH 420	Digital Digging--Geophysics in Archaeology		
ANTH 451	Andean Archaeology and Ethnohistory		
ANTH 452	Archaeology of Mesoamerica		
ANTH 453	Impacts on Ancient Environments		
ANTH 454	Anthropological Perspectives on Food		

ANTH 455	Great Plains Archaeology		
ANTH 456	Archaeology and the Public		
ANTH 457	Lithic Technology		
ANTH 458	Archaeology and Cultural Resource Management		
ANTH 459	Mediterranean Archaeology		
ANTH 460	Field Class in Archaeology		
ANTH 461	Anthropological Report Preparation		
ANTH 462	Anthropology Curation and Exhibition Methods		
ANTH 465	Zooarchaeology		
ANTH 478/HIST 478	Heritage Resource Management		
ANTH 492A	Seminar: Archaeology		
Complete a minimum of 3 credits in biological anthropology from the following not taken in another category:			3
ANTH 274	Human Diversity		
ANTH 275/SOC 275	Introduction to Forensic Anthropology		
ANTH 330	Human Ecology		
ANTH 365	Quantifying Anthropology		
ANTH 370	Primates		
ANTH 371	Growing Up Primate		
ANTH 372	Human Osteology		
ANTH 373	Human Evolution		
ANTH 374	Human Biological Variation		
ANTH 375	Evolution of Primate Behavior		
ANTH 376	Evolution of Human Adaptation		
ANTH 377	Anthropology Perspectives-Evolution, Society		
ANTH 378	Bipedal Apes		
ANTH 379	Evolutionary Medicine and Human Health		
ANTH 465	Zooarchaeology		
ANTH 470	Paleontology Field School		
ANTH 472	Human Biology		
ANTH 473	The Neandertals		
ANTH 474	Human Skeleton Analysis		
ANTH 475	Methods of Analysis in Paleoanthropology		
ANTH 492B	Seminar: Biological Anthropology		
Complete a minimum of 3 credits in cultural methods from the following not taken in another category:			3
ANTH 401	Psychological Anthropology Laboratory		
ANTH 441	Method in Cultural Anthropology		
ANTH 442	Ethnographic Field School		
ANTH 443	Ethnographic Field Methods	4A	
ANTH 444	Cultures of Virtual Worlds–Research Methods	4A	
ANTH 486[1]	Practicum		
ANTH 496[1]	Group Study		
Complete a minimum of 3 credits in cultural applications from the following not taken in another category:			3
ANTH 401	Psychological Anthropology Laboratory		
ANTH 405	Public Anthropology and Global Challenges		
ANTH 442	Ethnographic Field School		
ANTH 479/IE 479	International Development Theory and Practice	4A	
ANTH 484[1]	Supervised College Teaching		
ANTH 486[1]	Practicum		
ANTH 487[1]	Internship		
Advanced Writing		2	3

Electives			9
	Total Credits		30

Senior

Select a minimum of 9 credits from one of the following options not taken in another category:			9-10
General Cultural Anthropology Option			
ANTH 225	Anthropology of the Arts		
ANTH 232/MU 232	Soundscapes-Music as Human Practice	3C	
ANTH 310	Peoples and Cultures of Africa		
ANTH 312	Modern Indian Culture and Society		
ANTH 313	Modernization and Development		
ANTH 314	Southeast Asian Cultures and Societies	4A	
ANTH 315	Global Mobilities–The African Diaspora		
ANTH 317	Anthropology of Human Rights		
ANTH 322	The Anthropology of Religion	4A	
ANTH 330	Human Ecology		
ANTH 333	Anthropology of Sex and Reproduction		
ANTH 334	Narrative Traditions and Social Experience	4A	
ANTH 335	Language and Culture	4A	
ANTH 336	Art and Culture		
ANTH 338	Gender and Anthropology	4A	
ANTH 340	Medical Anthropology	4A	
ANTH 343	Applied Medical Anthropology		
ANTH 401	Psychological Anthropology Laboratory		
ANTH 405	Public Anthropology and Global Challenges		
ANTH 412	Indians of North America	4A	
ANTH 413	Indigenous Peoples Today	4A	
ANTH 414/ETST 414	Development in Indian Country	4A	
ANTH 415	Indigenous Ecologies and the Modern World	4A	
ANTH 416	Gender, Culture, and Health		
ANTH 417	Indigenous Environmental Stewardship		
ANTH 423	Cultural Psychiatry	4A	
ANTH 440	Theory in Cultural Anthropology		
ANTH 441	Method in Cultural Anthropology		
ANTH 442	Ethnographic Field School		
ANTH 443	Ethnographic Field Methods	4A	
ANTH 444	Cultures of Virtual Worlds–Research Methods	4A	
ANTH 445	Psychological Anthropology	4A	
ANTH 479/IE 479	International Development Theory and Practice	4A	
Art, Performance and Expressive Culture Option (9-10 credits)			
ANTH 225	Anthropology of the Arts		
ANTH 232/MU 232	Soundscapes-Music as Human Practice	3C	
ANTH 322	The Anthropology of Religion	4A	
ANTH 334	Narrative Traditions and Social Experience	4A	
ANTH 335	Language and Culture	4A	
ANTH 358	Archaeologies of Graffiti		
ANTH 444	Cultures of Virtual Worlds–Research Methods	4A	
Environment and Sustainability Option			
Select 6-9 credits from the following:			
ANTH 330	Human Ecology		
ANTH 405	Public Anthropology and Global Challenges		
ANTH 417	Indigenous Environmental Stewardship		

Select 0-3 credits from the following:			
GR 213	Climate Migrants		
GR 320	Cultural Geography		
Globalization and Development Option			
Select 6-9 credits from the following:			
ANTH 310	Peoples and Cultures of Africa		
ANTH 314	Southeast Asian Cultures and Societies	4A	
ANTH 315	Global Mobilities—The African Diaspora		
ANTH 423	Cultural Psychiatry	4A	
ANTH 479/IE 479	International Development Theory and Practice	4A	
Select 0-3 credits from the following:			
ANTH 454	Anthropological Perspectives on Food		
GR 330	Urban Geography		
GR 415	The Geography of Commodities		
Health and Well-Being Option			
ANTH 338	Gender and Anthropology	4A	
ANTH 340	Medical Anthropology	4A	
ANTH 379	Evolutionary Medicine and Human Health		
ANTH 416	Gender, Culture, and Health		
ANTH 423	Cultural Psychiatry	4A	
ANTH 445	Psychological Anthropology	4A	
Students must take ANTH 493 concurrently with one of the courses listed in the selection below it:			
ANTH 493[2]	Capstone Seminar	4C	1
Select one AUCC 4A course from the following not taken in another category:[2]			3-4
ANTH 314	Southeast Asian Cultures and Societies	4A	
ANTH 322	The Anthropology of Religion	4A	
ANTH 334	Narrative Traditions and Social Experience	4A	
ANTH 335	Language and Culture	4A	
ANTH 338	Gender and Anthropology	4A	
ANTH 340	Medical Anthropology	4A	
ANTH 412	Indians of North America	4A	
ANTH 413	Indigenous Peoples Today	4A	
ANTH 414/ETST 414	Development in Indian Country	4A	
ANTH 415	Indigenous Ecologies and the Modern World	4A	
ANTH 423	Cultural Psychiatry	4A	
ANTH 443	Ethnographic Field Methods	4A	
ANTH 444	Cultures of Virtual Worlds—Research Methods	4A	
ANTH 445	Psychological Anthropology	4A	
ANTH 479/IE 479	International Development Theory and Practice	4A	
Electives[3]			15-17
	Total Credits		30
	Program Total Credits:		120

1 Content for courses should be discussed with advisor for credit to count towards category.

2 ANTH 493 must be taken concurrently with one of the AUCC 4A cultural anthropology courses listed with ANTH 493 in the senior year. Using Competencies (AUCC 4A) must be taken concurrently with ANTH 493 Capstone Seminar. Courses approved for AUCC category 4A taken in the sophomore, junior, or senior year and not concurrently with ANTH 493 and not included in the approved list in the program will not count toward completion of the 4A requirement for this major. Students taking Senior Honors Thesis (HONR 499) (3 credits) also are required to register for ANTH 493 (1 credit).

3 Select enough elective credits to bring program total to a minimum of 120 credits, of which at least 42 must be upper division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
ANTH 100	Introductory Cultural Anthropology (GT-SS3)	X		3C	3
ANTH 101	Practicing Anthropology	X			1
CO 150	College Composition (GT-CO2)		X	1A	3
Quantitative Reasoning			X	1B	3
Electives					5
	Total Credits				15

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
ANTH 120	Human Origins and Variation (GT-SC2)	X		3A	3
ANTH 121	Human Origins and Variation Laboratory (GT-SC1)	X		3A	1
ANTH 140	Introduction to Prehistory (GT-HI1)	X		3D	3
Electives					8
AUCC 1B (Quantitative Reasoning) and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ANTH 200	Cultures and the Global System (GT-SS3)	X		3E	3
GR 100	Introduction to Geography (GT-SS2)			3C	3
Complete a minimum of 3 credits in Cultural Anthropology Theory not taken in another category (See List on Concentration Requirements Tab)					3
Arts and Humanities				3B	3
Electives					3
	Total Credits				15

Semester 4	**Critical**	**Recommended**	**AUCC**	**Credits**
Select one of the following statistics courses (See List on Concentration Requirements Tab)				3
Arts and Humanities			3B	3
Biological and Physical Sciences			3A	3
Electives				6
Total Credits				15

Junior

Semester 5	**Critical**	**Recommended**	**AUCC**	**Credits**
Complete a minimum of 3 credits in Archaeology not taken in another category (See List on Concentration Requirements Tab)				3
Complete a minimum of 3 credits in Biological Anthropology not taken in another category (See List on Concentration Requirements Tab)				3
Complete 3 upper-division credits of geography not taken in another category				3
Advanced Writing			2	3
Electives				3
Total Credits				15

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
ANTH 400/ GR 400	History of Theory-Anthropology and Geography	X		4B	3
Complete a minimum of 3 credits in Cultural Methods not taken in another category (See List on Concentration Requirements Tab)					3
Complete a minimum of 3 credits in Cultural Applications not taken in another category (See List on Concentration Requirements Tab)					3
Electives					6
	Total Credits				15

Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Select 9-10 credits from one of the available options (See List on Concentration Requirements Tab)					9-10
Electives					5-6
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
ANTH 493	Capstone Seminar	X		4C	1
AUCC 4A: Select one course not taken elsewhere from the AUCC 4A List on the Concentration Requirements Tab		X		4A	3-4
Electives		X			10-11
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Minor in Anthropology

Anthropology focuses on the evolution of the human condition and provides a cross-cultural view of humanity. The description and explanation of human activities in other societies and during different periods of time provides a sense of perspective for individuals operating within their own culture. A minor may be focused on one or more of the sub-disciplinary divisions such as biology, archaeology, cultural anthropology, or applied anthropology. The minor may also be distributed across the fields, similar to the requirements of the major.

To declare this minor, please visit Clark B 218.

Requirements
Effective Fall 2001

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	AUCC	Credits
Lower Division			
Select one from the following:			3
ANTH 100	Introductory Cultural Anthropology (GT-SS3)	3C	
ANTH 200	Cultures and the Global System (GT-SS3)	3E	
ANTH 120	Human Origins and Variation (GT-SC2)	3A	3
ANTH 121	Human Origins and Variation Laboratory (GT-SC1)	3A	1
ANTH 140	Introduction to Prehistory (GT-HI1)	3D	3
Upper Division			
Any combination of upper-division anthropology courses			12
Program Total Credits:			22

Major in Geography

The Geography major is housed in the Department of Anthropology and Geography. Through coursework and internship opportunities, majors are provided with a broad background in geographic thinking. Understanding dynamic interactions between humans and the environment in an era of rapid global change is emphasized in the major. Critical study of the diverse relationships that exist among space, place, humans, and the built and natural environment are explored to reveal and interpret the spatial and temporal distribution of geographic features and processes.

The Geography curriculum also concentrates specifically on mountain ecosystems, and human-environment interactions. Coursework takes advantage of faculty expertise in these areas of study, some of which are specific to the state of Colorado. Geography faculty use a wide range of research methods, including geographic information systems (GIS), remote sensing, spatial modeling, and spatial statistics to address applied research questions in Colorado, the Rocky Mountains, Patagonia, Southeast Asia, Latin America, Melanesia, and Africa. Undergraduate majors can expect to gain knowledge of and/or participate in faculty research related to:

1. Climate change implications for society and ecosystems
2. Land-use and land-cover change
3. Critical human geography
4. Critical Health geographies

5. Biogeography
6. Livelihood systems
7. Conservation
8. Cultural geography
9. Urban geography
10. Economic geography
11. Political/electoral geography
12. Geography of virtual worlds

The Geography major is built on the core values the Department of Anthropology and Geography promotes. These values emphasize experiential training, primary research as well as public engagement and education.

Learning Outcomes:

Students will demonstrate:

1. Mastery of the unifying themes of human and physical geography, as well as knowledge of the diverse conceptual and methodological approaches present in the discipline of geography.
2. The ability to identify, describe, and interpret spatial patterns and structures.
3. A critical understanding of the relationship between humans and the environment, with a specific focus on mountain systems and local cultures.
4. An ability to present geographic concepts, approaches, methodologies, and applications in written, oral, cartographic, and other visual forms.
5. An understanding of the discipline's relevance to everyday life.
6. An ability to communicate effectively and respectfully, including critical thinking and discussion skills.

Potential Occupations:

Like many other majors in Liberal Arts, the Geography major provides students with a broad academic background suitable for a variety of jobs in the public and private sectors. Geography majors are trained to think independently and critically, communicate effectively, and function in a multicultural world. Careers for graduates vary depending upon your focus in Geography. Geographers often work in international development, Foreign Service, education, conservation/natural resource management, urban and regional planning, data analysis, data management, GIS analyst, marketing, and business. Graduates who go on to advanced studies can pursue academic careers in geography.

Requirements
Effective Fall 2019

Freshman

		AUCC	Credits
ANTH 120	Human Origins and Variation (GT-SC2)	3A	3
ANTH 121	Human Origins and Variation Laboratory (GT-SC1)	3A	1
ANTH 140	Introduction to Prehistory (GT-HI1)	3D	3
ANTH 200	Cultures and the Global System (GT-SS3)	3E	3
CO 150	College Composition (GT-CO2)	1A	3
GR 100	Introduction to Geography (GT-SS2)	3C	3
Arts and Humanities		3B	3
Quantitative Reasoning		1B	3
GR XXX not taken in another category			8
	Total Credits		30

Sophomore

GR 210/ESS 210	Physical Geography		3
GR 220	Mapping, Cartography, and Spatial Thinking		3
Advanced Writing		2	3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	3
Select one from the following:			3
Social and Behavioral Sciences		3C	
Biological and Physical Sciences		3A	
Additional Humanities[1]			3
Additional Natural Sciences[2]			6
Additional Social Sciences[3]			3
	Total Credits		30

Junior

ANTH 400/GR 400	History of Theory-Anthropology and Geography	4B	3

GR 320	Cultural Geography		3
Select one of the following Human Geography courses not taken in another category:			3
GR 213	Climate Migrants		
GR 305	Geography of Global Health		
GR 330	Urban Geography		
GR 331	Geography of Farming Systems		
GR 345	Geography of Hazards		
GR 415	The Geography of Commodities		
GR 440	Political Geography		
Select one of the following Physical Geography courses not taken in another category:			3
GR 303	Mountain Geography		
GR 304/WR 304	Sustainable Watersheds	3A	
GR 348	Biogeography		
GR 410	Climate Change: Science, Policy, Implications		
GR 430[4]	Land Change Science and Remote Sensing		
GR 448	Forest Biogeography and Climate Change		
Select one of the following Geospatial Methods courses:			3-4
GR 311	GIS for Social Scientists		
GR 323/NR 323	Remote Sensing and Image Interpretation		
GR 420	Spatial Analysis with GIS		
Select one of the following Quantitative Methods courses:			3
ANTH 365	Quantifying Anthropology		
GR 315	Quantitative Geographical Methods		
Additional Social Sciences[3]			3
GR XXX			6
Electives			1-3
	Total Credits		28-31

Senior

GR 493	Capstone Seminar	4C	1
Students must take GR 493 concurrently with one of the 4A courses listed in the selection below if not previously taken:			3
GR 303	Mountain Geography	4A	
GR 410	Climate Change: Science, Policy, Implications	4A	
GR 415	The Geography of Commodities	4A	
GR 430	Land Change Science and Remote Sensing	4A	
Additional Humanities[1]			3
Additional Social Sciences[3]			3
Electives[5]			20
	Total Credits		30
	Program Total Credits:		120

1. Additional Humanities: Select a total of 6 credits, which must include two subject codes from the following: ART, D, CO, E, ETST, L***, MU, PHIL, SPCM, TH, WS.
2. Additional Natural Sciences: Select a total of 6 credits, which must include two subject codes from the following: AA, BC, BMS, BZ, CHEM, CS, CT, GEOL, LIFE, MATH, NR, NSCI, PH, SOCR, and STAT.
3. Additional Social Sciences: Select a total of 9 credits, which must include at least two subject codes from the following: ECON, HIST, INST, JTC, POLS, PSY, SOC.
4. GR 431 may also fulfill this requirement, but GR 431 must be taken concurrently with GR 430.
5. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
ANTH 120	Human Origins and Variation (GT-SC2)			3A	3
ANTH 121	Human Origins and Variation Laboratory (GT-SC1)			3A	1
ANTH 200	Cultures and the Global System (GT-SS3)			3E	3
GR 100	Introduction to Geography (GT-SS2)			3C	3
GR XXX not taken in another category					4
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
ANTH 140	Introduction to Prehistory (GT-HI1)			3D	3
CO 150	College Composition (GT-CO2)			1A	3
Arts and Humanities				3B	3
Quantitative Reasoning				1B	3
GR XXX not taken in another category					4
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
GR 210/ESS 210	Physical Geography				3
Additional Natural Sciences (See Requirements Tab)					6
Additional Social Sciences (See Requirements Tab)					3
Advanced Writing				2	3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
GR 220	Mapping, Cartography, and Spatial Thinking				3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
Select one from the following:					3
Biological and Physical Sciences				3A	
Social and Behavioral Sciences				3C	
Additional Humanities (See Requirements Tab)					3
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
ANTH 400/ GR 400	History of Theory-Anthropology and Geography			4B	3
GR 320	Cultural Geography				3
Select one of the following Geospatial Methods courses:					3-4
GR 311	GIS for Social Scientists				
GR 323/ NR 323	Remote Sensing and Image Interpretation				
GR 420	Spatial Analysis with GIS				
Select one of the following Quantitative Methods courses:					3
ANTH 365	Quantifying Anthropology				
GR 315	Quantitative Geographical Methods				
Additional Social Sciences (See Requirements Tab)					3
	Total Credits				15-16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one of the following Human Geography courses not taken in another category:					3
GR 213	Climate Migrants				
GR 305	Geography of Global Health				

GR 330	Urban Geography				
GR 331	Geography of Farming Systems				
GR 345	Geography of Hazards				
GR 415	The Geography of Commodities				
GR 440	Political Geography				
Select one of the following Physical Geography courses not taken in another category:					3
GR 303	Mountain Geography				
GR 304/ WR 304	Sustainable Watersheds			3A	
GR 348	Biogeography				
GR 410	Climate Change: Science, Policy, Implications				
GR 430	Land Change Science and Remote Sensing				
GR 448	Forest Biogeography and Climate Change				
GR XXX					6
Electives					1-3
	Total Credits				13-15

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Additional Social Sciences (See Requirements Tab)					3
Electives					12
	Total Credits				15

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
GR 493	Capstone Seminar	X		4C	1
Students must take GR 493 concurrently with one of the 4A courses listed in the selection below if not previously taken:		X		4A	3
GR 303	Mountain Geography			4A	
GR 410	Climate Change: Science, Policy, Implications			4A	
GR 415	The Geography of Commodities			4A	
GR 430	Land Change Science and Remote Sensing	X		4A	
Additional Humanities (See Requirements Tab)		X			3
Electives		X			8
The benchmark courses for Semester 8 are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Minor in Geography

The minor in Geography examines the critical interactions among space, place, people and the built and natural environment. These perspectives are used to interpret the spatial and temporal distribution of features and processes by applying spatial techniques and information technologies such as Geographic Information Systems (GIS) and remote sensing.

Requirements Effective Fall 2019

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	**Title**	**Credits**
Core Courses		
GR 100	Introduction to Geography (GT-SS2)	3
GR 320	Cultural Geography	3
Select at least one techniques course from the following: [1]		3-4
GR 323/NR 323	Remote Sensing and Image Interpretation	
GR 420	Spatial Analysis with GIS [2]	
NR 322	Introduction to Geographic Information Systems [2]	
Selected Courses		
Select enough credits from the following courses to bring program total to a minimum of 21 credits. At least 8-9 of the credits selected here must be GR and/or ANTH courses: [1]		11-12
ANTH 330	Human Ecology	
ANTH 479/IE 479	International Development Theory and Practice	
ESS 210/GR 210	Physical Geography	

GEOL 454	Geomorphology
GES 192	Global Environmental Sustainability Seminar
GES 470	Applications of Environmental Sustainability
GR 102	Geography of Europe and the Americas (GT-SS2)
GR 213	Climate Migrants
GR 220	Mapping, Cartography, and Spatial Thinking
GR 304/WR 304	Sustainable Watersheds
GR 305	Geography of Global Health
GR 323/NR 323	Remote Sensing and Image Interpretation
GR 330	Urban Geography
GR 345	Geography of Hazards
GR 410	Climate Change: Science, Policy, Implications
GR 415	The Geography of Commodities
GR 420	Spatial Analysis with GIS [2]
GR 430	Land Change Science and Remote Sensing
GR 431	Land Change Science Lab (Must be taken with GR 430.)
GR 440/POLS 440	Political Geography
HIST 355	American Environmental History
NR 322	Introduction to Geographic Information Systems [2]
SOC 320	Population-Natural Resources and Environment
SOC 460	Society and Environment
Program Total Credits:	21

[1] Credit for the techniques course requirement may not double count toward the minor.

[2] Credit is not allowed for both GR 420 and NR 322.

Master of Arts in Anthropology

Plan A

The thesis option consists of a minimum of 30 credits of course work concentrated in anthropological areas relevant to the participant's professional goals. The thesis is the culmination of a research project carried out by the student under the guidance of their advisor and committee. A final examination consists of a defense of the thesis as well as the final production of a thesis document that meets all graduate school and departmental requirements.

Plan B

The non-thesis option is intended for students seeking a broad understanding of a sub-discpline and/or the connections between disciplinary specializations through an exploration of diverse data sets and/or the execution of a number of pilot projects that generate primary data. Plan B will allow students to transition to a Ph.D. program in anthropology or leverage their work into the job market after degree completion. Plan B students are expected to take a more broadly distributed series of courses and to show less specialization than that which characterizes Plan A programs of study.

Requirements for Plan B are a minimum of 36 credits of study. Students must complete a portfolio of work demonstrating both the breadth of their understanding of anthropology and their own area of specialization, selected in consultation with the student's advisor and committee. A final examination consists of a defense of the portfolio.

Requirements Effective Spring 2013

Plan A

The thesis option must consist of a minimum of 30 semester credits of course work concentrated in anthropological areas relevant to the participant's professional goals. The thesis is the culmination of a research project carried out by the student under the guidance of his or her advisor. A final examination consists of a defense of the thesis, as well as other parts of the program of study.

Plan B

The non-thesis option is intended for students seeking development of an understanding of Anthropology which will allow them to move on to a PhD program in Anthropology, or be incorporated in their work. Plan B students are expected to take a more broadly distributed series of courses and to show less specialization than that which characterizes Plan A programs of study.

Requirements for Plan B are a minimum of 36 credits of study. Students must complete a portfolio of work demonstrating both the breadth of their understanding of Anthropology and their own area of specialization, selected in consultation with the student's advisor. A final examination consists of a defense of the portfolio, as well as other parts of the program of study.

Code	Title	Credits
ANTH 500	Development of Anthropological Theory	3
GRAD 544	Ethical Conduct of Research	1
Select one methods course integrated with the student's program of study in consultation with advisor.		3-4
Select at least three credits in a 500- or 600-level anthropology course outside the student's subfield of specialization (archaeology, socio-cultural or biological anthropology).		3
Select at least six credits from departments outside of Anthropology. The courses should be integrated with the student's program of study.		6
Program Total Credits:		16-17

- A minimum of 18 hours of regular course work in Anthropology is required. This excludes independent study.
- A maximum of six credits of ANTH 695 will be allowed towards graduation under the Plan A option. A minimum of 3 credits of ANTH 695 is required toward graduation under the Plan B option.
- A maximum of six credits of ANTH 699 will be allowed towards graduation under Plan A. No credits of ANTH 699 will be allowed toward graduation under Plan B.

Master of Arts in Anthropology, The Anthropology of Health and Well-Being Specialization

The Anthropology of Health and Well-Being Specialization studies the ways that human health and wellness are influenced by past and present sociocultural, environmental, biological, and biocultural forces by drawing from broad and holistic perspectives on human well-being.

Plan A
Effective Summer 2013

Code	Title	Credits
Core Requirements		
ANTH 500	Development of Anthropological Theory	3
GRAD 544	Ethical Conduct of Research	1
Research Methods [1]		3
ANTH 699	Thesis	5
Health-Focused Courses [2,3]		
Select a minimum of 12 credits from the following:		12
ANTH 372	Human Osteology	
ANTH 423	Cultural Psychiatry	
ANTH 444	Cultures of Virtual Worlds–Research Methods	
ANTH 445	Psychological Anthropology	
ANTH 472	Human Biology	
ANTH 520	Women, Health, and Culture	
ANTH 540	Medical Anthropology	
ANTH 545	Global Mental Health--Theory and Method	
ANTH 547	Mind, Medicine, and Culture	
ANTH 570	Contemporary Issues-Biological Anthropology	
ANTH 571	Anthropology and Global Health	
ANTH 572	Human Origins	
ANTH 573	Paleoclimate and Human Evolution	
Supporting Courses [2,3,4]		3
Select a minimum of 3 credits from the following:		
ANTH 438	Approaches to Community-Based Development	
ANTH 449	Community Development from the Ground Up	
ANTH 515	Culture and Environment	
ANTH 521	Gender, Sexuality, and Culture	
ANTH 529	Anthropology and Sustainable Development	
ANTH 530	Human-Environment Interactions	
ANTH 532	The Culture of Disaster	
ANTH 535	Globalization and Culture Change	
ANTH 546	Culture, Mind, and Cognitive Science	
ANTH 679/IE 679	Applications of International Development	
GR 420	Spatial Analysis with GIS	
Outside Courses [2]		
Select a minimum of 6 credits from the following:		6
ERHS 520	Environmental and Occupational Health Issues	
ETST 510	Ethnicity, Race, and Health Disparities in U.S.	
FSHN 508	International Nutrition and World Hunger	
HES 556	Wellness and Health Promotion Concepts	
JTC 630	Health Communication	
PSY 515	Women's Health	
PSY 517/IE 517	Perspectives in Global Health	
Program Total Credits:		33

A minimum of 33 credits are required to complete this program.

1. Select one departmentally approved course in methods with approval of advisor and committee.
2. Courses listed here constitute a partial list. Other courses may be used with approval of advisor and committee. Select courses with approval of advisor and committee.
3. A maximum total of 6 undergraduate credits may be used to fulfill the credits required to complete this specialization under the M.A. Anthropology.
4. Any methods course listed in Core Requirements may be included in Supporting Courses if not taken to fulfill the methods requirement.

Students must complete the minimum number of credits specified in the official program of study as approved by the University Curriculum Committee, and all credit requirements specified in the **Graduate and Professional Bulletin** for their degree.

Plan B
Effective Summer 2013

Code	Title	Credits
Core Requirements		
ANTH 500	Development of Anthropological Theory	3
GRAD 544	Ethical Conduct of Research	1
Research Methods [1]		3
ANTH 695	Independent Study	2
Health-Focused Courses [2,3]		
Select a minimum of 12 credits from the following:		12
ANTH 372	Human Osteology	
ANTH 423	Cultural Psychiatry	
ANTH 444	Cultures of Virtual Worlds–Research Methods	
ANTH 445	Psychological Anthropology	
ANTH 472	Human Biology	
ANTH 520	Women, Health, and Culture	
ANTH 540	Medical Anthropology	
ANTH 545	Global Mental Health--Theory and Method	
ANTH 547	Mind, Medicine, and Culture	
ANTH 570	Contemporary Issues-Biological Anthropology	
ANTH 571	Anthropology and Global Health	
ANTH 572	Human Origins	
ANTH 573	Paleoclimate and Human Evolution	
Supporting Courses [2,3,4]		

Select a minimum of 6 credits from the following:		6
ANTH 438	Approaches to Community-Based Development	
ANTH 449	Community Development from the Ground Up	
ANTH 515	Culture and Environment	
ANTH 521	Gender, Sexuality, and Culture	
ANTH 529	Anthropology and Sustainable Development	
ANTH 530	Human-Environment Interactions	
ANTH 532	The Culture of Disaster	
ANTH 535	Globalization and Culture Change	
ANTH 546	Culture, Mind, and Cognitive Science	
ANTH 679/IE 679	Applications of International Development	
GR 420	Spatial Analysis with GIS	
Outside Courses [2]		
Select a minimum of 9 credits from the following:		9
ERHS 520	Environmental and Occupational Health Issues	
ETST 510	Ethnicity, Race, and Health Disparities in U.S.	
FSHN 508	International Nutrition and World Hunger	
HES 556	Wellness and Health Promotion Concepts	
JTC 630	Health Communication	
PSY 515	Women's Health	
PSY 517/IE 517	Perspectives in Global Health	
Program Total Credits:		36

A minimum of 36 credits are required to complete this program.

1. Select one course in methods from department list with approval of advisor and committee.
2. Courses listed here constitute a partial list. Other courses may be used with approval of advisor and committee. Select courses with approval of advisor and committee.
3. A maximum total of 6 undergraduate credits may be used to fulfill the requirements of this specialization under the M.A. Anthropology.
4. Any methods course listed in Core Requirements may be included in Supporting Courses if not taken to fulfill the methods requirement.

Students must complete the minimum number of credits specified in the official program of study as approved by the University Curriculum Committee, and all credit requirements specified in the **Graduate and Professional Bulletin** for their degree.

Master of Arts in Anthropology, Humans and the Environment Specialization

The **Humans and the Environment Specialization** investigates how past and present human activities influence the environment, the ways ecological and other processes affect human evolution and the human condition today, and the resilience of social and ecological systems.

Plan A
Effective Summer 2013

Code	Title	Credits
Core Requirements		
ANTH 500	Development of Anthropological Theory	3
GRAD 544	Ethical Conduct of Research	1
Research Methods [1]		3
ANTH 699	Thesis	5
Humans and the Environment Focused Courses [2,3]		
Select a minimum of 12 credits from the following:		12
ANTH 446	New Orleans and the Caribbean	
ANTH 450	Hunter-Gatherer Ecology	
ANTH 453	Impacts on Ancient Environments	
ANTH 515	Culture and Environment	
ANTH 529	Anthropology and Sustainable Development	
ANTH 530	Human-Environment Interactions	
ANTH 532	The Culture of Disaster	
ANTH 554/NR 554	Ecological and Social Agent-based Modeling	
ANTH 573	Paleoclimate and Human Evolution	
GR 410	Climate Change: Science, Policy, Implications	
Supporting Courses [2,3,4]		
Select a minimum of 3 credits from the following:		3
ANTH 359	Colorado Prehistory	
ANTH 414/ ETST 414	Development in Indian Country	
ANTH 455	Great Plains Archaeology	
ANTH 472	Human Biology	
ANTH 478/ HIST 478	Heritage Resource Management	
ANTH 528	Economic Anthropology	
ANTH 572	Human Origins	
ANTH 679/IE 679	Applications of International Development	
GR 420	Spatial Analysis with GIS	
GR 503/NR 503	Remote Sensing and Image Analysis	
Outside Courses [2,3]		
Select a minimum of 6 credits from the following:		6
ECOL 592	Interdisciplinary Seminar in Ecology	
NR 535	Action for Sustainable Behavior	
POLS 462	Globalization, Sustainability, and Justice	
SOC 564	Environmental Justice	
Program Total Credits:		33

A minimum of 33 credits are required to complete this program.

1. Select one course in methods from department list with approval of advisor and committee.
2. Courses listed here constitute a partial list. Other courses may be used with approval of advisor and committee. Select courses with approval of advisor and committee.

[3] A maximum total of 6 undergraduate credits may be used to fulfill the requirements for this specialization under the M.A. Anthropology.

[4] Any methods course listed in Core Requirements may be included in Supporting Courses if not taken to fulfill the methods requirement.

Students must complete the minimum number of credits specified in the official program of study as approved by the University Curriculum Committee, and all credit requirements specified in the **Graduate and Professional Bulletin** for their degree.

Plan B
Effective Summer 2013

Code	Title	Credits
Core Requirements		
ANTH 500	Development of Anthropological Theory	3
GRAD 544	Ethical Conduct of Research	1
Research Methods [1]		3
ANTH 695	Independent Study	2
Humans and the Environment Focused Courses [2,3]		
Select a minimum of 12 credits from the following:		12
ANTH 446	New Orleans and the Caribbean	
ANTH 450	Hunter-Gatherer Ecology	
ANTH 453	Impacts on Ancient Environments	
ANTH 515	Culture and Environment	
ANTH 529	Anthropology and Sustainable Development	
ANTH 530	Human-Environment Interactions	
ANTH 532	The Culture of Disaster	
ANTH 554/NR 554	Ecological and Social Agent-based Modeling	
ANTH 573	Paleoclimate and Human Evolution	
GR 410	Climate Change: Science, Policy, Implications	
Supporting Courses [2,3,4]		
Select a minimum of 6 credits from the following:		6
ANTH 359	Colorado Prehistory	
ANTH 414/ ETST 414	Development in Indian Country	
ANTH 455	Great Plains Archaeology	
ANTH 472	Human Biology	
ANTH 478/ HIST 478	Heritage Resource Management	
ANTH 528	Economic Anthropology	
ANTH 572	Human Origins	
ANTH 679/IE 679	Applications of International Development	
GR 420	Spatial Analysis with GIS	
GR 503/NR 503	Remote Sensing and Image Analysis	
Outside Courses [2,3]		
Select a minimum of 9 credits from the following:		9
ECOL 592	Interdisciplinary Seminar in Ecology	
NR 535	Action for Sustainable Behavior	
POLS 462	Globalization, Sustainability, and Justice	
SOC 564	Environmental Justice	
Program Total Credits:		36

A minimum of 36 credits are required to complete this program.

[1] Select one course in methods from department list with approval of advisor and committee.

[2] Courses listed here constitute a partial list. Other courses may be used with approval of advisor and committee. Select courses with approval of advisor and committee.

[3] A maximum total of 6 undergraduate credits may be used to fulfill the requirements of this specialization under the M.A. Anthropology.

[4] Any methods course listed in Core Requirements may be included in Supporting Courses if not taken to fulfill the methods requirement.

Students must complete the minimum number of credits specified in the official program of study as approved by the University Curriculum Committee, and all credit requirements specified in the **Graduate and Professional Bulletin** for their degree.

Master of Arts in Anthropology, International Development Specialization

The **International Development and Globalization Specialization** examines how local societies respond to global influences and the extent to which cultural meanings, beliefs, institutions, structures of inequality and social relations between genders and among kin are changing as a result. This specialization also explores how economic and community development processes can improve basic aspects of human welfare.

Plan A
Effective Fall 2018

Code	Title	Credits
Core Courses		
ANTH 500	Development of Anthropological Theory	3
ANTH 679/IE 679	Applications of International Development	3
GRAD 544	Ethical Conduct of Research	1
Methods [1]		3
ANTH 699	Thesis	5
Technical Sciences		
Select a minimum of 9 credits: either all from one group, or one each from 3 groups, or a combination of courses totaling a minimum of 9 credits with committee approval. Courses must be outside of social sciences.		9
Group A. Water Resources:		
CIVE 522	Engineering Hydrology	
CIVE 544	Water Resources Planning and Management	
CIVE 578	Infrastructure and Utility Management	
CIVE 622	Risk Analysis of Water/Environmental Systems	
SOC 639	Technology Assessment and Social Forecasting	
WR 510	Watershed Management in Developing Countries	

Group B. Environmental/Water Quality:		
BSPM 508	Environmental Fate of Pesticides	
CIVE 438	Environmental Engr Concepts for Civil Engrs	
CIVE 522	Engineering Hydrology	
CIVE 539	Water and Wastewater Analysis	
CIVE 547/ STAT 547	Statistics for Environmental Monitoring	
SOC 639	Technology Assessment and Social Forecasting	
FW 544	Ecotoxicology	
Group C. Agricultural Development:		
ANEQ 448	Livestock Manure Management and Environment	
AREC 415	International Agricultural Trade	
AREC 572	Social Benefit Cost Analysis	
AREC 660	Development of Rural Resource-Based Economies	
AREC 678	Agricultural and Resource Policy	
BSPM 462/ BZ 462/MIP 462	Parasitology and Vector Biology	
RS 471	Rangeland Planning and Grazing Management	
RS 531	World Grassland Ecogeography	
Group D. Appropriate Technology:		
CM 666/PHIL 666	Science and Ethics	
HIST 463	Science and Technology in Modern History	
Group E. Natural Resource Management:		
FW 576	Wildlife Policy, Administration, and Law	
HORT 466/F 466	Urban and Community Forestry	
NR 515	Natural Resources Policy and Biodiversity	
Group F. Spatial Information Approaches:		
GR 420	Spatial Analysis with GIS	
GR 503/NR 503	Remote Sensing and Image Analysis	
LAND 520	Geographic Information Systems	
Social Sciences		
Select a minimum of 6 credits: either all courses from one group, or one each from 2 groups, totaling a minimum of 6 credits with committee approval. [2]		6
Group A. Cultures, Institutions, and Globalization:		
ANTH 413	Indigenous Peoples Today	
ANTH 422/ SOC 422	Comparative Legal Systems	
ANTH 438	Approaches to Community-Based Development	
ANTH 439	Community Mobilization	
ANTH 447	Gender Equity in Development	
ANTH 448	Development and Empowerment	
ANTH 449	Community Development from the Ground Up	
ANTH 521	Gender, Sexuality, and Culture	
ANTH 529	Anthropology and Sustainable Development	
ANTH 532	The Culture of Disaster	
ANTH 535	Globalization and Culture Change	
ANTH 539	Anthropology of Modernity	
AREC 566/ SOC 566	Contemporary Issues in Developing Countries	
GR 320	Cultural Geography	
HIST 350	United States Foreign Relations Since 1914	
IE 450/SOWK 450	International Social Welfare and Development	
IE 470	Women and Development	
IE 472	Education for Global Peace	
IE 550/PHIL 550	Ethics and International Development	
JTC 412	International Mass Communication	
POLS 431	International Law	
POLS 433	International Organization	
POLS 541	Political Economy of Change and Development	
SOC 661	Gender and Global Society	
SOC 666	Globalization and Socioeconomic Restructuring	
SOC 669	Global Inequality and Change	
SOWK 400	Generalist Practice-Communities	
SOWK 631	Advanced Community Practice	
Group B. Credit, Economy, and Development:		
ANTH 414/ ETST 414	Development in Indian Country	
ANTH 528	Economic Anthropology	
ANTH 551	Historical Archaeology	
ECON 440	Economics of International Trade and Policy	
ECON 442	Economics of International Finance and Policy	
ECON 460	Economic Development	
ECON 515	Financial Institutions-Structure/Regulation	
ECON 640	International Trade Theory	
FIN 475	International Business Finance	
MGT 475	International Business Management	
SOC 663	Sociology of Sustainable Development	
Group C. Health, Culture, and Development:		
ANTH 423	Cultural Psychiatry	
ANTH 472	Human Biology	
ANTH 520	Women, Health, and Culture	
ANTH 532	The Culture of Disaster	
ANTH 540	Medical Anthropology	
ANTH 545	Global Mental Health--Theory and Method	
ANTH 547	Mind, Medicine, and Culture	
ANTH 570	Contemporary Issues-Biological Anthropology	
ANTH 571	Anthropology and Global Health	
ERHS 430	Human Disease and the Environment	
FSHN 508	International Nutrition and World Hunger	
FSHN 661	International Nutrition	
IE 471	Children and Youth in Global Context	
IE 517/PSY 517	Perspectives in Global Health	

Group D. Conservation and Resource Management:	
ANTH 415	Indigenous Ecologies and the Modern World
ANTH 450	Hunter-Gatherer Ecology
ANTH 478/ HIST 478	Heritage Resource Management
ANTH 515	Culture and Environment
ANTH 530	Human-Environment Interactions
AREC 540/ ECON 540	Environmental and Natural Resource Economics
AREC 541/ ECON 541	Environmental Economics
AREC 542	Applied Advanced Water Resource Economics
NRRT 442	Tourism Planning
NRRT 470	Tourism Impacts
NRRT 550	Ecotourism
POLS 670	Politics of Environment and Sustainability
SOC 461	Water, Society, and Environment
Area Studies [2]	
Select a minimum of 3 credits from the following:	3
ANTH 310	Peoples and Cultures of Africa
ANTH 312	Modern Indian Culture and Society
ANTH 314	Southeast Asian Cultures and Societies
ANTH 319	Latin American Peasantries
ANTH 411	Indians of South America
ANTH 412	Indians of North America
ANTH 446	New Orleans and the Caribbean
ANTH 451	Andean Archaeology and Ethnohistory
HIST 414	Revolutions in Latin America
HIST 422	Modern Africa
HIST 423	South African History
HIST 530	Reading Seminar: Africa
HIST 531	Reading Seminar: Latin America
HIST 532	Reading Seminar: Middle East
HIST 533	Reading Seminar: East Asia
HIST 534	Reading Seminar: South Asia
L***	Any upper division (300- to 400-level) or graduate language course [3]
PHIL 455	Islamic Philosophy
POLS 444	Comparative African Politics
POLS 445	Comparative Asian Politics
POLS 446	Politics of South America
POLS 447	Politics in Mexico, Central America, Caribbean
Program Total Credits:	33

A minimum of 33 credits are required to complete this program.

1 Select one course in methods from department list with approval of advisor and committee.

2 At least one course within the Social Sciences group and/or the Area Studies group must be ANTH.

3 Select any upper division (300-level or above) or graduate level language course in consultation with advisor and committee.

Students must complete the minimum number of credits specified in the official program of study as approved by the University Curriculum Committee, and all credit requirements specified in the **Graduate and Professional Bulletin** for their degree.

Plan B
Effective Fall 2018

Code	Title	Credits
Core Courses		
ANTH 500	Development of Anthropological Theory	3
ANTH 695	Independent Study [1]	2
ANTH 679/IE 679	Applications of International Development	3
GRAD 544	Ethical Conduct of Research	1
Methods [2]		3
Technical Sciences		
Select a minimum of 9 credits: all from one group, one each from 3 groups, or a combination, with committee approval. Courses must be outside of social sciences.		9
Group A. Water Resources:		
CIVE 522	Engineering Hydrology	
CIVE 544	Water Resources Planning and Management	
CIVE 578	Infrastructure and Utility Management	
CIVE 622	Risk Analysis of Water/Environmental Systems	
SOC 639	Technology Assessment and Social Forecasting	
WR 510	Watershed Management in Developing Countries	
Group B. Environmental/Water Quality:		
BSPM 508	Environmental Fate of Pesticides	
CIVE 438	Environmental Engr Concepts for Civil Engrs	
CIVE 522	Engineering Hydrology	
CIVE 539	Water and Wastewater Analysis	
CIVE 547/ STAT 547	Statistics for Environmental Monitoring	
FW 544	Ecotoxicology	
SOC 639	Technology Assessment and Social Forecasting	
Group C. Agricultural Development:		
ANEQ 448	Livestock Manure Management and Environment	
AREC 415	International Agricultural Trade	
AREC 572	Social Benefit Cost Analysis	
AREC 660	Development of Rural Resource-Based Economies	
AREC 678	Agricultural and Resource Policy	
BSPM 462/ BZ 462/MIP 462	Parasitology and Vector Biology	
RS 471	Rangeland Planning and Grazing Management	

RS 531	World Grassland Ecogeography
Group D. Appropriate Technology:	
CM 666/PHIL 666	Science and Ethics
HIST 463	Science and Technology in Modern History
Group E. Natural Resource Management:	
FW 576	Wildlife Policy, Administration, and Law [3]
HORT 466/F 466	Urban and Community Forestry
NR 515	Natural Resources Policy and Biodiversity [3]
Group F. Spatial Information Approaches:	
GR 420	Spatial Analysis with GIS
GR 503/NR 503	Remote Sensing and Image Analysis
LAND 520	Geographic Information Systems

Social Science [4,5]

Select a minimum of 9 credits: all from one group, one each from 3 groups, or a combination, with committee approval.		9
Group A. Cultures, Institutions, and Globalization:		
ANTH 413	Indigenous Peoples Today	
ANTH 422/ SOC 422	Comparative Legal Systems	
ANTH 438	Approaches to Community-Based Development	
ANTH 439	Community Mobilization	
ANTH 447	Gender Equity in Development	
ANTH 448	Development and Empowerment	
ANTH 449	Community Development from the Ground Up	
ANTH 521	Gender, Sexuality, and Culture	
ANTH 529	Anthropology and Sustainable Development	
ANTH 532	The Culture of Disaster	
ANTH 535	Globalization and Culture Change	
ANTH 539	Anthropology of Modernity	
AREC 566/ SOC 566	Contemporary Issues in Developing Countries	
GR 320	Cultural Geography	
HIST 350	United States Foreign Relations Since 1914	
IE 450/SOWK 450	International Social Welfare and Development	
IE 470	Women and Development	
IE 550/PHIL 550	Ethics and International Development	
JTC 412	International Mass Communication	
POLS 431	International Law	
POLS 433	International Organization	
POLS 541	Political Economy of Change and Development	
SOC 661	Gender and Global Society	
SOC 666	Globalization and Socioeconomic Restructuring	
SOC 669	Global Inequality and Change	
SOWK 400	Generalist Practice-Communities	
SOWK 631	Advanced Community Practice	
Group B. Credit, Economy, and Development:		
ANTH 414/ ETST 414	Development in Indian Country	
ANTH 528	Economic Anthropology	
ANTH 551	Historical Archaeology	
ECON 440	Economics of International Trade and Policy	
ECON 442	Economics of International Finance and Policy	
ECON 460	Economic Development	
ECON 515	Financial Institutions-Structure/Regulation	
ECON 640	International Trade Theory	
FIN 475	International Business Finance	
MGT 475	International Business Management	
SOC 663	Sociology of Sustainable Development	
Group C. Health, Culture, and Development:		
ANTH 423	Cultural Psychiatry	
ANTH 472	Human Biology	
ANTH 520	Women, Health, and Culture	
ANTH 532	The Culture of Disaster	
ANTH 540	Medical Anthropology	
ANTH 545	Global Mental Health--Theory and Method	
ANTH 547	Mind, Medicine, and Culture	
ANTH 570	Contemporary Issues-Biological Anthropology	
ANTH 571	Anthropology and Global Health	
ERHS 430	Human Disease and the Environment	
FSHN 508	International Nutrition and World Hunger	
FSHN 661	International Nutrition	
IE 471	Children and Youth in Global Context	
IE 517/PSY 517	Perspectives in Global Health	
Group D. Conservation and Resource Management:		
ANTH 415	Indigenous Ecologies and the Modern World	
ANTH 450	Hunter-Gatherer Ecology	
ANTH 478/ HIST 478	Heritage Resource Management	
ANTH 515	Culture and Environment	
ANTH 530	Human-Environment Interactions	
AREC 540/ ECON 540	Environmental and Natural Resource Economics	
AREC 541/ ECON 541	Environmental Economics	
AREC 542	Applied Advanced Water Resource Economics	
NRRT 442	Tourism Planning	
NRRT 470	Tourism Impacts	
NRRT 550	Ecotourism	
POLS 670	Politics of Environment and Sustainability	
SOC 461	Water, Society, and Environment	

Area Studies [4,5]

Select a minimum of 6 credits from the following:		6
ANTH 310	Peoples and Cultures of Africa	
ANTH 312	Modern Indian Culture and Society	
ANTH 314	Southeast Asian Cultures and Societies	
ANTH 319	Latin American Peasantries	

ANTH 411	Indians of South America
ANTH 412	Indians of North America
ANTH 446	New Orleans and the Caribbean
ANTH 451	Andean Archaeology and Ethnohistory
HIST 414	Revolutions in Latin America
HIST 422	Modern Africa
HIST 423	South African History
HIST 530	Reading Seminar: Africa
HIST 531	Reading Seminar: Latin America
HIST 532	Reading Seminar: Middle East
HIST 533	Reading Seminar: East Asia
HIST 534	Reading Seminar: South Asia
L***	Any upper division (300- to 400-level) language course [6]
PHIL 455	Islamic Philosophy
POLS 444	Comparative African Politics
POLS 445	Comparative Asian Politics
POLS 446	Politics of South America
POLS 447	Politics in Mexico, Central America, Caribbean
Program Total Credits:	36

A minimum of 36 credits are required to complete this program.

1 Two credits of independent study are intended to prepare for formal professional presentation of the student's development portfolio at a culmination event in the student's last semester.

2 Select from departmental list.

3 This course is taught by correspondence only.

4 At least two courses within Social Sciences and/or Area Studies must be ANTH.

5 Courses listed here constitute a partial list. Other courses may be used with approval of advisor and committee. See department list for most up-to-date course list.

6 Select any upper division (300-level or above) or graduate level language course in consultation with advisor and committee.

Students must complete the minimum number of credits specified in the official program of study as approved by the University Curriculum Committee, and all credit requirements specified in the **Graduate and Professional Bulletin** for their degree.

Master of Arts in Anthropology, Professional Methods and Techniques Specialization

The Professional Methods and Techniques Specialization develops skills in a wide range of methods and techniques used by professionals in applied anthropology, federal and state natural resource agencies, and other arenas of social, historical, biological and spatial research about humans. These include qualitative research and interview protocols, quantitative analysis, GIS and remote sensing, archaeological field survey, historic archaeological methods, culture and heritage resource management, and paleoanthropological methods.

Plan A
Effective Fall 2017

Code	Title	Credits
Core Requirements		
ANTH 500	Development of Anthropological Theory	3
GRAD 544	Ethical Conduct of Research	1
ANTH 699	Thesis	5
Methods-Focused Courses [1,2]		
Select a minimum of 12 credits from the following:		12
ANTH 372	Human Osteology	
ANTH 441	Method in Cultural Anthropology	
ANTH 442	Ethnographic Field School	
ANTH 444	Cultures of Virtual Worlds–Research Methods	
ANTH 449	Community Development from the Ground Up	
ANTH 456	Archaeology and the Public	
ANTH 457	Lithic Technology	
ANTH 460	Field Class in Archaeology	
ANTH 465	Zooarchaeology	
ANTH 472	Human Biology	
ANTH 475	Methods of Analysis in Paleoanthropology	
ANTH 478/ HIST 478	Heritage Resource Management	
ANTH 541	Seminar in Archaeological Method	
ANTH 543	Foundations of Ethnographic Research	
ANTH 544	From Death to Discovery	
ANTH 545	Global Mental Health--Theory and Method	
ANTH 547	Mind, Medicine, and Culture	
ANTH 551	Historical Archaeology	
ANTH 554/NR 554	Ecological and Social Agent-based Modeling	
ANTH 573	Paleoclimate and Human Evolution	
ANTH 660	Field Archaeology	
ANTH 686	Practicum-Field Archaeology	
GR 420	Spatial Analysis with GIS	
GR 503/NR 503	Remote Sensing and Image Analysis	
Supporting Courses [1,2]		
Select a minimum of 6 credits from the following:		6
ANTH 414/ ETST 414	Development in Indian Country	
ANTH 423	Cultural Psychiatry	
ANTH 438	Approaches to Community-Based Development	
ANTH 440	Theory in Cultural Anthropology	
ANTH 445	Psychological Anthropology	
ANTH 446	New Orleans and the Caribbean	
ANTH 451	Andean Archaeology and Ethnohistory	
ANTH 453	Impacts on Ancient Environments	
ANTH 455	Great Plains Archaeology	
ANTH 473	The Neandertals	
ANTH 515	Culture and Environment	

ANTH 546	Culture, Mind, and Cognitive Science
Outside Courses [1,2]	
Select a minimum of 6 credits from the following:	6
HIST 501	Historical Method: Historiography
HIST 502	Historical Method: Archives
HIST 503	Historical Method: Preservation
HIST 504	Historical Method: Museums
JTC 471	Research for Public Communicators
PHIL 415	Logic and Scientific Method
POLS 621	Qualitative Methods in Political Science
POLS 625	Quantitative Methods of Political Research
SOC 610	Seminar in Methods of Qualitative Analysis
SOC 612	Seminar in Methods of Evaluational Research
SPCM 638	Communication Research Methods
Program Total Credits:	33

A minimum of 33 credits are required to complete this program.

1 Courses listed here constitute a partial list. Other courses may be used with approval of advisor and committee. Select courses with approval of advisor and committee.

2 A maximum total of 6 undergraduate credits may be used to fulfill the requirements of this specialization under the M.A. Anthropology.

Students must complete the minimum number of credits specified in the official program of study as approved by the University Curriculum Committee, and all credit requirements specified in the **Graduate and Professional Bulletin** for their degree.

Plan B
Effective Fall 2017

Code	Title	Credits
Core Requirements		
ANTH 500	Development of Anthropological Theory	3
GRAD 544	Ethical Conduct of Research	1
ANTH 695	Independent Study	2
Methods-Focused Courses [1]		
Select a minimum of 12 credits from the following: [2]		12
ANTH 372	Human Osteology	
ANTH 441	Method in Cultural Anthropology	
ANTH 442	Ethnographic Field School	
ANTH 444	Cultures of Virtual Worlds–Research Methods	
ANTH 449	Community Development from the Ground Up	
ANTH 456	Archaeology and the Public	
ANTH 457	Lithic Technology	
ANTH 460	Field Class in Archaeology	
ANTH 465	Zooarchaeology	
ANTH 472	Human Biology	
ANTH 475	Methods of Analysis in Paleoanthropology	
ANTH 478/ HIST 478	Heritage Resource Management	
ANTH 541	Seminar in Archaeological Method	
ANTH 543	Foundations of Ethnographic Research	
ANTH 544	From Death to Discovery	
ANTH 545	Global Mental Health--Theory and Method	
ANTH 547	Mind, Medicine, and Culture	
ANTH 551	Historical Archaeology	
ANTH 554/NR 554	Ecological and Social Agent-based Modeling	
ANTH 573	Paleoclimate and Human Evolution	
ANTH 660	Field Archaeology	
ANTH 686	Practicum-Field Archaeology	
GR 420	Spatial Analysis with GIS	
GR 503/NR 503	Remote Sensing and Image Analysis	
Supporting Courses [1]		
Select a minimum of 9 credits from the following: [2]		9
ANTH 414/ ETST 414	Development in Indian Country	
ANTH 423	Cultural Psychiatry	
ANTH 438	Approaches to Community-Based Development	
ANTH 439	Community Mobilization	
ANTH 440	Theory in Cultural Anthropology	
ANTH 445	Psychological Anthropology	
ANTH 446	New Orleans and the Caribbean	
ANTH 515	Culture and Environment	
ANTH 546	Culture, Mind, and Cognitive Science	
Outside Courses [1]		
Select a minimum of 9 credits from the following: [2]		9
HIST 501	Historical Method: Historiography	
HIST 502	Historical Method: Archives	
HIST 503	Historical Method: Preservation	
HIST 504	Historical Method: Museums	
JTC 471	Research for Public Communicators	
PHIL 415	Logic and Scientific Method	
POLS 621	Qualitative Methods in Political Science	
POLS 625	Quantitative Methods of Political Research	
SOC 610	Seminar in Methods of Qualitative Analysis	
SOC 612	Seminar in Methods of Evaluational Research	
SPCM 638	Communication Research Methods	
Program Total Credits:		36

A minimum of 36 credits are required to complete this program.

1 Courses listed here constitute a partial list. Other courses may be used with approval of advisor and committee. Select courses with approval of advisor and committee.

2 A maximum total of 6 credits may be used to fulfill the requirements of this specialization under the M.A. Anthropology.

Students must complete the minimum number of credits specified in the official program of study as approved by the University Curriculum Committee, and all credit requirements specified in the **Graduate and Professional Bulletin** for their degree.

Department of Art and Art History

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Associate Professor Suzanne Faris, Chair, Department of Art and Art History
Associate Professor Haley Bates, Graduate Coordinator
Assistant Professor Emily Moore, Undergraduate Coordinator

CSU features a well-rounded curriculum integrating breadth of experience with depth of knowledge. Students develop both creative and critical thinking skills as they experiment with contemporary and traditional art making processes in a very active studio environment. In addition to essential liberal arts coursework, Art majors will be enrolled in studio, art history, or art education classes as they progress through their specific program of study. On-site advisors are available to help students navigate the many options offered by the Department of Art and Art History

Undergraduate Majors

- Major in Art, B.F.A.
  - Art Education Concentration
  - Drawing Concentration
  - Electronic Art Concentration
  - Fibers Concentration
  - Graphic Design Concentration
  - Metalsmithing Concentration
  - Painting Concentration
  - Photo Image Making Concentration
  - Pottery Concentration
  - Printmaking Concentration
  - Sculpture Concentration
- Major in Art, B.A.
  - Art History Concentration
  - Integrated Visual Studies Concentration

Graduate Graduate Programs in Art

The Art Department offers a Master of Fine Arts degree program with specializations in drawing, fibers, graphic design, metalsmithing and jewelry, painting, printmaking, and sculpture. The program requires 60 credits in two full-time academic years. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the department's website (http://art.colostate.edu).

Master's Program

- Master of Fine Arts (M.F.A.)

Courses Art and Art History (ART)

ART 100 Introduction to the Visual Arts (GT-AH1) Credits: 3 (3-0-0)
Course Description: Exploration of the development of visual arts.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Arts & Expression (GT-AH1).

ART 105 Issues and Practices in Art Credit: 1 (1-0-0)
Course Description: Current issues, practices, and resources in the visual arts; integration of unified vocabulary in various art disciplines.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 110 Global Art History I Credits: 3 (3-0-0)
Course Description: Art and architecture of the ancient world.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 111 Global Art History II Credits: 3 (3-0-0)
Course Description: Art and architecture in the era of global connection.
Prerequisite: ART 110.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 120 Foundations--Time and Structure Credits: 3 (0-6-0)
Course Description: Establishes a foundational understanding of digital literacy as part of a creative practice through the development of experimental media artworks in relation to interdisciplinary concepts.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 135 Foundations - Form and Observation Credits: 3 (0-6-0)
Course Description: Foundational understanding of visual literacy as part of a creative practice through the development of two-dimensional artworks exploring form through observational methods in relation to interdisciplinary concepts.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 136 Introduction to Figure Drawing Credits: 3 (0-6-0)
Course Description: Human form as basis for self-expression through various drawing media.
Prerequisite: ART 135.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 160 Foundations - Color and Composition Credits: 3 (0-6-0)
Course Description: Establishes a foundational understanding of color and composition as part of a creative practice through the development of artworks using two-dimensional methods in relation to interdisciplinary concepts.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 170 Foundations - Materials and Space Credits: 3 (0-6-0)
Course Description: Establishes a foundational understanding of materials and space as part of a creative practice through the development of three-dimensional artworks in relation to interdisciplinary concepts.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 200 Media Arts in Context Credits: 3 (3-0-0)
Course Description: History and contemporary practice of media-based arts. Addresses printmaking, graphic design, photography, film, video, computer-generated imagery, digital fabrication, and other cognate disciplines.
Prerequisite: None.
Registration Information: Offered as an online course only.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B.

ART 212 Global Art History III Credits: 3 (3-0-0)
Course Description: Global modern and contemporary art and architecture.
Prerequisite: ART 111.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 230 Photo Image Making I Credits: 3 (0-6-0)
Course Description: Photographic imagery as an art medium; exploration of silver-based (film) materials.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 235 Intermediate Drawing I Credits: 3 (0-6-0)
Course Description: Drawing using models and various still life material.
Prerequisite: ART 136.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 240 Pottery I Credits: 3 (0-6-0)
Course Description: Basic techniques of studio ceramics and wheel throwing; exploration of expressive potential in pottery.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 245 Metalsmithing and Jewelry I Credits: 3 (0-6-0)
Course Description: Basic metal techniques; forming and construction; surface treatment and finishing processes; behavior and mechanical properties of metals.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 250 Fibers I Credits: 3 (0-6-0)
Course Description: Fibers and fabric as expressive media; weaving and basic fiber structures; fabric painting and surface techniques.
Prerequisite: (ART 110 and ART 135) and (ART 160 or ART 170).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 253 Digital Fabrication Credits: 3 (0-6-0)
Course Description: Practical and technical skills within a historical and theoretical context for using computers, in combination with traditional and analog fabrication processes, to shape physical materials and make creative works. Introduces 3D Computer Aided Design (CAD), Computer Aided Machining (CAM), and Computer Numeric Controlled (CNC) Machining including 3D printing, Laser Cutting, and CNC Routing/Milling.
Prerequisite: ART 110 or ART 135 or ART 136 or ART 160 or ART 170.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 255 Introduction to Graphic Design Credits: 3 (0-6-0)
Course Description: Problems emphasizing typography, layout, symbols, illustration, and package design.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Registration Information: 2.55 GPA or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 256 Introduction to Electronic Art Credits: 3 (0-6-0)
Course Description: Introduction to digital media and internet-based design.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 260 Painting I Credits: 3 (0-6-0)
Course Description: Basic oil painting procedures, techniques, and concepts.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 265 Printmaking I-Intaglio and Relief Credits: 3 (0-6-0)
Course Description: Problems in composition utilizing basic techniques and principles of printmaking processes.
Prerequisite: (ART 110 and ART 135) and (ART 160 or ART 170).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 266 History and Practice of Non-Toxic Printmaking Credits: 3 (1-4-0)
Course Description: Brief history of traditional printmaking practices to provide exposure to contemporary non-toxic printmaking practices through a hands-on studio.
Prerequisite: None.
Restriction: .
Registration Information: Must register for lecture and laboratory. Offered as Mixed Face-to-Face only. Credit not allowed for both ART 266 and ART 380A2.
Grade Mode: Traditional.
Special Course Fee: No.

ART 270 Sculpture I Credits: 3 (0-6-0)
Course Description: Introduction to sculptural techniques and concepts.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 295A Independent Study: Painting Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295B Independent Study: Printmaking Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295C Independent Study: Sculpture Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 295D Independent Study: Fibers Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295E Independent Study: Metalsmithing and Jewelry Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 295F Independent Study: Drawing Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295G Independent Study: Graphic Design Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295H Independent Study: Art History Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295I Independent Study: Art Education Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295J Independent Study: Pottery Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295K Independent Study: Photo Image Making Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 310 History of American Art to 1945 Credits: 3 (3-0-0)
Course Description: American art from 17th century to 1945.
Prerequisite: ART 212.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 311 Art of West and Central Africa Credits: 3 (3-0-0)
Course Description: Focuses on the arts of West and Central Africa from prehistory through contemporary visual expressions, and engages with current art historical theoretical approaches and practices in order to gain a nuanced understanding of the arts in these respective regions and their relationship to global art production.
Prerequisite: ART 212.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 312 Pre-Columbian Art of Mesoamerica Credits: 3 (3-0-0)
Course Description: Artistic and architectural traditions of major ancient civilizations in Mesoamerica, including the Olmecs, Maya, Teotihuacanoes, Mixtecs, and Aztecs, from 1200 bce until the sixteenth-century conquest by Spain.
Prerequisite: ART 212.
Grade Mode: Traditional.
Special Course Fee: No.

ART 313 Art of East and Southern Africa Credits: 3 (3-0-0)
Course Description: Arts of southern and East Africa from prehistory through contemporary visual expressions, and engages with current art historical theoretical approaches and practices to gain a nuanced understanding of the arts in these respective regions and their relationship to global art production.
Prerequisite: ART 212.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 314 Women in Art History Credits: 3 (3-0-0)
Course Description: Women as artists in history of art and women's media in art.
Prerequisite: ART 212.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 315 United States Art 1945-1980 Credits: 3 (3-0-0)
Course Description: Visual art in the United States 1945-1980.
Prerequisite: ART 212.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 316 Art of the Pacific Credits: 3 (3-0-0)
Course Description: Arts of Australia, Indonesia, Melanesia, Micronesia, and Polynesia.
Prerequisite: ART 212.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 317 Native North American Art Credits: 3 (3-0-0)
Course Description: Introduction to historic and contemporary art forms of Native North America, emphasizing the cultural and political contexts.
Prerequisite: ART 212.
Registration Information: Written consent of instructor for non-Art majors.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 320 Global Encounters in Art Credits: 3 (3-0-0)
Course Description: Comparative topics in global art.
Prerequisite: ART 212.
Grade Mode: Traditional.
Special Course Fee: No.

ART 321A Travel Abroad: Studio Workshop in Italy-Drawing Credits: Var[3-5] (0-0-0)
Course Description: Exploration of studio techniques in Italy.
Prerequisite: ART 135.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 321B Travel Abroad: Studio Workshop in Italy-Photo Image Making Credits: Var[3-5] (0-0-0)
Course Description: Exploration of studio techniques in Italy.
Prerequisite: ART 230.
Registration Information: ART 230 or portfolio review; written consent of instructor.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 321C Travel Abroad: Studio Workshop in Italy-Fibers Credits: Var[3-5] (0-0-0)
Course Description: Exploration of studio techniques in Italy.
Prerequisite: ART 250.
Registration Information: ART 250 or portfolio review; written consent of instructor.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 321D Travel Abroad: Studio Workshop in Italy-Sculpture Credits: Var[3-5] (0-0-0)
Course Description: Exploration of studio techniques in Italy.
Prerequisite: ART 270.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 325 Concepts in Art Education Credits: 3 (3-0-0)
Course Description: Artistic learning in children, adolescents, adults, and special populations.
Prerequisite: EDUC 275.
Registration Information: Admission to Teacher Licensure Program required.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 326 Art Education Studio Credits: 4 (0-8-0)
Course Description: Art areas required for teacher licensure as indicated by individual student needs.
Prerequisite: None.
Registration Information: Junior or senior standing; admission to Teacher Licensure Program required.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 327 Issues in Art Education and the Public Credits: 3 (3-0-0)
Course Description: Introduce students to the concepts relating to Art Education in contemporary society.
Prerequisite: None.
Registration Information: Junior standing. This is a partial semester course. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 330 Photo Image Making II Credits: 4 (0-8-0)
Course Description: Studio course designed to develop the growth of photographic expression.
Prerequisite: ART 230.
Registration Information: ART 230 or portfolio review.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 331 Photo Image Making III Credits: 4 (0-8-0)
Course Description: Studio course designed to further growth of concept, materials in photographic expression as an art medium.
Prerequisite: ART 330.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 335 Intermediate Drawing II Credits: 4 (0-8-0)
Course Description: Assigned and independent drawing projects; use of traditional and non-traditional materials.
Prerequisite: ART 235.
Registration Information: May be taken 3 times for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 336 Intermediate Drawing III Credits: 4 (0-8-0)
Course Description: Assigned and independent drawing projects; art theory and criticism; readings and written assignments.
Prerequisite: ART 335.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 340 Pottery II Credits: 4 (0-8-0)
Course Description: Studio ceramic and wheel throwing techniques; surface treatment, kiln firing, clay and glaze formulation.
Prerequisite: ART 240.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 341 Pottery III Credits: 4 (0-8-0)
Course Description: Form and surface exploration; supportive ceramic technologies; expression in historical pottery.
Prerequisite: ART 340.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 345 Metalsmithing and Jewelry II Credits: 4 (0-8-0)
Course Description: Raising and casting techniques in combination with construction; metal spinning.
Prerequisite: ART 245.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 346 Metalsmithing and Jewelry III Credits: 4 (0-8-0)
Course Description: Forging and enameling techniques on nonferrous and ferrous metals; stone setting.
Prerequisite: ART 245.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 350 Fibers II Credits: 4 (0-8-0)
Course Description: Intermediate fiber structures and fabric and surface design; dyes and pigments; continued investigation of fibers and fabric as expressive media.
Prerequisite: ART 250.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 351 Fibers III Credits: 4 (0-8-0)
Course Description: Investigation of fibers and fabric as expressive media; research in historic textiles.
Prerequisite: ART 250.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 355 Typography and Design Systems Credits: 4 (0-8-0)
Course Description: Emphasis on typographic solutions for advertising, corporate identity, packaging, and publication design.
Prerequisite: ART 255.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 356 Illustration Credits: 4 (0-8-0)
Course Description: Problems emphasizing media, experimental techniques, and compositions.
Prerequisite: ART 255.
Registration Information: Six credits in drawing required in addition to ART 255.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 357 Interactive Media Credits: 4 (0-8-0)
Course Description: Technical, conceptual, and historic aspects of creating interactive electronic media.
Prerequisite: ART 255 or ART 256.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 358 Experimental Video Credits: 4 (0-8-0)
Course Description: History, theory, application of experimental video and digital special effects, animation and video techniques as they apply to experimental video.
Prerequisite: ART 255 or ART 256.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 360 Painting Methods and Materials Credits: 4 (0-8-0)
Course Description: Experimentation with the painting process in relationship to method, material and tools.
Prerequisite: ART 361.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 361 Figure Painting Credits: 4 (0-8-0)
Course Description: Composition and techniques in oil and/or acrylic emphasizing the human figure.
Prerequisite: ART 235 and ART 260.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 365 Printmaking II-Lithography Credits: 4 (0-8-0)
Course Description: Preparation, processing, and printing techniques in stone and metal plate lithography.
Prerequisite: ART 136.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 366 Printmaking III-Studio Workshop Credits: 4 (0-8-0)
Course Description: Advanced intaglio, relief, planographic, and stencil processes in the workshop, continued emphasis on individual creative growth.
Prerequisite: ART 365.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 370 Sculpture II Credits: 4 (0-8-0)
Course Description: Intermediate-level exploration of materials, concepts, process, and outcomes rooted in the sculpture area.
Prerequisite: ART 270.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 371 Sculpture III Credits: 4 (0-8-0)
Course Description: Intermediate-level development of studio practice, exploration of technical process, theory and professionalism.
Prerequisite: ART 270.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 382A Study Abroad in Japan: Art History Credits: 3 (0-0-3)
Course Description: History of Japanese art and architecture experienced on location in Japan.
Prerequisite: ART 110 or ART 120 or ART 135 or ART 160 or ART 170.
Term Offered: Summer (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

ART 382B Study Abroad in Japan: Studio Art Credits: 3 (0-0-3)
Course Description: Investigation of Japanese art and design experienced on location in Japan.
Prerequisite: ART 110 or ART 120 or ART 135 or ART 160 or ART 170.
Term Offered: Summer (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

ART 382C Study Abroad: Art Meets Environment in Baja California Sur Credits: 3 (0-0-3)
Course Description: Explores the intersection of visual arts, community and environment in Baja California Sur through direct experience, creative practice, collaborative processes and contemporary and historical art theory.
Prerequisite: CO 150.
Registration Information: Sophomore standing. Written consent of instructor. Offered as Mixed Face-to-Face.
Grade Mode: Traditional.
Special Course Fee: No.

ART 384 Supervised College Teaching Credits: Var[1-4] (0-0-0)
Course Description: Supervised assistance in instruction.
Prerequisite: None.
Registration Information: Junior or senior standing; written consent of instructor. Maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 392 Undergraduate Professional Practices Seminar Credits: 3 (0-0-3)
Course Description: Skills and tools beneficial in pursuing professional and/or academic goals in the visual arts.
Prerequisite: None.
Registration Information: Junior standing.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 400 BFA Portfolio Credit: 1 (1-0-0)
Course Description: Effectively submit capstone work to the University's Digital Repository and a Juried BFA Exhibition while teaching best practices for managing and sharing work after graduation.
Prerequisite: None.
Registration Information: Senior standing. Written consent of instructor. This is a partial semester course.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ART 410 Greek Art Credits: 3 (3-0-0)
Course Description: Aegean and Greek architecture, painting, and sculpture.
Prerequisite: ART 212.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 411 History of Medieval Art Credits: 3 (3-0-0)
Course Description: Early Christian, Byzantine, Islamic, Romanesque, and Gothic visual art forms.
Prerequisite: ART 212.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 412 History of Renaissance Art Credits: 3 (3-0-0)
Course Description: Architecture, sculpture, painting, and minor arts, 1300 to 1600.
Prerequisite: ART 212.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 414 History of Baroque and Rococo Art Credits: 3 (3-0-0)
Course Description: 17th- and 18th-century visual arts.
Prerequisite: ART 212.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 415 History of 19th Century European Art Credits: 3 (3-0-0)
Course Description: Architecture, sculpture, painting, and other arts in Europe, 1780 - 1900.
Prerequisite: ART 212.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 416 History of European Art, 1900 to 1945 Credits: 3 (3-0-0)
Course Description: Visual arts in Europe, 1900 to 1945.
Prerequisite: ART 212.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 417 Roman Art Credits: 3 (3-0-0)
Course Description: Roman sculpture, painting, and architecture.
Prerequisite: ART 212.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 418 Contemporary Artists and Art Critics Credits: 3 (3-0-0)
Course Description: Critical study of contemporary artists and art criticism.
Prerequisite: ART 212.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 419 Historiography and Methodology of Art History Credits: 3 (3-0-0)
Course Description: Historiography/methodology/research methods in art history.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 420 Travel Abroad-Art History in Italy Credits: Var[3-5] (0-0-0)
Course Description: Art historical study of painting, sculpture, and architecture in Italy.
Prerequisite: ART 212.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 421 Art and Environment Credits: 3 (0-6-0)
Course Description: Interdisciplinary studio/seminar course investigating art's relationship to the environment through readings, field trips, presentations and studio practice.
Prerequisite: ART 136 and ART 160 and ART 170 and ART 200 to 299 - at least 6 credits.
Registration Information: Required field trips. Credit allowed for only one of the following: ART 380A1, ART 421, ART 521 or ART 680A1.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 425 Integrated Visual Studies Credits: 4 (4-0-0)
Course Description: Interdisciplinary and guided study linking systems of knowledge. Students are afforded the space to draw on their breadth of information and artistic mediums to create a capstone project that demonstrates an ability to communicate effectively across verbal, visual, and written forms. Develop skills as makers and thinkers, fostering critical awareness of how society reflects and produces visual meaning.
Prerequisite: None.
Registration Information: Senior standing. Written consent of advisor. 21 credits of upper-division coursework in the BA-Integrated Visual Studies concentration.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 430 Advanced Photo Image Making I Credits: 4 (0-8-0)
Course Description: Advanced problems in use of photo image making as an art medium.
Prerequisite: ART 331.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 431 Advanced Photo Image Making II Credits: 4 (0-8-0)
Course Description: Studio course to refine individual directions and professional goals in photography as an art medium.
Prerequisite: ART 430.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 435 Advanced Drawing I Credits: 4 (0-8-0)
Course Description: Independent projects and identification of personal artistic direction; research in art-related topics.
Prerequisite: ART 336.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 436 Advanced Drawing II Credits: 4 (0-8-0)
Course Description: Capstone course; production of professional exhibition-quality work.
Prerequisite: ART 435.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 440 Pottery IV Credits: 4 (0-8-0)
Course Description: Advanced individual research in pottery form and expression; supportive technology; expression in contemporary American pottery.
Prerequisite: ART 341.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 441 Pottery V Credits: 4 (0-8-0)
Course Description: Advanced individual research in pottery form and expression of personal subject matter; supportive technology.
Prerequisite: ART 440.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 445 Metalsmithing and Jewelry IV Credits: 4 (0-8-0)
Course Description: Chasing and repousse techniques in two- and three-dimension; inlay, engraving, and etching techniques.
Prerequisite: ART 345 and ART 346.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 446 Metalsmithing and Jewelry V Credits: 4 (0-8-0)
Course Description: Advanced techniques: granulation, electroforming, photoetching, makume, niello, ferrous metals techniques.
Prerequisite: ART 345 and ART 346.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 450 Fibers IV Credits: 4 (0-8-0)
Course Description: Advanced studio problems in expressive use of fibers and fabric.
Prerequisite: ART 350 and ART 351.
Registration Information: Maximum of 8 credits allowed in the course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 451 Fibers V Credits: 4 (0-8-0)
Course Description: Advanced studio problems in expressive use of fibers and fabric.
Prerequisite: ART 351 or ART 450.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 455 Advanced Typography and Design Systems Credits: 4 (0-8-0)
Course Description: Two- and three-dimensional solutions for advertising, corporate identity, packaging, and publication design.
Prerequisite: ART 355.
Registration Information: Maximum of 8 credits allowed in course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 456 Advanced Illustration Credits: 4 (0-8-0)
Course Description: Projects in editorial and reportorial illustration emphasizing techniques applied to solving problems in advanced composition.
Prerequisite: ART 356.
Registration Information: Maximum of 8 credits allowed in course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 457 Advanced Interactive Media Credits: 4 (0-8-0)
Course Description: Technical, conceptual, and historic aspects of creating interactive electronic media.
Prerequisite: (ART 255 or ART 256) and (ART 357).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 458 Advanced Experimental Video Credits: 4 (0-8-0)
Course Description: Advanced experimental video and visual effects.
Prerequisite: (ART 255 or ART 256) and (ART 358).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 460 Advanced Painting I Credits: 4 (0-8-0)
Course Description: Advanced composition and exploration of individual creative expression.
Prerequisite: ART 360 and ART 361.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 461 Advanced Painting II Credits: 4 (0-8-0)
Course Description: Continuation in direction of individual creative expression.
Prerequisite: ART 460.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 465 Printmaking IV-Studio Workshop Credits: 4 (0-8-0)
Course Description: Advanced printmaking workshop; intaglio, relief, planographic, and stencil; continued emphasis on individual creative growth.
Prerequisite: ART 366.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 466 Printmaking V-Studio Workshop Credits: 4 (0-8-0)
Course Description: Advanced printmaking concepts in studio and research problems.
Prerequisite: ART 465.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 470 Sculpture IV Credits: 4 (0-8-0)
Course Description: Development of individual expression using sculptural techniques.
Prerequisite: ART 370 and ART 371.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 471 Sculpture V Credits: 4 (0-8-0)
Course Description: Advanced expression using sculptural techniques.
Prerequisite: ART 470.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 482A Study Abroad: Art History in Italy Credit: 1 (0-0-1)
Course Description: Special topics in Italian art history; most classes will be taught on-site at museums, churches, and galleries in Italy. Focus on the art and architecture of the famed Michelangelo Buonarroti.
Prerequisite: ART 212.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 487 Internship Credits: Var[1-4] (0-0-0)
Course Description: Supervised work experience in an approved location.
Prerequisite: None.
Registration Information: Junior or senior standing; written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 492A Seminar: Art History Credits: 3 (0-0-3)
Course Description: Topical studies in Art History.
Prerequisite: ART 212.
Grade Mode: Traditional.
Special Course Fee: No.

ART 492B Seminar: Art Education Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Registration Information: Must have concurrent registration in ART 326.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 495A Independent Study: Painting Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 495B Independent Study: Printmaking Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 495C Independent Study: Sculpture Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 495D Independent Study: Fibers Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 495E Independent Study: Metalsmithing and Jewelry Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 495F Independent Study: Drawing Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 495G Independent Study: Graphic Design Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 495H Independent Study: Art History Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 495I Independent Study: Art Education Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 495J Independent Study: Pottery Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 495K Independent Study: Photo Image Making Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: ART 330.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 496A Group Study: Painting Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 496B Group Study: Printmaking Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 496C Group Study: Sculpture Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 496D Group Study: Fibers Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 496E Group Study: Metalsmithing and Jewelry Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 496F Group Study: Drawing Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 496G Group Study: Graphic Design Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 496H Group Study: Art History Credits: 3 (3-0-0)
Course Description: Topical studies in Art History.
Prerequisite: ART 212.
Registration Information: Maximum of 9 credits allowed in course.
Grade Mode: Traditional.
Special Course Fee: No.

ART 496I Group Study: Art Education Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 496J Group Study: Pottery Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 496K Group Study: Photo Image Making Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 510A Advanced Study in Art History: American Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510B Advanced Study in Art History: African Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510C Advanced Study in Art History: Pre-Colombian Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 510E Advanced Study in Art History: United States Art Since 1945 Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510F Advanced Study in Art History: Greek Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510G Advanced Study in Art History: Medieval Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510H Advanced Study in Art History: Renaissance Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510I Advanced Study in Art History: Baroque and Rococo Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510J Advanced Study in Art History: 19th-Century European Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510K Advanced Study in Art History: 20th Century European Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510L Advanced Study in Art History: West and Central Africa Credits: 3 (3-0-0)
Course Description: Focuses on the arts of West and Central Africa from prehistory through contemporary visual expressions. Engages with current art historical theoretical approaches and practices in order to gain a nuanced understanding of the arts in these respective regions and their relationship to global art production.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 510M Advanced Study in Art History: Roman Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510N Advanced Study in Art History: Graphic Design Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510O Advanced Study in Art History: Women in Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510P Advanced Study in Art History: Pacific Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510Q Advanced Study in Art History: Contemporary Art and Art Critics Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510R Advanced Study in Art History: Native North American Art Credits: 3 (3-0-0)
Course Description: Graduate study in the history of Native North American art.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 514 Contemporary American Art Critics and Artists Credits: 3 (0-0-3)
Course Description: Issues in contemporary American art are explored through the work of critics and artists who visit through the Critic and Artist Residency Series.
Prerequisite: ART 510E.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 515 Seminar-Contemporary Art Theory Credits: 3 (0-0-3)
Course Description: Relationship between critical theory and the visual arts; how artists and critics apply theory in their work.
Prerequisite: ART 510E.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 521 Art and Environment - Advanced Study Credits: 3 (0-6-0)
Course Description: Interdisciplinary studio/seminar course investigating art's relationship to the environment through readings, field trips, presentations and studio practice.
Prerequisite: None.
Registration Information: Graduate standing in the Art and Art History Department. Required field trips. Credit allowed for only one of the following: ART 380A1, ART 421, ART 521 or ART680A1.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 575A Studio Problems: Painting Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: .
Registration Information: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 575B Studio Problems: Printmaking Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: .
Registration Information: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 575C Studio Problems: Sculpture Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: .
Registration Information: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 575D Studio Problems: Fibers Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: .
Registration Information: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 575E Studio Problems: Metalsmithing and Jewelry Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 575F Studio Problems: Drawing Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: .
Registration Information: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 575G Studio Problems: Graphic Design Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: .
Registration Information: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 592 Art History Seminar Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Registration Information: Required for course admittance: Twenty-one credits of art history.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 675A Studio Problems: Painting Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575A - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 675B Studio Problems: Printmaking Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575B - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 675C Studio Problems: Sculpture Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575C - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 675D Studio Problems: Fibers Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575D - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 675E Studio Problems: Metalsmithing and Jewelry Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575E - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 675F Studio Problems: Drawing Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575F - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 675G Studio Problems: Graphic Design Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575G - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 695A Independent Study: Painting Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 695B Independent Study: Printmaking Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 695C Independent Study: Sculpture Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 695D Independent Study: Fibers Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 695E Independent Study: Metalsmithing and Jewelry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 695F Independent Study: Drawing Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 695G Independent Study: Graphic Design Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 695H Independent Study: Art History Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696A Group Study: Painting Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696B Group Study: Printmaking Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696C Group Study: Sculpture Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696D Group Study: Fibers Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696E Group Study: Metalsmithing and Jewelry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696F Group Study: Drawing Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696G Group Study: Graphic Design Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696H Group Study: Art History Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696I Group Study: Multiple Media Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 699A Thesis: Painting Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575A and/or ART 675A.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 699B Thesis: Printmaking Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575B and/or ART 675B.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 699C Thesis: Sculpture Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575C and/or ART 675C.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 699D Thesis: Fibers Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575D and/or ART 675D.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 699E Thesis: Metalsmithing and Jewelry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575E and/or ART 675E.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 699F Thesis: Drawing Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575F and/or ART 675F.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 699G Thesis: Graphic Design Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575G and/or ART 675G.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Art, B.F.A.

Throughout history, art has been a fundamental language of the human spirit. Visual arts express human experience through an ever-widening range of media and materials, some of which include: oils, acrylics, pastels, charcoal, clay, plaster, steel, bronze, wood, copper, litho stones, and digital media. Visual artists create abstract works and images of objects, people, nature, topography, and events. The Department of Art and Art History offers several options of study: The B.F.A. (Bachelor of Fine Arts) degree with studio concentrations in Drawing, Electronic Arts, Fibers, Graphic Design, Metalsmithing, Painting, Photo Image Making, Pottery, Printmaking, and Sculpture; and the B.F.A. degree with a concentration in Art Education. The B.A. (Bachelor of Arts) degree with concentrations in Integrated Visual Studies and Art History are all professional degrees, leading to related art careers.

Learning Outcomes

Students will demonstrate:

- Fundamental knowledge and mastery of media and processes necessary to communicate meaning in a work of art.
- Ability to communicate clearly about their own art and the art of others.
- Knowledge about contemporary art and motivation to view and discuss current local, regional, and national exhibitions. Students well versed on contemporary art would:
  a. regularly read reviews of exhibitions in local and national newspapers;
  b. regularly read art periodicals;
  c. attend multiple exhibitions; and
  d. be knowledgeable about contemporary artists in their discipline (i.e., nationally known painters, sculptors, etc.).

Potential Occupations

Art graduates possess a number of transferable communication, analytical, and critical thinking skills appropriate for work in traditional business as well as positions in academia and roles as freelance artists, graphic designers, art educators, art historians, studio fine artists and as “creatives” in government and industry. Many employers appreciate art majors for their multiple skills and their ability to adapt to a variety of tasks and work environments. Participation in internships, cooperative

education, and service learning opportunities is highly recommended to enhance practical training and development. Graduates who go on for advanced studies can attain more responsible positions with the possibility of rising to top professional levels.

Depending on student interests, the electives taken, or the concentration selected, available career choices include, but are not limited to: art appraiser, art director, art therapist, exhibit designer, art critic, jeweler, gallery director, graphic design artist, free lance artist, sculptor, woodworker, welder, foundry worker, studio photographer, technical illustrator, painter, textile designer, weaver, art educator, art historian, art curator, art librarian, art museum educator, web page designer, photo lab technician, art restorer, and master printer.

The Department of Art and Art History offers the B.F.A. (Bachelor of Fine Arts) two options of study: The B.F.A. degree with studio concentrations in Drawing, Electronic Arts, Fibers, Graphic Design, Metalsmithing, Painting, Photo Image Making, Pottery, Printmaking, and Sculpture; and the B.F.A. degree with a concentration in Art Education. Both are considered professional degrees.

The curriculum progression in the department for the B.F.A. is similar within the concentrations and some concentrations may have restrictions. Freshmen study foundation courses in form and observation, color and composition, materials and space, and global art history. Sophomores explore various concentration courses and become familiar with the studio practices for the concentration studios housed in separate wings that feature large, well-equipped studio spaces designed for exploration of work in a specific media. Juniors and seniors focus on advanced topics in their chosen concentration by taking one upper-division course in their chosen field each semester. Additionally, at this level art education students are engaged in pedagogical course work.

Learning Outcomes

Students will demonstrate:

- Fundamental knowledge and mastery of media and processes necessary to communicate meaning in a work of art.
- Ability to communicate clearly about their own art and the art of others.
- Knowledge about and be well versed in contemporary art and demonstrate the motivation to view and discuss current local, regional, and national exhibitions.

In addition to the outcomes above, students with an art education concentration will demonstrate:

- Integrate literacy, numeracy, and other disciplines while providing appropriate accommodation and differentiation strategies in the art experiences they develop for their students.
- Effectively document, analyze, and reflect on student learning and make appropriate changes for more effective instruction.
- Proficiency in all areas of the Colorado Teacher Quality Standards.

Concentrations

- Drawing Concentration
- Electronic Art Concentration
- Fibers Concentration
- Graphic Design Concentration
- Metalsmithing Concentration
- Painting Concentration
- Photo Image Making Concentration
- Pottery Concentration
- Printmaking Concentration
- Sculpture Concentration
- Art Education Concentration

Major in Art (B.F.A.), Art Education Concentration

The Art Education concentration embraces the artist-teacher concept, allowing students to develop a strong studio concentration while preparing to teach art at the K-12 level. The program is comprehensive, meaning students take course work to prepare them to teach at the elementary and secondary school levels. One full semester of student teaching at both the elementary and secondary levels is preceded by in-depth field work with elementary, secondary, and exceptional populations. Students can expect practicum or service-learning experiences each semester in the program. As a result, the Art Education program enjoys good working relationships with school districts in the state of Colorado and the Gregory Allicar Museum of Art on the CSU campus—all of which host our students.

Throughout the program students engage in philosophical and theoretical studies, contemporary pedagogical practices, and arts-based research to prepare for the complexities of the K-12 art studio. Additionally, community-based and museum experiences give art education students the ability to situate their role in the context of contemporary visual and material culture.

Students interested in pursuing a teaching license through CSU may refer to the Center for Educator Preparation (CEP) (https://www.chhs.colostate.edu/soe/center-for-educator-preparation) for general information. Art Education students must maintain a 2.75 cumulative GPA for admission to the Art Education program, eligibility for student teaching placement, and licensure.

Requirements
Effective Spring 2019

A Portfolio Review is required to be submitted for review upon completion of three ART studio courses for continuing students and upon completion of two ART studio courses for transfer students and students who have changed majors.

The Art Education concentration requires a 2.75 cumulative CSU GPA, and that students pass the PLACE exam. Admission to the Center for Educator Preparation (CEP) (http://www.cep.chhs.colostate.edu/students/teacher/admissions.aspx) **is also required. Fingerprint and background check.**

A minimum grade of C (2.000) or better is required in all Art and Education coursework.

Freshman

		AUCC	Credits
ART 105	Issues and Practices in Art		1
ART 110	Global Art History I		3
ART 111	Global Art History II		3
ART 135	Foundations - Form and Observation		3
ART 136	Introduction to Figure Drawing		3
ART 160	Foundations - Color and Composition		3
ART 170	Foundations - Materials and Space		3
CO 150	College Composition (GT-CO2)	1A	3
Arts and Humanities		3B	3
Quantitative Reasoning		1B	3
	Total Credits		28

Sophomore

ART 212	Global Art History III		3
EDUC 275	Schooling in the United States (GT-SS3)	3C	3
Select two studio intro courses from the following:			6
ART 230	Photo Image Making I		
ART 240	Pottery I		
ART 260	Painting I		
ART 270	Sculpture I		
Select two courses from the following:			6
ART 245	Metalsmithing and Jewelry I		
ART 250	Fibers I		
ART 265	Printmaking I-Intaglio and Relief		
Biological and Physical Sciences		3A	7
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
	Total Credits		31

Junior

ART 325	Concepts in Art Education		3
EDUC 331	Educational Technology and Assessment		2
EDUC 340	Literacy and the Learner		3
EDUC 350	Instruction I-Individualization/Management		3
EDUC 386	Practicum-Instruction I		1
Select two courses from the following not taken elsewhere:			6
ART 230	Photo Image Making I		
ART 240	Pottery I		
ART 245	Metalsmithing and Jewelry I		
ART 250	Fibers I		
ART 260	Painting I		
ART 265	Printmaking I-Intaglio and Relief		
ART 270	Sculpture I		
Select 3 credits of upper division (300-to 400-level) art history from the following:			3
ART 310	History of American Art to 1945	4B	
ART 311	Art of West and Central Africa	4A,4B	
ART 312	Pre-Columbian Art of Mesoamerica	4B	
ART 313	Art of East and Southern Africa	4A,4B	
ART 314	Women in Art History	4B	

ART 315	United States Art 1945-1980	4B	
ART 316	Art of the Pacific	4B	
ART 317	Native North American Art	4A,4B	
ART 410	Greek Art	4B	
ART 411	History of Medieval Art	4B	
ART 412	History of Renaissance Art	4B	
ART 414	History of Baroque and Rococo Art	4B	
ART 415	History of 19th Century European Art	4B	
ART 416	History of European Art, 1900 to 1945	4B	
ART 417	Roman Art	4B	
ART 418	Contemporary Artists and Art Critics	4A,4B	
ART 492A	Seminar: Art History	4A,4B	
ART 496H	Group Study: Art History	4A,4B	
Advanced Writing		2	3
Studio teaching emphasis[1]			8
	Total Credits		32

Senior

ART 326	Art Education Studio		4
EDUC 450	Instruction II-Standards and Assessment		4
EDUC 466	Methods and Assessment in K-12 Art Education		4
EDUC 485A	Student Teaching: Elementary	4A,4C	6
EDUC 485B	Student Teaching: Secondary	4A,4C	6
EDUC 486E	Practicum: Instruction II		1
EDUC 493A	Seminar: Professional Relations	4C	1
Arts and Humanities		3B	3
	Total Credits		29
	Program Total Credits:		120

[1] Select eight credits from one upper-division concentration area other than Graphic Design.

Major Completion Map

To declare this Concentration: A Portfolio Review is required to be submitted for review upon completion of three ART studio courses for continuing students and upon completion of two ART studio courses for transfer students and students who have changed majors.

Distinctive Requirements for Degree Program: The Art Education concentration requires a 2.75 cumulative CSU GPA, and that students pass the PLACE exam. Admission to the Center for Educator Preparation (CEP) (http://www.cep.chhs.colostate.edu/students/teacher/admissions.aspx) **is also required. Fingerprint and background check.**

A minimum grade of C (2.000) or better is required in all Art and Education coursework.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 105	Issues and Practices in Art	X			1
ART 110	Global Art History I	X			3
ART 135	Foundations - Form and Observation	X			3
ART 160	Foundations - Color and Composition	X			3
CO 150	College Composition (GT-CO2)		X	1A	3
	Total Credits				13
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 111	Global Art History II	X			3
ART 136	Introduction to Figure Drawing	X			3
ART 170	Foundations - Materials and Space	X			3
Arts and Humanities			X	3B	3
Quantitative Reasoning		X		1B	3

CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 212	Global Art History III	X			3
Select one course from the following:					3
ART 230	Photo Image Making I				
ART 240	Pottery I				
ART 260	Painting I				
ART 270	Sculpture I				
Select one course from the following:					3
ART 245	Metalsmithing and Jewelry I				
ART 250	Fibers I				
ART 265	Printmaking I-Intaglio and Relief				
Biological and Physical Sciences			X	3A	4
Diversity and Global Awareness			X	3E	3
Portfolio review is strongly recommended by the end of Semester 3.			X		
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 275	Schooling in the United States (GT-SS3)		X	3C	3
Select one course from the following not previously taken:					3
ART 230	Photo Image Making I				
ART 240	Pottery I				
ART 260	Painting I				
ART 270	Sculpture I				
Select one course from the following not previously taken:					3
ART 245	Metalsmithing and Jewelry I				
ART 250	Fibers I				
ART 265	Printmaking I-Intaglio and Relief				
Biological and Physical Sciences			X	3A	3
Historical Perspectives			X	3D	3
Portfolio review must be completed by the end of Semester 4.		X			
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 340	Literacy and the Learner	X			3
Select one course from the following not previously taken:					3
ART 230	Photo Image Making I				
ART 240	Pottery I				
ART 245	Metalsmithing and Jewelry I				
ART 250	Fibers I				
ART 260	Painting I				
ART 265	Printmaking I-Intaglio and Relief				
ART 270	Sculpture I				
ART History, Upper-Division (AUCC 4B) (See Concentration Requirements Tab)		X		4B	3
Upper-Division Studio - Teaching Emphasis		X			4
Advanced Writing			X	2	3
EDUC 275 must be completed by the end of Semester 5.		X			
ART 311, ART 312, or ART 316 are strongly recommended to meet AUCC 4B requirement.			X		
	Total Credits				16

Semester 6		Critical	Recommended	AUCC	Credits
ART 325	Concepts in Art Education	X			3
EDUC 331	Educational Technology and Assessment	X			2
EDUC 350	Instruction I-Individualization/Management	X			3
EDUC 386	Practicum-Instruction I	X			1-3
Select one course from the following not previously taken:					3
ART 230	Photo Image Making I				
ART 240	Pottery I				
ART 245	Metalsmithing and Jewelry I				
ART 250	Fibers I				
ART 260	Painting I				
ART 265	Printmaking I-Intaglio and Relief				
ART 270	Sculpture I				
Upper-Division Studio - Teaching Emphasis		X			4
	Total Credits				16

Senior

Semester 7		Critical	Recommended	AUCC	Credits
ART 326	Art Education Studio	X			4
EDUC 450	Instruction II-Standards and Assessment	X			4
EDUC 466	Methods and Assessment in K-12 Art Education	X			4
EDUC 486E	Practicum: Instruction II	X			1
Arts and Humanities		X		3B	3
	Total Credits				16

Semester 8		Critical	Recommended	AUCC	Credits
EDUC 485A	Student Teaching: Elementary	X		4A,4C	6
EDUC 485B	Student Teaching: Secondary	X		4A,4C	6
EDUC 493A	Seminar: Professional Relations	X		4C	1
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				13
	Program Total Credits:				120

Major in Art (B.F.A.), Drawing Concentration

The Drawing concentration includes a solid foundation in the basics of drawing, plus a strong emphasis on the advanced development of drawing as a "high art" form. Initially, courses expose students to working from observation. A variety of fundamental skills, techniques, and materials are explored through rudimentary exercises and open projects. Perception skills and visual vocabulary are introduced to students through group critiques and discussions.Throughout the program, students are expected to refine skill together with an increasing exploration of personal expression and ideas. Drawing majors are expected to be highly motivated individuals engaged in the process of drawing as a sophisticated fine art which displays an advanced level of visual challenge and aesthetics as well as conveying a sense of content and meaning.

Requirements Effective Fall 2018

A Portfolio Review is required to be submitted for review upon completion of three ART studio courses for continuing students and upon completion of two ART studio courses for transfer students and students who have changed majors.

A minimum grade of C (2.000) or better is required in ART 335**,** ART 336**,** ART 435**,** ART 436.

Freshman

		AUCC	Credits
ART 105	Issues and Practices in Art		1
ART 110	Global Art History I		3
ART 111	Global Art History II		3
ART 135	Foundations - Form and Observation		3
ART 136	Introduction to Figure Drawing		3

ART 160	Foundations - Color and Composition		3
ART 170	Foundations - Materials and Space		3
CO 150	College Composition (GT-CO2)	1A	3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Quantitative Reasoning		1B	3
	Total Credits		31

Sophomore

ART 212	Global Art History III		3
ART 235	Intermediate Drawing I		3
Select three courses from the following:			9
ART 120	Foundations--Time and Structure		
ART 230	Photo Image Making I		
ART 240	Pottery I		
ART 245	Metalsmithing and Jewelry I		
ART 250	Fibers I		
ART 255	Introduction to Graphic Design		
ART 256	Introduction to Electronic Art		
ART 260	Painting I		
ART 265	Printmaking I-Intaglio and Relief		
ART 270	Sculpture I		
Upper-Division Art History[1]		4A,4B	3
Biological and Physical Sciences		3A	7
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
	Total Credits		31

Junior

ART 335	Intermediate Drawing II		4
ART 336	Intermediate Drawing III		4
Art Elective			3
Upper-Division Art History[1]		4A,4B	3
Upper-Division Art Elective			4
Upper-Division Non-Art Elective			3
Advanced Writing		2	3
Arts and Humanities		3B	3
Elective			3
	Total Credits		30

Senior

ART 400	BFA Portfolio		1
ART 435	Advanced Drawing I	4C	4
ART 436	Advanced Drawing II	4C	4
Upper-Division Art Elective			4
Upper-Division Non-Art Electives[2]			9
Non-Art Electives (any level)[2]			6
	Total Credits		28
	Program Total Credits:		120

Upper-Division Art History Courses [1]

Code	Title	AUCC	Credits
ART 310	History of American Art to 1945	4A,4B	3
ART 311	Art of West and Central Africa	4A,4B	3
ART 312	Pre-Columbian Art of Mesoamerica	4A,4B	3
ART 313	Art of East and Southern Africa	4A,4B	3
ART 314	Women in Art History	4A,4B	3
ART 315	United States Art 1945-1980	4A,4B	3
ART 316	Art of the Pacific	4A,4B	3
ART 317	Native North American Art	4A,4B	3
ART 320	Global Encounters in Art		3
ART 410	Greek Art	4A,4B	3
ART 411	History of Medieval Art	4A,4B	3
ART 412	History of Renaissance Art	4A,4B	3
ART 414	History of Baroque and Rococo Art	4A,4B	3
ART 415	History of 19th Century European Art	4A,4B	3
ART 416	History of European Art, 1900 to 1945	4A,4B	3
ART 417	Roman Art	4A,4B	3
ART 418	Contemporary Artists and Art Critics	4A,4B	3
ART 492A	Seminar: Art History	4A,4B	3
ART 496H	Group Study: Art History	4A,4B	3

[1] Select 6 credits of Upper-Division Art History Courses total, at least 3 of which must satisfy AUCC categories 4A and 4B.

[2] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

To declare this Concentration: A Portfolio Review is required to be submitted for review upon completion of three ART studio courses for continuing students and upon completion of two ART studio courses for transfer students and students who have changed majors.

Distinctive Requirements for Degree Program: A minimum grade of C (2.000) or better is required in ART 335**,** ART 336**,** ART 435**,** ART 436.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
ART 105	Issues and Practices in Art		X		1
ART 110	Global Art History I	X			3
ART 135	Foundations - Form and Observation	X			3
ART 160	Foundations - Color and Composition	X			3
CO 150	College Composition (GT-CO2)		X	1A	3
Diversity and Global Awareness			X	3E	3
	Total Credits				16

Semester 2		Critical	Recommended	AUCC	Credits
ART 111	Global Art History II	X			3
ART 136	Introduction to Figure Drawing	X			3
ART 170	Foundations - Materials and Space	X			3
Arts and Humanities			X	3B	3
Quantitative Reasoning		X		1B	3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		Critical	Recommended	AUCC	Credits
ART 212	Global Art History III	X			3

Select two courses from the following:					6
ART 120	Foundations--Time and Structure				
ART 230	Photo Image Making I				
ART 240	Pottery I				
ART 245	Metalsmithing and Jewelry I				
ART 250	Fibers I				
ART 255	Introduction to Graphic Design				
ART 256	Introduction to Electronic Art				
ART 260	Painting I				
ART 265	Printmaking I-Intaglio and Relief				
ART 270	Sculpture I				
Biological and Physical Sciences			X	3A	4
Historical Perspectives			X	3D	3
Portfolio review recommended by the end of Semester 3.			X		
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 235	Intermediate Drawing I	X			3
Select one course from the following not previously taken:					3
ART 120	Foundations--Time and Structure				
ART 230	Photo Image Making I				
ART 240	Pottery I				
ART 245	Metalsmithing and Jewelry I				
ART 250	Fibers I				
ART 255	Introduction to Graphic Design				
ART 256	Introduction to Electronic Art				
ART 260	Painting I				
ART 265	Printmaking I-Intaglio and Relief				
ART 270	Sculpture I				
Upper-Division Art History (See List on Concentration Requirements Tab)				4A,4B	3
Biological and Physical Sciences			X	3A	3
Social and Behavioral Sciences			X	3C	3
ART 235 must be completed by the end of Semester 4.		X			
Portfolio review must be completed by the end of Semester 4.		X			
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 335	Intermediate Drawing II	X			4
ART Elective			X		3
Upper-Division Art History (See List on Concentration Requirements Tab)			X	4A,4B	3
Advanced Writing			X	2	3
Arts and Humanities			X	3B	3
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 336	Intermediate Drawing III	X			4
Upper-Division Art Elective			X		4
Upper-Division Non-Art Elective			X		3
Elective			X		3
	Total Credits				14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 435	Advanced Drawing I	X		4C	4
Upper-Division Non-Art Elective			X		3

Non-Art Electives (any level)			X		6
	Total Credits				13
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 400	BFA Portfolio	X			1
ART 436	Advanced Drawing II	X		4C	4
Upper-Division Art Elective		X			4
Upper-Division Non-Art Electives		X			6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Art (B.F.A.), Electronic Art Concentration

The Electronic Art concentration offers students the chance to create and critique within the context of digital methods and materials. Integrating digital media theories into their creative practice, students work with software and hardware to explore humanity's relationship with the digital realm. These explorations can include game theory, experimental video techniques, net.art, user interface, software creation, the creation of social tools, installation work, physical computing, and code within the context of visual arts. Electronic art students are also encouraged to incorporate interdisciplinary, interactive, and collaborative practices in their work.

Requirements Effective Fall 2018

A Portfolio Review is required to be submitted for review upon completion of three ART studio courses for continuing students and upon completion of two ART studio courses for transfer students and students who have changed majors.

A minimum grade of C (2.000) or better is required in ART 357, ART 358, ART 457, ART 458.

Freshman

		AUCC	**Credits**
ART 105	Issues and Practices in Art		1
ART 110	Global Art History I		3
ART 111	Global Art History II		3
ART 135	Foundations - Form and Observation		3
ART 136	Introduction to Figure Drawing		3
ART 160	Foundations - Color and Composition		3
ART 170	Foundations - Materials and Space		3
CO 150	College Composition (GT-CO2)	1A	3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Quantitative Reasoning		1B	3
	Total Credits		31

Sophomore

ART 212	Global Art History III	3
ART 256	Introduction to Electronic Art	3
Select three courses from the following:		9
ART 120	Foundations--Time and Structure	
ART 230	Photo Image Making I	
ART 235	Intermediate Drawing I	
ART 240	Pottery I	
ART 245	Metalsmithing and Jewelry I	
ART 250	Fibers I	
ART 255	Introduction to Graphic Design	
ART 260	Painting I	
ART 265	Printmaking I-Intaglio and Relief	

ART 270	Sculpture I		
Upper-Division Art History[1]		4A,4B	3
Biological and Physical Sciences		3A	7
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
	Total Credits		31
Junior			
ART 357	Interactive Media		4
ART 358	Experimental Video		4
Art Elective			3
Upper-Division Art History[1]		4A,4B	3
Upper-Division Art Elective			4
Upper-Division Non-Art Elective			3
Advanced Writing		2	3
Arts and Humanities		3B	3
Elective			3
	Total Credits		30
Senior			
ART 400	BFA Portfolio		1
ART 457	Advanced Interactive Media		4
ART 458	Advanced Experimental Video	4C	4
Upper-Division Art Elective			4
Upper-Division Non-Art Electives[2]			9
Non-Art Electives (any level)[2]			6
	Total Credits		28
	Program Total Credits:		120

Upper-Division Art History Courses [1]

Code	Title	AUCC	Credits
ART 310	History of American Art to 1945	4A,4B	3
ART 311	Art of West and Central Africa	4A,4B	3
ART 312	Pre-Columbian Art of Mesoamerica	4A,4B	3
ART 313	Art of East and Southern Africa	4A,4B	3
ART 314	Women in Art History	4A,4B	3
ART 315	United States Art 1945-1980	4A,4B	3
ART 316	Art of the Pacific	4A,4B	3
ART 317	Native North American Art	4A,4B	3
ART 320	Global Encounters in Art		3
ART 410	Greek Art	4A,4B	3
ART 411	History of Medieval Art	4A,4B	3
ART 412	History of Renaissance Art	4A,4B	3
ART 414	History of Baroque and Rococo Art	4A,4B	3
ART 415	History of 19th Century European Art	4A,4B	3
ART 416	History of European Art, 1900 to 1945	4A,4B	3
ART 417	Roman Art	4A,4B	3
ART 418	Contemporary Artists and Art Critics	4A,4B	3
ART 492A	Seminar: Art History	4A,4B	3
ART 496H	Group Study: Art History	4A,4B	3

1 Select 6 credits of Upper-Division Art History Courses total, at least 3 of which must satisfy AUCC categories 4A and 4B.

2 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

To declare this Concentration: A Portfolio Review is required to be submitted for review upon completion of three ART studio courses for continuing students and upon completion of two ART studio courses for transfer students and students who have changed majors.

Distinctive Requirements for Degree Program: A minimum grade of C (2.000) or better is required ART 357, ART 358, ART 457, ART 458.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
ART 105	Issues and Practices in Art		X		1
ART 110	Global Art History I	X			3
ART 135	Foundations - Form and Observation	X			3
ART 160	Foundations - Color and Composition	X			3
CO 150	College Composition (GT-CO2)		X	1A	3
Diversity and Global Awareness				3E	3
	Total Credits				16

Semester 2		Critical	Recommended	AUCC	Credits
ART 111	Global Art History II	X			3
ART 136	Introduction to Figure Drawing	X			3
ART 170	Foundations - Materials and Space	X			3
Arts and Humanities			X	3B	3
Quantitative Reasoning		X		1B	3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		Critical	Recommended	AUCC	Credits
ART 212	Global Art History III	X			3
Select two courses from the following:					6
ART 120	Foundations--Time and Structure				
ART 230	Photo Image Making I				
ART 235	Intermediate Drawing I				
ART 240	Pottery I				
ART 245	Metalsmithing and Jewelry I				
ART 250	Fibers I				
ART 255	Introduction to Graphic Design				
ART 260	Painting I				
ART 265	Printmaking I-Intaglio and Relief				
ART 270	Sculpture I				
Biological and Physical Sciences			X	3A	4
Historical Perspectives		X		3D	3
Portfolio review recommended by the end of Semester 3.			X		
	Total Credits				16

Semester 4		Critical	Recommended	AUCC	Credits
ART 256	Introduction to Electronic Art	X			3
Select one course from the following not previously taken:					3
ART 120	Foundations--Time and Structure				
ART 230	Photo Image Making I				
ART 235	Intermediate Drawing I				
ART 240	Pottery I				
ART 245	Metalsmithing and Jewelry I				
ART 250	Fibers I				
ART 255	Introduction to Graphic Design				
ART 260	Painting I				

ART 265	Printmaking I-Intaglio and Relief				
ART 270	Sculpture I				
Upper-Division Art History (See List on Concentration Requirements Tab)				4A,4B	3
Biological and Physical Sciences			X	3A	3
Social and Behavioral Sciences			X	3C	3
ART 256 must be completed by the end of Semester 4.		X			
Portfolio review must be completed by the end of Semester 4.		X			
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 358	Experimental Video	X			4
Art Elective			X		3
Upper-Division Art History (See List on Concentration Requirements Tab)			X	4A,4B	3
Advanced Writing			X	2	3
Arts and Humanities			X	3B	3
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 357	Interactive Media	X			4
Upper-Division Art Elective			X		4
Upper-Division Non-Art Elective			X		3
Elective			X		3
	Total Credits				14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 458	Advanced Experimental Video	X		4C	4
Upper-Division Non-Art Elective			X		3
Non-Art Electives (any level)			X		6
	Total Credits				13
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 400	BFA Portfolio	X			1
ART 457	Advanced Interactive Media	X			4
Upper-Division Art Elective		X			4
Upper-Division Non-Art Electives		X			6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Art (B.F.A.), Fibers Concentration

The Fibers concentration fosters creativity and artistic expression in a wide variety of textile media. Students develop skills in visual communication as they investigate the language of textiles and its role in contemporary art and design. Undergraduate courses provide foundations in weaving and surface-design methods—including fabric printing, painting, dyeing, and embellishment. Classes also promote creative investigation of off-loom constructions, feltmaking, mixed media, and installation.

Studio work is enriched with research in the collections of the Gregory Allicar Museum of Art and the Avenir Museum of Design and Merchandising. Students receive guidance in professional practices as they direct their talents toward careers in art, design, and education.

CSU alumni exhibit their work regionally, nationally, and internationally; teach at public and private schools, colleges, and universities; and lead workshop programs throughout the U.S. Our alumni also jury and curate exhibitions, work as designers, and write for national publications. Study abroad and internship opportunities are available. Suggested non-art electives that would enhance the major are: DM 120, AM 363, and AM 460.

Requirements Effective Fall 2018

A Portfolio Review is required to be submitted for review upon completion of three ART studio courses for continuing students and upon completion of two ART studio courses for transfer students and students who have changed majors.

A minimum grade of C (2.000) or better is required in ART 350, ART 351, ART 450, ART 451.

Freshman

		AUCC	Credits
ART 105	Issues and Practices in Art		1
ART 110	Global Art History I		3
ART 111	Global Art History II		3
ART 135	Foundations - Form and Observation		3
ART 136	Introduction to Figure Drawing		3
ART 160	Foundations - Color and Composition		3
ART 170	Foundations - Materials and Space		3
CO 150	College Composition (GT-CO2)	1A	3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Quantitative Reasoning		1B	3
	Total Credits		31

Sophomore

ART 212	Global Art History III		3
ART 250	Fibers I		3
Select three courses from the following:			9
ART 120	Foundations--Time and Structure		
ART 230	Photo Image Making I		
ART 235	Intermediate Drawing I		
ART 240	Pottery I		
ART 245	Metalsmithing and Jewelry I		
ART 255	Introduction to Graphic Design		
ART 256	Introduction to Electronic Art		
ART 260	Painting I		
ART 265	Printmaking I-Intaglio and Relief		
ART 270	Sculpture I		
Upper-Division Art History[1]		4A,4B	3
Biological and Physical Sciences		3A	7
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
	Total Credits		31

Junior

ART 350	Fibers II		4
ART 351	Fibers III		4
Art Elective[2]			3
Upper-Division Art History[1]		4A,4B	3
Upper-Division Art Elective[2]			4
Upper-Division Non-Art Elective			3
Advanced Writing		2	3
Arts and Humanities		3B	3
Elective			3
	Total Credits		30

Senior

ART 400	BFA Portfolio		1
ART 450	Fibers IV	4C	4
ART 451	Fibers V	4C	4
Upper-Division Art Elective[2]			4
Upper-Division Non-Art Elective[3]			9
Non-Art Electives (any level)[3]			6
	Total Credits		28
	Program Total Credits:		120

Upper-Division Art History Courses [1]

Code	Title	AUCC	Credits
ART 310	History of American Art to 1945	4A,4B	3
ART 311	Art of West and Central Africa	4A,4B	3
ART 312	Pre-Columbian Art of Mesoamerica	4A,4B	3
ART 313	Art of East and Southern Africa	4A,4B	3
ART 314	Women in Art History	4A,4B	3
ART 315	United States Art 1945-1980	4A,4B	3
ART 316	Art of the Pacific	4A,4B	3
ART 317	Native North American Art	4A,4B	3
ART 320	Global Encounters in Art		3
ART 410	Greek Art	4A,4B	3
ART 411	History of Medieval Art	4A,4B	3
ART 412	History of Renaissance Art	4A,4B	3
ART 414	History of Baroque and Rococo Art	4A,4B	3
ART 415	History of 19th Century European Art	4A,4B	3
ART 416	History of European Art, 1900 to 1945	4A,4B	3
ART 417	Roman Art	4A,4B	3
ART 418	Contemporary Artists and Art Critics	4A,4B	3
ART 492A	Seminar: Art History	4A,4B	3
ART 496H	Group Study: Art History	4A,4B	3

1 Select 6 credits of Upper-Division Art History Courses total, at least 3 of which must satisfy AUCC categories 4A and 4B.

2 ART 450 and ART 451 may be repeated for up to 8 credits each; 4 credits of each course are required in the Senior year for AUCC category 4C. If ART 450 or ART 451 are repeated for credit, the second 4 credits taken in each course may count toward the Art Elective or the Upper-Division Art Elective requirements.

3 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

To declare this Concentration: A Portfolio Review is required to be submitted for review upon completion of three ART studio courses for continuing students and upon completion of two ART studio courses for transfer students and students who have changed majors.

Distinctive Requirements for Degree Program: A minimum grade of C (2.000) or better is required in ART 350, ART 351, ART 450, ART 451.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
ART 105	Issues and Practices in Art		X		1
ART 110	Global Art History I	X			3
ART 135	Foundations - Form and Observation	X			3
ART 160	Foundations - Color and Composition	X			3
CO 150	College Composition (GT-CO2)		X	1A	3

Diversity and Global Awareness			X	3E	3
	Total Credits				16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 111	Global Art History II	X			3
ART 136	Introduction to Figure Drawing	X			3
ART 170	Foundations - Materials and Space	X			3
Arts and Humanities			X	3B	3
Quantitative Reasoning		X		1B	3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 212	Global Art History III	X			3
Select two courses from the following:					6
ART 120	Foundations--Time and Structure				
ART 230	Photo Image Making I				
ART 235	Intermediate Drawing I				
ART 240	Pottery I				
ART 245	Metalsmithing and Jewelry I				
ART 255	Introduction to Graphic Design				
ART 256	Introduction to Electronic Art				
ART 260	Painting I				
ART 265	Printmaking I-Intaglio and Relief				
ART 270	Sculpture I				
Biological and Physical Sciences			X	3A	4
Historical Perspectives				3D	3
Portfolio review recommended by the end of Semester 3.			X		
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 250	Fibers I	X			3
Select one course from the following not previously taken:					3
ART 120	Foundations--Time and Structure				
ART 230	Photo Image Making I				
ART 235	Intermediate Drawing I				
ART 240	Pottery I				
ART 245	Metalsmithing and Jewelry I				
ART 255	Introduction to Graphic Design				
ART 256	Introduction to Electronic Art				
ART 260	Painting I				
ART 265	Printmaking I-Intaglio and Relief				
ART 270	Sculpture I				
Upper-Division Art History (See List on Concentration Requirements Tab)				4A,4B	3
Biological and Physical Sciences			X	3A	3
Social and Behavioral Sciences			X	3C	3
ART 250 must be completed by the end of Semester 4.		X			
Portfolio review must be completed by the end of Semester 4.		X			
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 350	Fibers II	X			4
ART Elective			X		3
Upper-Division Art History (See List on Concentration Requirements Tab)			X	4A,4B	3

Advanced Writing			X	2	3
Arts and Humanities			X	3B	3
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 351	Fibers III	X			4
Upper-Division Art Elective			X		4
Upper-Division Non-Art Elective			X		3
Elective			X		3
	Total Credits				14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 450	Fibers IV	X		4C	4
Upper-Division Non-Art Elective			X		3
Non-Art Electives (any level)			X		6
	Total Credits				13
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 400	BFA Portfolio	X			1
ART 451	Fibers V	X		4C	4
Upper-Division Art Elective		X			4
Upper-Division Non-Art Electives		X			6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Art (B.F.A.), Graphic Design Concentration

The Graphic Design concentration is closely aligned with the artistry, practices, and standards of excellence in the contemporary design professions. With an emphasis on rich processes, conceptual problem-solving, and technical proficiency, students are able to create effective expressions of visual communication in a variety of print and digital media. Experimental explorations of typography, illustration, and design systems are expected from participants of the program, as well as applications of design that address social impact and awareness. Design theory, history, and professional practices are discussed regularly with faculty. Projects and activities are designed to prepare students for the varied challenges and opportunities for professionals in visual communications.

Requirements Effective Fall 2018

A Portfolio Review is required to be submitted for review upon completion of three ART studio courses for continuing students and upon completion of two ART studio courses for transfer students and students who have changed majors.

A minimum grade of C (2.000) or better is required in ART 355, ART 356, ART 455, ART 456.

Freshman

		AUCC	Credits
ART 105	Issues and Practices in Art		1
ART 110	Global Art History I		3
ART 111	Global Art History II		3
ART 135	Foundations - Form and Observation		3
ART 136	Introduction to Figure Drawing		3
ART 160	Foundations - Color and Composition		3
ART 170	Foundations - Materials and Space		3
CO 150	College Composition (GT-CO2)	1A	3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Quantitative Reasoning		1B	3
	Total Credits		31

Sophomore

ART 212	Global Art History III		3
ART 255	Introduction to Graphic Design		3
Select three courses from the following:			9
ART 120	Foundations--Time and Structure		
ART 230	Photo Image Making I		
ART 235	Intermediate Drawing I		
ART 240	Pottery I		
ART 245	Metalsmithing and Jewelry I		
ART 250	Fibers I		
ART 256	Introduction to Electronic Art		
ART 260	Painting I		
ART 265	Printmaking I-Intaglio and Relief		
ART 270	Sculpture I		
Upper-Division Art History[1]		4A,4B	3
Biological and Physical Sciences		3A	7
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
	Total Credits		31

Junior

ART 355	Typography and Design Systems		4
ART 356	Illustration		4
Art Elective[2]			3
Upper-Division Art History[1]		4A,4B	3
Upper-Division Art Elective[2]			4
Upper-Division Non-Art Elective			3
Advanced Writing		2	3
Arts and Humanities		3B	3
Elective			3
	Total Credits		30

Senior

ART 400	BFA Portfolio		1
ART 455	Advanced Typography and Design Systems	4C	4
ART 456	Advanced Illustration	4C	4
Upper-Division Art Elective[2]			4
Upper-Division Non-Art Electives[3]			9
Non-Art Electives (any level)[3]			6
	Total Credits		28
	Program Total Credits:		120

Upper-Division Art History Courses [1]

Code	Title	AUCC	Credits
ART 310	History of American Art to 1945	4A,4B	3
ART 311	Art of West and Central Africa	4A,4B	3
ART 312	Pre-Columbian Art of Mesoamerica	4A,4B	3
ART 313	Art of East and Southern Africa	4A,4B	3
ART 314	Women in Art History	4A,4B	3
ART 315	United States Art 1945-1980	4A,4B	3

ART 316	Art of the Pacific	4A,4B	3
ART 317	Native North American Art	4A,4B	3
ART 320	Global Encounters in Art		3
ART 410	Greek Art	4A,4B	3
ART 411	History of Medieval Art	4A,4B	3
ART 412	History of Renaissance Art	4A,4B	3
ART 414	History of Baroque and Rococo Art	4A,4B	3
ART 415	History of 19th Century European Art	4A,4B	3
ART 416	History of European Art, 1900 to 1945	4A,4B	3
ART 417	Roman Art	4A,4B	3
ART 418	Contemporary Artists and Art Critics	4A,4B	3
ART 492A	Seminar: Art History	4A,4B	3
ART 496H	Group Study: Art History	4A,4B	3

[1] Select 6 credits of Upper-Division Art History Courses total, at least 3 of which must satisfy AUCC categories 4A and 4B.

[2] ART 455 and ART 456 may be repeated for up to 8 credits each; 4 credits of each course are required in the Senior year for AUCC category 4C. If ART 455 or ART 456 are repeated for credit, the second 4 credits taken in each course may count toward the Art Elective or the Upper-Division Art Elective requirements.

[3] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

To declare this Concentration: A Portfolio Review is required to be submitted for review upon completion of three ART studio courses for continuing students and upon completion of two ART studio courses for transfer students and students who have changed majors.

Distinctive Requirements for Degree Program: A minimum grade of C (2.000) or better is required in ART 355, ART 356, ART 455, ART 456.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 105	Issues and Practices in Art		X		1
ART 110	Global Art History I	X			3
ART 135	Foundations - Form and Observation	X			3
ART 160	Foundations - Color and Composition	X			3
CO 150	College Composition (GT-CO2)		X	1A	3
Diversity and Global Awareness			X	3E	3
	Total Credits				16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 111	Global Art History II	X			3
ART 136	Introduction to Figure Drawing	X			3
ART 170	Foundations - Materials and Space	X			3
Arts and Humanities			X	3B	3
Quantitative Reasoning		X		1B	3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 212	Global Art History III	X			3
Select two courses from the following:					6
ART 120	Foundations--Time and Structure				
ART 230	Photo Image Making I				
ART 235	Intermediate Drawing I				
ART 240	Pottery I				
ART 245	Metalsmithing and Jewelry I				
ART 250	Fibers I				

ART 256	Introduction to Electronic Art				
ART 260	Painting I				
ART 265	Printmaking I-Intaglio and Relief				
ART 270	Sculpture I				
Biological and Physical Sciences			X	3A	4
Historical Perspectives				3D	3
Portfolio review recommended by the end of Semester 3.			X		
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 255	Introduction to Graphic Design	X			3
Select one course from the following not previously taken:					3
ART 120	Foundations--Time and Structure				
ART 230	Photo Image Making I				
ART 235	Intermediate Drawing I				
ART 240	Pottery I				
ART 245	Metalsmithing and Jewelry I				
ART 250	Fibers I				
ART 256	Introduction to Electronic Art				
ART 260	Painting I				
ART 265	Printmaking I-Intaglio and Relief				
ART 270	Sculpture I				
Upper-Division Art History (See List on Concentration Requirements Tab)				4A,4B	3
Biological and Physical Sciences			X	3A	3
Social and Behavioral Sciences			X	3C	3
ART 255 must be completed by the end of Semester 4.		X			
Portfolio review must be completed by the end of Semester 4.		X			
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 355	Typography and Design Systems	X			4
ART Elective			X		3
Upper-Division Art History (See List on Concentration Requirements Tab)			X	4A,4B	3
Advanced Writing			X	2	3
Arts and Humanities			X	3B	3
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 356	Illustration	X			4
Upper-Division Art Elective			X		4
Upper-Division Non-Art Elective			X		3
Elective			X		3
	Total Credits				14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 455	Advanced Typography and Design Systems	X		4C	4
Upper-Division Non-Art Elective			X		3
Non-Art Electives (any level)			X		6
	Total Credits				13
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 400	BFA Portfolio	X			1
ART 456	Advanced Illustration	X		4C	4
Upper-Division Art Elective		X			4
Upper-Division Non-Art Electives		X			6

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X	
Total Credits		15
Program Total Credits:		120

Major in Art (B.F.A.), Metalsmithing Concentration

The Metalsmithing concentration offers students the opportunity to explore a range of traditional techniques and processes, while emphasizing formal and conceptual development within their own artistic practice. Class projects introduce and strengthen technical skills, and provide awareness of both historical and contemporary practice within the field.

Students are encouraged to enter regional and national juried exhibitions, to participate in workshops and conferences, and ultimately to locate and establish a place for themselves within the field of contemporary jewelry and metalsmithing, either professionally, academically, or both.

Requirements Effective Fall 2018

A Portfolio Review is required to be submitted for review upon completion of three ART studio courses for continuing students and upon completion of two ART studio courses for transfer students and students who have changed majors.

A minimum grade of C (2.000) or better is required in ART 345, ART 346, ART 445, ART 446.

Freshman

		AUCC	Credits
ART 105	Issues and Practices in Art		1
ART 110	Global Art History I		3
ART 111	Global Art History II		3
ART 135	Foundations - Form and Observation		3
ART 136	Introduction to Figure Drawing		3
ART 160	Foundations - Color and Composition		3
ART 170	Foundations - Materials and Space		3
CO 150	College Composition (GT-CO2)	1A	3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Quantitative Reasoning		1B	3
	Total Credits		31

Sophomore

ART 212	Global Art History III		3
ART 245	Metalsmithing and Jewelry I		3
Select three courses from the following:			9
ART 120	Foundations--Time and Structure		
ART 230	Photo Image Making I		
ART 235	Intermediate Drawing I		
ART 240	Pottery I		
ART 250	Fibers I		
ART 255	Introduction to Graphic Design		
ART 256	Introduction to Electronic Art		
ART 260	Painting I		
ART 265	Printmaking I-Intaglio and Relief		
ART 270	Sculpture I		
Upper-Division Art History[1]		4A,4B	3
Biological and Physical Sciences		3A	7
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
	Total Credits		31

Junior

ART 345	Metalsmithing and Jewelry II		4
ART 346	Metalsmithing and Jewelry III		4
Art Elective			3
Upper-Division Art History[1]		4A,4B	3
Upper-Division Art Elective			4
Advanced Writing		2	3
Arts and Humanities		3B	3
Upper-Division Non-Art Elective			3
Elective			3
	Total Credits		30

Senior

ART 400	BFA Portfolio		1
ART 445	Metalsmithing and Jewelry IV	4C	4
ART 446	Metalsmithing and Jewelry V	4C	4
Upper-Division Art Elective			4
Upper-Division Non-Art Electives[2]			9
Non-Art Electives (any level)[2]			6
	Total Credits		28
	Program Total Credits:		120

Upper-Division Art History Courses [1]

Code	Title	AUCC	Credits
ART 310	History of American Art to 1945	4A,4B	3
ART 311	Art of West and Central Africa	4A,4B	3
ART 312	Pre-Columbian Art of Mesoamerica	4A,4B	3
ART 313	Art of East and Southern Africa	4A,4B	3
ART 314	Women in Art History	4A,4B	3
ART 315	United States Art 1945-1980	4A,4B	3
ART 316	Art of the Pacific	4A,4B	3
ART 317	Native North American Art	4A,4B	3
ART 320	Global Encounters in Art		3
ART 410	Greek Art	4A,4B	3
ART 411	History of Medieval Art	4A,4B	3
ART 412	History of Renaissance Art	4A,4B	3
ART 414	History of Baroque and Rococo Art	4A,4B	3
ART 415	History of 19th Century European Art	4A,4B	3
ART 416	History of European Art, 1900 to 1945	4A,4B	3
ART 417	Roman Art	4A,4B	3
ART 418	Contemporary Artists and Art Critics	4A,4B	3
ART 492A	Seminar: Art History	4A,4B	3
ART 496H	Group Study: Art History	4A,4B	3

1 Select 6 credits of Upper-Division Art History Courses total, at least 3 of which must satisfy AUCC categories 4A and 4B.

2 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

To declare this Concentration: A Portfolio Review is required to be submitted for review upon completion of three ART studio courses for continuing students and upon completion of two ART studio courses for transfer students and students who have changed majors.

Distinctive Requirements for Degree Program: A minimum grade of C (2.000) or better is required in ART 345, ART 346, ART 445, ART 446.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 105	Issues and Practices in Art		X		1
ART 110	Global Art History I	X			3
ART 135	Foundations - Form and Observation	X			3
ART 160	Foundations - Color and Composition	X			3
CO 150	College Composition (GT-CO2)		X	1A	3
Diversity and Global Awareness			X	3E	3
	Total Credits				16

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 111	Global Art History II	X			3
ART 136	Introduction to Figure Drawing	X			3
ART 170	Foundations - Materials and Space	X			3
Arts and Humanities			X	3B	3
Quantitative Reasoning		X		1B	3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 212	Global Art History III	X			3
Select two courses from the following:					6
ART 120	Foundations--Time and Structure				
ART 230	Photo Image Making I				
ART 235	Intermediate Drawing I				
ART 240	Pottery I				
ART 250	Fibers I				
ART 255	Introduction to Graphic Design				
ART 256	Introduction to Electronic Art				
ART 260	Painting I				
ART 265	Printmaking I-Intaglio and Relief				
ART 270	Sculpture I				
Biological and Physical Sciences			X	3A	4
Historical Perspectives				3D	3
Portfolio review recommended by the end of Semester 3.			X		
	Total Credits				16

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 245	Metalsmithing and Jewelry I	X			3
Select one course from the following not previously taken:					3
ART 120	Foundations--Time and Structure				
ART 230	Photo Image Making I				
ART 235	Intermediate Drawing I				
ART 240	Pottery I				
ART 250	Fibers I				
ART 255	Introduction to Graphic Design				
ART 256	Introduction to Electronic Art				
ART 260	Painting I				
ART 265	Printmaking I-Intaglio and Relief				
ART 270	Sculpture I				

Upper-Division Art History (See List on Concentration Requirements Tab)				4A,4B	3
Biological and Physical Sciences			X	3A	3
Social and Behavioral Sciences			X	3C	3
ART 245 must be completed by the end of Semester 4.		X			
Portfolio review must be completed by the end of Semester 4.		X			
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 345	Metalsmithing and Jewelry II	X			4
ART Elective			X		3
Upper-Division Art History (See List on Concentration Requirements Tab)			X	4A,4B	3
Advanced Writing			X	2	3
Arts and Humanities			X	3B	3
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 346	Metalsmithing and Jewelry III	X			4
Upper-Division Art Elective			X		4
Upper-Division Non-Art Elective			X		3
Elective			X		3
	Total Credits				14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 445	Metalsmithing and Jewelry IV	X		4C	4
Upper-Division Non-Art Elective			X		3
Non-Art Electives (any level)			X		6
	Total Credits				13
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 400	BFA Portfolio	X			1
ART 446	Metalsmithing and Jewelry V	X		4C	4
Upper-Division Art Elective		X			4
Upper-Division Non-Art Electives		X			6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Art (B.F.A.), Painting Concentration

The Painting concentration gives students the ability to explore, develop, and gain personal understanding of the visual language and technical aspects of the painting medium. Additionally, it encourages the development of material experimentation and conceptual thinking in the upper level courses. Students begin by working from observation, developing skills and proficiency in oils. As students gain skills and abilities with oil paints they are encouraged to challenge the very notion of what painting is by exploring alternative tools, methods and surfaces. Discipline and perseverance are strengthened as students develop a unique voice, conceptually and formally. In their senior year, students work closely with the Painting faculty to develop a distinctive body of work that is sophisticated in its content and scope.

Requirements Effective Fall 2018

A Portfolio Review is required to be submitted for review upon completion of three ART studio courses for continuing students and upon completion of two ART studio courses for transfer students and students who have changed majors.

A minimum grade of C (2.000) or better is required in ART 360, ART 361, ART 460, ART 461.

Freshman

		AUCC	Credits
ART 105	Issues and Practices in Art		1
ART 110	Global Art History I		3
ART 111	Global Art History II		3
ART 135	Foundations - Form and Observation		3
ART 136	Introduction to Figure Drawing		3
ART 160	Foundations - Color and Composition		3
ART 170	Foundations - Materials and Space		3
CO 150	College Composition (GT-CO2)	1A	3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Quantitative Reasoning		1B	3
	Total Credits		31

Sophomore

ART 212	Global Art History III		3
ART 260	Painting I		3
Select three courses from the following:			9
ART 120	Foundations--Time and Structure		
ART 230	Photo Image Making I		
ART 235	Intermediate Drawing I		
ART 240	Pottery I		
ART 245	Metalsmithing and Jewelry I		
ART 250	Fibers I		
ART 255	Introduction to Graphic Design		
ART 256	Introduction to Electronic Art		
ART 265	Printmaking I-Intaglio and Relief		
ART 270	Sculpture I		
Upper-Division Art History[1]		4A,4B	3
Biological and Physical Sciences		3A	7
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
	Total Credits		31

Junior

ART 360	Painting Methods and Materials		4
ART 361	Figure Painting		4
Art Elective			3
Upper-Division Art History[1]		4A,4B	3
Upper-Division Art Elective			4
Advanced Writing		2	3
Arts and Humanities		3B	3
Upper-Division Non-Art Elective			3
Elective			3
	Total Credits		30

Senior

ART 400	BFA Portfolio		1
ART 460	Advanced Painting I	4C	4
ART 461	Advanced Painting II	4C	4

Upper-Division Art Elective	4
Upper-Division Non-Art Electives[2]	9
Non-Art Electives (any level)[2]	6
Total Credits	28
Program Total Credits:	120

Upper-Division Art History Courses [1]

Code	Title	AUCC	Credits
ART 310	History of American Art to 1945	4A,4B	3
ART 311	Art of West and Central Africa	4A,4B	3
ART 312	Pre-Columbian Art of Mesoamerica	4A,4B	3
ART 313	Art of East and Southern Africa	4A,4B	3
ART 314	Women in Art History	4A,4B	3
ART 315	United States Art 1945-1980	4A,4B	3
ART 316	Art of the Pacific	4A,4B	3
ART 317	Native North American Art	4A,4B	3
ART 320	Global Encounters in Art		3
ART 410	Greek Art	4A,4B	3
ART 411	History of Medieval Art	4A,4B	3
ART 412	History of Renaissance Art	4A,4B	3
ART 414	History of Baroque and Rococo Art	4A,4B	3
ART 415	History of 19th Century European Art	4A,4B	3
ART 416	History of European Art, 1900 to 1945	4A,4B	3
ART 417	Roman Art	4A,4B	3
ART 418	Contemporary Artists and Art Critics	4A,4B	3
ART 492A	Seminar: Art History	4A,4B	3
ART 496H	Group Study: Art History	4A,4B	3

1 Select 6 credits of Upper-Division Art History Courses total, at least 3 of which must satisfy AUCC categories 4A and 4B.

2 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

To declare this Concentration: A Portfolio Review is required to be submitted for review upon completion of three ART studio courses for continuing students and upon completion of two ART studio courses for transfer students and students who have changed majors.

Distinctive Requirements for Degree Program: A minimum grade of C (2.000) or better is required in ART 360, ART 361, ART 460, ART 461.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
ART 105	Issues and Practices in Art		X		1
ART 110	Global Art History I	X			3
ART 135	Foundations - Form and Observation	X			3
ART 160	Foundations - Color and Composition	X			3
CO 150	College Composition (GT-CO2)		X	1A	3
Diversity and Global Awareness			X	3E	3
	Total Credits				16

Semester 2		Critical	Recommended	AUCC	Credits
ART 111	Global Art History II	X			3
ART 136	Introduction to Figure Drawing	X			3
ART 170	Foundations - Materials and Space	X			3

Arts and Humanities			X	3B	3
Quantitative Reasoning		X		1B	3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 212	Global Art History III	X			3
Select two courses from the following:					6
ART 120	Foundations--Time and Structure				
ART 230	Photo Image Making I				
ART 235	Intermediate Drawing I				
ART 240	Pottery I				
ART 245	Metalsmithing and Jewelry I				
ART 250	Fibers I				
ART 255	Introduction to Graphic Design				
ART 256	Introduction to Electronic Art				
ART 265	Printmaking I-Intaglio and Relief				
ART 270	Sculpture I				
Biological and Physical Sciences			X	3A	4
Historical Perspectives			X	3D	3
Portfolio review recommended by the end of Semester 3.			X		
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 260	Painting I	X			3
Select one course from the following not previously taken:					3
ART 120	Foundations--Time and Structure				
ART 230	Photo Image Making I				
ART 235	Intermediate Drawing I				
ART 240	Pottery I				
ART 245	Metalsmithing and Jewelry I				
ART 250	Fibers I				
ART 255	Introduction to Graphic Design				
ART 256	Introduction to Electronic Art				
ART 265	Printmaking I-Intaglio and Relief				
ART 270	Sculpture I				
Upper-Division Art History (See List on Concentration Requirements Tab)				4A,4B	3
Biological and Physical Sciences			X	3A	3
Social and Behavioral Sciences			X	3C	3
ART 260 must be completed by the end of Semester 4.		X			
Portfolio review must be completed by the end of Semester 4.		X			
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 361	Figure Painting	X			4
ART Elective			X		3
Upper-Division Art History (See List on Concentration Requirements Tab)			X	4A,4B	3
Advanced Writing			X	2	3
Arts and Humanities			X	3B	3
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 360	Painting Methods and Materials	X			4
Upper-Division Art Elective			X		4

Upper-Division Non-Art Elective			X		3
Elective			X		3
	Total Credits				14

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 460	Advanced Painting I	X		4C	4
Upper-Division Non-Art Elective			X		3
Non-Art Electives (any level)			X		6
	Total Credits				13

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 400	BFA Portfolio	X			1
ART 461	Advanced Painting II	X		4C	4
Upper-Division Art Elective		X			4
Upper-Division Non-Art Electives		X			6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Art (B.F.A.), Photo Image Making Concentration

The Photo Image Making concentration is structured to enable students to concentrate on expressive, personal applications of the photographic medium. Projects and assignments encourage each student to explore individual directions, with equal emphasis given to intuitive and intellectual concerns. Student work is evaluated for aesthetic quality and technical excellence. The curriculum is designed to provide students with a strong foundation in the fundamentals of contemporary photographic practice, while emphasizing investigation of the medium for its expressive potential and understanding its connections to the contemporary art world. Interdisciplinary and experimental work is encouraged, as are more traditional approaches and conventional processes. Facilities are available to enable offerings in a wide range of processes and techniques, from standard silver-based imagery production and digital capture/output methods to alternative processes such as cyanotype and palladium printing. In short, information and instruction are provided for any image making strategy that a student wishes to pursue.

Requirements Effective Fall 2018

A Portfolio Review is required to be submitted for review upon completion of three ART studio courses for continuing students and upon completion of two ART studio courses for transfer students and students who have changed majors.

A minimum grade of C (2.000) or better is required in ART 330, ART 331, ART 430, ART 431.

Freshman

		AUCC	**Credits**
ART 105	Issues and Practices in Art		1
ART 110	Global Art History I		3
ART 111	Global Art History II		3
ART 135	Foundations - Form and Observation		3
ART 136	Introduction to Figure Drawing		3
ART 160	Foundations - Color and Composition		3
ART 170	Foundations - Materials and Space		3
CO 150	College Composition (GT-CO2)	1A	3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Quantitative Reasoning		1B	3
	Total Credits		31

Sophomore

ART 212	Global Art History III	3
ART 230	Photo Image Making I	3

Select three courses from the following:			9
ART 120	Foundations--Time and Structure		
ART 235	Intermediate Drawing I		
ART 240	Pottery I		
ART 245	Metalsmithing and Jewelry I		
ART 250	Fibers I		
ART 255	Introduction to Graphic Design		
ART 256	Introduction to Electronic Art		
ART 260	Painting I		
ART 265	Printmaking I-Intaglio and Relief		
ART 270	Sculpture I		
Upper-Division Art History[1]		4A,4B	3
Biological and Physical Sciences		3A	7
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
	Total Credits		31
Junior			
ART 330	Photo Image Making II		4
ART 331	Photo Image Making III		4
Art Elective			3
Upper-Division Art History[1]		4A,4B	3
Upper-Division Art Elective			4
Advanced Writing		2	3
Arts and Humanities		3B	3
Upper-Division Non-Art Elective			3
Elective			3
	Total Credits		30
Senior			
ART 400	BFA Portfolio		1
ART 430	Advanced Photo Image Making I	4C	4
ART 431	Advanced Photo Image Making II	4C	4
Upper-Division Art Elective			4
Upper-Division Non-Art Electives[2]			9
Non-Art Electives (any level)[2]			6
	Total Credits		28
	Program Total Credits:		120

Upper-Division Art History Courses [1]

Code	Title	AUCC	Credits
ART 310	History of American Art to 1945	4A,4B	3
ART 311	Art of West and Central Africa	4A,4B	3
ART 312	Pre-Columbian Art of Mesoamerica	4A,4B	3
ART 313	Art of East and Southern Africa	4A,4B	3
ART 314	Women in Art History	4A,4B	3
ART 315	United States Art 1945-1980	4A,4B	3
ART 316	Art of the Pacific	4A,4B	3
ART 317	Native North American Art	4A,4B	3
ART 320	Global Encounters in Art		3
ART 410	Greek Art	4A,4B	3

ART 411	History of Medieval Art	4A,4B	3
ART 412	History of Renaissance Art	4A,4B	3
ART 414	History of Baroque and Rococo Art	4A,4B	3
ART 415	History of 19th Century European Art	4A,4B	3
ART 416	History of European Art, 1900 to 1945	4A,4B	3
ART 417	Roman Art	4A,4B	3
ART 418	Contemporary Artists and Art Critics	4A,4B	3
ART 492A	Seminar: Art History	4A,4B	3
ART 496H	Group Study: Art History	4A,4B	3

[1] Select 6 credits of Upper-Division Art History Courses total, at least 3 of which must satisfy AUCC categories 4A and 4B.

[2] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

To declare this Concentration: A Portfolio Review is required to be submitted for review upon completion of three ART studio courses for continuing students and upon completion of two ART studio courses for transfer students and students who have changed majors.

Distinctive Requirements for Degree Program: A minimum grade of C (2.000) or better is required in ART 330, ART 331, ART 430,ART 431.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 105	Issues and Practices in Art		X		1
ART 110	Global Art History I	X			3
ART 135	Foundations - Form and Observation	X			3
ART 160	Foundations - Color and Composition	X			3
CO 150	College Composition (GT-CO2)		X	1A	3
Diversity and Global Awareness			X	3E	3
	Total Credits				16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 111	Global Art History II	X			3
ART 136	Introduction to Figure Drawing	X			3
ART 170	Foundations - Materials and Space	X			3
Arts and Humanities			X	3B	3
Quantitative Reasoning		X		1B	3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 212	Global Art History III	X			3
Select two courses from the following:					6
ART 120	Foundations--Time and Structure				
ART 235	Intermediate Drawing I				
ART 240	Pottery I				
ART 245	Metalsmithing and Jewelry I				
ART 250	Fibers I				
ART 255	Introduction to Graphic Design				
ART 256	Introduction to Electronic Art				
ART 260	Painting I				
ART 265	Printmaking I-Intaglio and Relief				
ART 270	Sculpture I				
Biological and Physical Sciences			X	3A	4
Historical Perspectives			X	3D	3

Portfolio review recommended by the end of Semester 3.			X		
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 230	Photo Image Making I	X			3
Select one course from the following not previously taken:					3
ART 120	Foundations--Time and Structure				
ART 235	Intermediate Drawing I				
ART 240	Pottery I				
ART 245	Metalsmithing and Jewelry I				
ART 250	Fibers I				
ART 255	Introduction to Graphic Design				
ART 256	Introduction to Electronic Art				
ART 260	Painting I				
ART 265	Printmaking I-Intaglio and Relief				
ART 270	Sculpture I				
Upper-Division Art History (See List on Concentration Requirements Tab)				4A,4B	3
Biological and Physical Sciences			X	3A	3
Social and Behavioral Sciences			X	3C	3
ART 230 must be completed by the end of Semester 4.		X			
Portfolio review must be completed by the end of Semester 4.		X			
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 330	Photo Image Making II	X			4
ART Elective			X		3
Upper-Division Art History (See List on Concentration Requirements Tab)			X	4A,4B	3
Advanced Writing			X	2	3
Arts and Humanities			X	3B	3
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 331	Photo Image Making III	X			4
Upper-Division Art Elective			X		4
Upper-Division Non-Art Elective			X		3
Elective			X		3
	Total Credits				14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 430	Advanced Photo Image Making I	X		4C	4
Upper-Division Non-Art Elective			X		3
Non-Art Electives (any level)			X		6
	Total Credits				13
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 400	BFA Portfolio	X			1
ART 431	Advanced Photo Image Making II	X		4C	4
Upper-Division Art Elective		X			4
Upper-Division Non-Art Electives		X			6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Art (B.F.A.), Pottery Concentration

The Pottery concentration is committed to providing a comprehensive curriculum in the range of processes and concepts present in contemporary ceramic art. The philosophy of the area encourages the concurrent development of critical, technical, and manual skills. Issues and debates in contemporary crafts, sculpture, architecture, design, and studio pottery are presented alongside a rigorous exploration of forming and decorating processes and technology.

Requirements Effective Fall 2018

A Portfolio Review is required to be submitted for review upon completion of three ART studio courses for continuing students and upon completion of two ART studio courses for transfer students and students who have changed majors.

A minimum grade of C (2.000) or better is required in ART 340 ART 341, ART 440, ART 441.

Freshman

		AUCC	Credits
ART 105	Issues and Practices in Art		1
ART 110	Global Art History I		3
ART 111	Global Art History II		3
ART 135	Foundations - Form and Observation		3
ART 136	Introduction to Figure Drawing		3
ART 160	Foundations - Color and Composition		3
ART 170	Foundations - Materials and Space		3
CO 150	College Composition (GT-CO2)	1A	3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Quantitative Reasoning		1B	3
	Total Credits		31

Sophomore

ART 212	Global Art History III		3
ART 240	Pottery I		3
Select three courses from the following:			9
ART 120	Foundations--Time and Structure		
ART 230	Photo Image Making I		
ART 235	Intermediate Drawing I		
ART 245	Metalsmithing and Jewelry I		
ART 250	Fibers I		
ART 255	Introduction to Graphic Design		
ART 256	Introduction to Electronic Art		
ART 260	Painting I		
ART 265	Printmaking I-Intaglio and Relief		
ART 270	Sculpture I		
Upper-Division Art History[1]		4A,4B	3
Biological and Physical Sciences		3A	7
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
	Total Credits		31

Junior

ART 340	Pottery II		4
ART 341	Pottery III		4
Art Elective			3
Upper-Division Art History[1]		4A,4B	3
Upper-Division Art Elective			4

Advanced Writing		2	3
Arts and Humanities		3B	3
Upper-Division Non-Art Elective			3
Elective			3
	Total Credits		30
Senior			
ART 400	BFA Portfolio		1
ART 440	Pottery IV	4C	4
ART 441	Pottery V	4C	4
Upper-Division Art Elective			4
Upper-Division Non-Art Electives[2]			9
Non-Art Electives (any level)[2]			6
	Total Credits		28
	Program Total Credits:		120

Upper-Division Art History Courses [1]

Code	Title	AUCC	Credits
ART 310	History of American Art to 1945	4A,4B	3
ART 311	Art of West and Central Africa	4A,4B	3
ART 312	Pre-Columbian Art of Mesoamerica	4A,4B	3
ART 313	Art of East and Southern Africa	4A,4B	3
ART 314	Women in Art History	4A,4B	3
ART 315	United States Art 1945-1980	4A,4B	3
ART 316	Art of the Pacific	4A,4B	3
ART 317	Native North American Art	4A,4B	3
ART 320	Global Encounters in Art		3
ART 410	Greek Art	4A,4B	3
ART 411	History of Medieval Art	4A,4B	3
ART 412	History of Renaissance Art	4A,4B	3
ART 414	History of Baroque and Rococo Art	4A,4B	3
ART 415	History of 19th Century European Art	4A,4B	3
ART 416	History of European Art, 1900 to 1945	4A,4B	3
ART 417	Roman Art	4A,4B	3
ART 418	Contemporary Artists and Art Critics	4A,4B	3
ART 492A	Seminar: Art History	4A,4B	3
ART 496H	Group Study: Art History	4A,4B	3

1 Select 6 credits of Upper-Division Art History Courses total, at least 3 of which must satisfy AUCC categories 4A and 4B.

2 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

To declare this Concentration: A Portfolio Review is required to be submitted for review upon completion of three ART studio courses for continuing students and upon completion of two ART studio courses for transfer students and students who have changed majors.

Distinctive Requirements for Degree Program: A minimum grade of C (2.000) or better is required in ART 340 ART 341, ART 440, ART 441.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 105	Issues and Practices in Art		X		1
ART 110	Global Art History I	X			3
ART 135	Foundations - Form and Observation	X			3
ART 160	Foundations - Color and Composition	X			3
CO 150	College Composition (GT-CO2)		X	1A	3
Diversity and Global Awareness			X	3E	3
	Total Credits				16

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 111	Global Art History II	X			3
ART 136	Introduction to Figure Drawing	X			3
ART 170	Foundations - Materials and Space	X			3
Arts and Humanities			X	3B	3
Quantitative Reasoning		X		1B	3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 212	Global Art History III	X			3
Select two courses from the following:					6
ART 120	Foundations--Time and Structure				
ART 230	Photo Image Making I				
ART 235	Intermediate Drawing I				
ART 245	Metalsmithing and Jewelry I				
ART 250	Fibers I				
ART 255	Introduction to Graphic Design				
ART 256	Introduction to Electronic Art				
ART 260	Painting I				
ART 265	Printmaking I-Intaglio and Relief				
ART 270	Sculpture I				
Biological and Physical Sciences			X	3A	4
Historical Perspectives			X	3D	3
Portfolio review recommended by the end of Semester 3.			X		
	Total Credits				16

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 240	Pottery I	X			3
Select one course from the following not previously taken:					3
ART 120	Foundations--Time and Structure				
ART 230	Photo Image Making I				
ART 235	Intermediate Drawing I				
ART 245	Metalsmithing and Jewelry I				
ART 250	Fibers I				
ART 255	Introduction to Graphic Design				
ART 256	Introduction to Electronic Art				
ART 260	Painting I				
ART 265	Printmaking I-Intaglio and Relief				
ART 270	Sculpture I				
Upper-Division Art History (See List on Concentration Requirements Tab)				4A,4B	3
Biological and Physical Sciences			X	3A	3
Social and Behavioral Sciences			X	3C	3

ART 240 must be completed by the end of Semester 4.		X			
Portfolio review must be completed by the end of Semester 4.		X			
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 340	Pottery II	X			4
ART Elective			X		3
Upper-Division Art History (See List on Concentration Requirements Tab)			X	4A,4B	3
Advanced Writing			X	2	3
Arts and Humanities			X	3B	3
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 341	Pottery III	X			4
Upper-Division Art Elective			X		4
Upper-Division Non-Art Elective			X		3
Elective			X		3
	Total Credits				14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 440	Pottery IV	X		4C	4
Upper-Division Non-Art Elective			X		3
Non-Art Electives (any level)			X		6
	Total Credits				13
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 400	BFA Portfolio	X			1
ART 441	Pottery V	X		4C	4
Upper-Division Art Elective		X			4
Upper-Division Non-Art Electives		X			6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Art (B.F.A.), Printmaking Concentration

Printmaking courses at the undergraduate level are taught in a series of workshops that are structured to develop a strong personal vision and instill the self-confidence necessary to allow ongoing creative growth. A sound technical background in a variety of media provides students with the basic knowledge needed to cultivate a strong studio practice and explore new authentic research based off of that foundation. The community workshop atmosphere presumes the notion that the interaction of serious, highly motivated artists sharing visual concepts and technical investigations in the same space will undoubtedly lead to a wide array of unique and diverse avenues of creative inquiry.

Requirements Effective Fall 2018

A Portfolio Review is required to be submitted for review upon completion of three ART studio courses for continuing students and upon completion of two ART studio courses for transfer students and students who have changed majors.

A minimum grade of C (2.000) or better is required in ART 365, ART 366, ART 465, ART 466.

Freshman

		AUCC	Credits
ART 105	Issues and Practices in Art		1
ART 110	Global Art History I		3
ART 111	Global Art History II		3
ART 135	Foundations - Form and Observation		3
ART 136	Introduction to Figure Drawing		3

ART 160	Foundations - Color and Composition		3
ART 170	Foundations - Materials and Space		3
CO 150	College Composition (GT-CO2)	1A	3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Quantitative Reasoning		1B	3
	Total Credits		31

Sophomore

ART 212	Global Art History III		3
ART 265	Printmaking I-Intaglio and Relief		3
Select three courses from the following:			9
ART 120	Foundations--Time and Structure		
ART 230	Photo Image Making I		
ART 235	Intermediate Drawing I		
ART 240	Pottery I		
ART 245	Metalsmithing and Jewelry I		
ART 250	Fibers I		
ART 255	Introduction to Graphic Design		
ART 256	Introduction to Electronic Art		
ART 260	Painting I		
ART 270	Sculpture I		
Upper-Division Art History[1]		4A,4B	3
Biological and Physical Sciences		3A	7
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
	Total Credits		31

Junior

ART 365	Printmaking II-Lithography		4
ART 366	Printmaking III-Studio Workshop		4
Art Elective[2]			3
Upper-Division Art History[1]		4A,4B	3
Upper-Division Art Elective[2]			4
Advanced Writing		2	3
Arts and Humanities		3B	3
Upper-Division Non-Art Elective			3
Elective			3
	Total Credits		30

Senior

ART 400	BFA Portfolio		1
ART 465	Printmaking IV-Studio Workshop	4C	4
ART 466	Printmaking V-Studio Workshop	4C	4
Upper-Division Art Elective[2]			4
Upper-Division Non-Art Electives[3]			9
Non-Art Electives (any level)[3]			6
	Total Credits		28
	Program Total Credits:		120

Upper-Division Art History Courses [1]

Code	Title	AUCC	Credits
ART 310	History of American Art to 1945	4A,4B	3
ART 311	Art of West and Central Africa	4A,4B	3
ART 312	Pre-Columbian Art of Mesoamerica	4A,4B	3
ART 313	Art of East and Southern Africa	4A,4B	3
ART 314	Women in Art History	4A,4B	3
ART 315	United States Art 1945-1980	4A,4B	3
ART 316	Art of the Pacific	4A,4B	3
ART 317	Native North American Art	4A,4B	3
ART 320	Global Encounters in Art		3
ART 410	Greek Art	4A,4B	3
ART 411	History of Medieval Art	4A,4B	3
ART 412	History of Renaissance Art	4A,4B	3
ART 414	History of Baroque and Rococo Art	4A,4B	3
ART 415	History of 19th Century European Art	4A,4B	3
ART 416	History of European Art, 1900 to 1945	4A,4B	3
ART 417	Roman Art	4A,4B	3
ART 418	Contemporary Artists and Art Critics	4A,4B	3
ART 492A	Seminar: Art History	4A,4B	3
ART 496H	Group Study: Art History	4A,4B	3

[1] Select 6 credits of Upper-Division Art History Courses total, at least 3 of which must satisfy AUCC categories 4A and 4B.

[2] ART 466 may be repeated for up to 8 credits; 4 credits are required in the Senior year for AUCC category 4C. If ART 466 is repeated for credit, the second 4 credits taken may count toward the Art Elective or the Upper-Division Art Elective requirements.

[3] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

To declare this Concentration: A Portfolio Review is required to be submitted for review upon completion of three ART studio courses for continuing students and upon completion of two ART studio courses for transfer students and students who have changed majors.

Distinctive Requirements for Degree Program: A minimum grade of C (2.000) or better is required in ART 365, ART 366, ART 465, ART 466.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
ART 105	Issues and Practices in Art		X		1
ART 110	Global Art History I	X			3
ART 135	Foundations - Form and Observation	X			3
ART 160	Foundations - Color and Composition	X			3
CO 150	College Composition (GT-CO2)		X	1A	3
Diversity and Global Awareness			X	3E	3
	Total Credits				16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 111	Global Art History II	X			3
ART 136	Introduction to Figure Drawing	X			3
ART 170	Foundations - Materials and Space	X			3
Arts and Humanities			X	3B	3
Quantitative Reasoning		X		1B	3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 212	Global Art History III	X			3
Select two courses from the following:					6
ART 120	Foundations--Time and Structure				
ART 230	Photo Image Making I				
ART 235	Intermediate Drawing I				
ART 240	Pottery I				
ART 245	Metalsmithing and Jewelry I				
ART 250	Fibers I				
ART 255	Introduction to Graphic Design				
ART 256	Introduction to Electronic Art				
ART 260	Painting I				
ART 270	Sculpture I				
Biological and Physical Sciences			X	3A	4
Historical Perspectives			X	3D	3
Portfolio review recommended by the end of Semester 3.			X		
	Total Credits				16

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 265	Printmaking I-Intaglio and Relief	X			3
Select one course from the following not previously taken:					3
ART 120	Foundations--Time and Structure				
ART 230	Photo Image Making I				
ART 235	Intermediate Drawing I				
ART 240	Pottery I				
ART 245	Metalsmithing and Jewelry I				
ART 250	Fibers I				
ART 255	Introduction to Graphic Design				
ART 256	Introduction to Electronic Art				
ART 260	Painting I				
ART 270	Sculpture I				
Upper-Division Art History (See List on Concentration Requirements Tab)				4A,4B	3
Biological and Physical Sciences			X	3A	3
Social and Behavioral Sciences			X	3C	3
ART 265 must be completed by the end of Semester 4.		X			
Portfolio review must be completed by the end of Semester 4.		X			
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 365	Printmaking II-Lithography	X			4
ART Elective			X		3
Upper-Division Art History (See List on Concentration Requirements Tab)			X	4A,4B	3
Advanced Writing			X	2	3
Arts and Humanities			X	3B	3
	Total Credits				16

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 366	Printmaking III-Studio Workshop	X			4
Upper-Division Art Elective			X		4
Upper-Division Non-Art Elective			X		3
Elective			X		3
	Total Credits				14

Senior

Semester 7		Critical	Recommended	AUCC	Credits
ART 465	Printmaking IV-Studio Workshop	X		4C	4
Upper-Division Non-Art Elective			X		3
Non-Art Electives (any level)			X		6
	Total Credits				13
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 400	BFA Portfolio	X			1
ART 466	Printmaking V-Studio Workshop	X		4C	4
Upper-Division Art Elective		X			4
Upper-Division Non-Art Electives		X			6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Art (B.F.A.), Sculpture Concentration

The Sculpture concentration challenges students to create a vibrant fusion between technical process, conceptual expression, and professionalism. Students are encouraged to experiment and innovate while exploring content in the areas of object-making, installation, site-based work, performance, time-based art, and digital processes. Through the integration of readings, classroom discussion, presentations, and individual research, the sculpture curriculum is designed to enable students to explore concepts and content relevant both in today's contemporary society and in the art world. The synthesis of this broad spectrum of information is intended to aid students as they develop a unique personal vision for their artwork and studio practice. Refined technical skill will be developed and is a requirement for students as they progress through the Sculpture concentration.

Requirements Effective Fall 2018

A Portfolio Review is required to be submitted for review upon completion of three ART studio courses for continuing students and upon completion of two ART studio courses for transfer students and students who have changed majors.

A minimum grade of C (2.000) or better is required in ART 370, ART 371, ART 470, ART 471.

Freshman

		AUCC	Credits
ART 105	Issues and Practices in Art		1
ART 110	Global Art History I		3
ART 111	Global Art History II		3
ART 135	Foundations - Form and Observation		3
ART 136	Introduction to Figure Drawing		3
ART 160	Foundations - Color and Composition		3
ART 170	Foundations - Materials and Space		3
CO 150	College Composition (GT-CO2)	1A	3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Quantitative Reasoning		1B	3
	Total Credits		31

Sophomore

ART 212	Global Art History III	3
ART 270	Sculpture I	3
Select three courses from the following:		9
ART 120	Foundations--Time and Structure	
ART 230	Photo Image Making I	
ART 235	Intermediate Drawing I	
ART 240	Pottery I	

ART 245	Metalsmithing and Jewelry I		
ART 250	Fibers I		
ART 255	Introduction to Graphic Design		
ART 256	Introduction to Electronic Art		
ART 260	Painting I		
ART 265	Printmaking I-Intaglio and Relief		
Upper-Division Art History[1]		4A,4B	3
Biological and Physical Sciences		3A	7
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
	Total Credits		31

Junior

ART 370	Sculpture II		4
ART 371	Sculpture III		4
Art Elective			3
Upper-Division Art History[1]		4A,4B	3
Upper-Division Art Elective			4
Advanced Writing		2	3
Arts and Humanities		3B	3
Upper-Division Non-Art Elective			3
Elective			3
	Total Credits		30

Senior

ART 400	BFA Portfolio		1
ART 470	Sculpture IV	4C	4
ART 471	Sculpture V	4C	4
Upper-Division Art Elective			4
Upper-Division Non-Art Electives[2]			9
Non-Art Electives (any level)[2]			6
	Total Credits		28
	Program Total Credits:		120

Upper-Division Art History Courses [1]

Code	Title	AUCC	Credits
ART 310	History of American Art to 1945	4A,4B	3
ART 311	Art of West and Central Africa	4A,4B	3
ART 312	Pre-Columbian Art of Mesoamerica	4A,4B	3
ART 313	Art of East and Southern Africa	4A,4B	3
ART 314	Women in Art History	4A,4B	3
ART 315	United States Art 1945-1980	4A,4B	3
ART 316	Art of the Pacific	4A,4B	3
ART 317	Native North American Art	4A,4B	3
ART 320	Global Encounters in Art		3
ART 410	Greek Art	4A,4B	3
ART 411	History of Medieval Art	4A,4B	3
ART 412	History of Renaissance Art	4A,4B	3
ART 414	History of Baroque and Rococo Art	4A,4B	3
ART 415	History of 19th Century European Art	4A,4B	3

ART 416	History of European Art, 1900 to 1945	4A,4B	3
ART 417	Roman Art	4A,4B	3
ART 418	Contemporary Artists and Art Critics	4A,4B	3
ART 492A	Seminar: Art History	4A,4B	3
ART 496H	Group Study: Art History	4A,4B	3

[1] Select 6 credits of Upper-Division Art History Courses total, at least 3 of which must satisfy AUCC categories 4A and 4B.

[2] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

To declare this Concentration: A Portfolio Review is required to be submitted for review upon completion of three ART studio courses for continuing students and upon completion of two ART studio courses for transfer students and students who have changed majors.

Distinctive Requirements for Degree Program: A minimum grade of C (2.000) or better is required in ART 370, ART 371, ART 470, ART 471.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 105	Issues and Practices in Art		X		1
ART 110	Global Art History I	X			3
ART 135	Foundations - Form and Observation	X			3
ART 160	Foundations - Color and Composition	X			3
CO 150	College Composition (GT-CO2)		X	1A	3
Diversity and Global Awareness			X	3E	3
	Total Credits				16

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 111	Global Art History II	X			3
ART 136	Introduction to Figure Drawing	X			3
ART 170	Foundations - Materials and Space	X			3
Arts and Humanities			X	3B	3
Quantitative Reasoning		X		1B	3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 212	Global Art History III	X			3
Select two courses from the following:					6
ART 120	Foundations--Time and Structure				
ART 230	Photo Image Making I				
ART 235	Intermediate Drawing I				
ART 240	Pottery I				
ART 245	Metalsmithing and Jewelry I				
ART 250	Fibers I				
ART 255	Introduction to Graphic Design				
ART 256	Introduction to Electronic Art				
ART 260	Painting I				
ART 265	Printmaking I-Intaglio and Relief				
Biological and Physical Sciences			X	3A	4
Historical Perspectives			X	3D	3
Portfolio review recommended by the end of Semester 3.			X		
	Total Credits				16

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 270	Sculpture I	X			3

Select one course from the following not previously taken:					3
ART 120	Foundations--Time and Structure				
ART 230	Photo Image Making I				
ART 235	Intermediate Drawing I				
ART 240	Pottery I				
ART 245	Metalsmithing and Jewelry I				
ART 250	Fibers I				
ART 255	Introduction to Graphic Design				
ART 256	Introduction to Electronic Art				
ART 260	Painting I				
ART 265	Printmaking I-Intaglio and Relief				
Upper-Division Art History (See List on Concentration Requirements Tab)				4A,4B	3
Biological and Physical Sciences			X	3A	3
Social and Behavioral Sciences			X	3C	3
ART 270 must be completed by the end of Semester 4.		X			
Portfolio review must be completed by the end of Semester 4.		X			
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 370	Sculpture II	X			4
ART Elective			X		3
Upper-Division Art History (See List on Concentration Requirements Tab)			X	4A,4B	3
Advanced Writing			X	2	3
Arts and Humanities			X	3B	3
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 371	Sculpture III	X			4
Upper-Division Art Elective			X		4
Upper-Division Non-Art Elective			X		3
Elective			X		3
	Total Credits				14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 470	Sculpture IV	X		4C	4
Upper-Division Non-Art Elective			X		3
Non-Art Electives (any level)			X		6
	Total Credits				13
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 400	BFA Portfolio	X			1
ART 471	Sculpture V	X		4C	4
Upper-Division Art Elective		X			4
Upper-Division Non-Art Electives		X			6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Art, B.A.

Throughout history, art has been a fundamental language of the human spirit. Visual arts express human experience through an ever-widening range of media and materials, some of which include: oils, acrylics, pastels, charcoal, clay, plaster, steel, bronze, wood, copper, litho stones, and digital media. Visual artists create abstract works and images of objects, people, nature, topography, and events. The Department of Art and Art History offers several options of study: The B.F.A. (Bachelor of Fine Arts) degree with studio concentrations in Drawing, Electronic Arts, Fibers, Graphic Design, Metalsmithing, Painting, Photo Image Making, Pottery, Printmaking, and Sculpture; and the B.F.A. degree with

a concentration in Art Education. The B.A. (Bachelor of Arts) degree with concentrations in Integrated Visual Studies and Art History are all professional degrees, leading to related art careers.

Learning Outcomes

Students will demonstrate:

- Fundamental knowledge and mastery of media and processes necessary to communicate meaning in a work of art.
- Ability to communicate clearly about their own art and the art of others.
- Knowledge about contemporary art and motivation to view and discuss current local, regional, and national exhibitions. Students well versed on contemporary art would:
  a. regularly read reviews of exhibitions in local and national newspapers;
  b. regularly read art periodicals;
  c. attend multiple exhibitions; and
  d. be knowledgeable about contemporary artists in their discipline (i.e., nationally known painters, sculptors, etc.).

Potential Occupations

Art graduates possess a number of transferable communication, analytical, and critical thinking skills appropriate for work in traditional business as well as positions in academia and roles as freelance artists, graphic designers, art educators, art historians, studio fine artists and as "creatives" in government and industry. Many employers appreciate art majors for their multiple skills and their ability to adapt to a variety of tasks and work environments. Participation in internships, cooperative education, and service learning opportunities is highly recommended to enhance practical training and development. Graduates who go on for advanced studies can attain more responsible positions with the possibility of rising to top professional levels.

Depending on student interests, the electives taken, or the concentration selected, available career choices include, but are not limited to: art appraiser, art director, art therapist, exhibit designer, art critic, jeweler, gallery director, graphic design artist, free lance artist, sculptor, woodworker, welder, foundry worker, studio photographer, technical illustrator, painter, textile designer, weaver, art educator, art historian, art curator, art librarian, art museum educator, web page designer, photo lab technician, art restorer, and master printer.

The B.A. (Bachelor of Arts) in Art is a liberal arts degree with two concentrations: Art History and Integrated Visual Studies. The Art History concentration seeks to develop students' critical and analytical skills and ability to comprehend global visual arts within social, historical, cultural, and aesthetic frameworks. Students learn about the visual and material culture of societies from around the world, reflecting the global turn in the discipline. Traditional courses in Western art history are balanced against courses in the Arts of Africa, Native American Art, the Arts of the Ancient and Colonial Americas, and Pacific Art. Because of the comparative nature of Art History, students in the concentration are required to complete courses in a second field, a foreign language, and the philosophy of aesthetics. A capstone seminar introduces students to the fundamental toolbox of methodological approaches taken by professional art historians.

The Integrated Visual Studies concentration is an ideal program for students to develop skills as makers and thinkers. By making work and interpreting images from visual art, photography, film, television, and commercial imagery, students learn to analyze visual communication from a variety of aesthetic, theoretical, scientific, economic, sociological and historical viewpoints. Students take a relatively equal ratio of studio and academic classes that foster critical awareness of how society is reflected and produced through visual means in the twenty-first century. Visual Studies students have the curricular flexibility to pursue other academic interests and extracurricular activities with greater intensity, as well as to pursue explorations in the theoretical and technical aspects of art making within a studio practice.

Both concentrations begin their study with the foundation program. Freshmen study foundation courses in form and observation, color and composition, materials and space, and global art history.

Student Learning Outcomes

Art History students will demonstrate:

- Knowledge of the tools and techniques of art historical research and scholarship.
- Communication skills, original thinking, art historical interpretation, and research skills in written form, resulting in a lengthy work of original scholarship.
- Communication skills, original thinking, art historical interpretation, and research skills in oral form.
- Demonstrate general knowledge of the monuments and principal artists of all major art periods of the past, including a broad understanding of the art of the twentieth century and acquaintance with the art history of non-Western cultures.
- Adequate mastery of a foreign language to support research through the reading of primary source materials.
- Functional knowledge of the creative process.

Integrated Visual Studies students will demonstrate:

- Communication skills in written and oral form with precision, cogency, and rhetorical force.
- The ability to explain and defend creative/research effectively and rationally; advocating for their world view.
- Skills of invention and innovation–developing things and ideas that never existed before.

Major in Art (BA), Art History Concentration

The Art History concentration provides a basic preparation in art history for graduate studies, careers in research and teaching at the college level, positions in museums, libraries, or private collections, or for writing and criticism in the arts. In addition to a high degree of research experience, students will complete a second field or minor and one year of foreign language. In-depth study in a second field allows students to refine their focus.

Requirements Effective Fall 2018

A Portfolio Review is required to be submitted for review upon completion of three ART studio courses for continuing students and upon completion of two ART studio courses for transfer students and students who have changed majors.

A minimum grade of C (2.000) or better is required in all upper-division Art History coursework.

Freshman

		AUCC	Credits
ART 105	Issues and Practices in Art		1
ART 110	Global Art History I		3
ART 111	Global Art History II		3
ART 135	Foundations - Form and Observation		3
ART 160	Foundations - Color and Composition		3
CO 150	College Composition (GT-CO2)	1A	3
L*** Foreign Language			10
Quantitative Reasoning		1B	3
	Total Credits		29

Sophomore

ART 170	Foundations - Materials and Space		3
ART 212	Global Art History III		3
Select one course from the following:			3
ART 136	Introduction to Figure Drawing		
ART 230	Photo Image Making I		
ART 240	Pottery I		
ART 245	Metalsmithing and Jewelry I		
ART 250	Fibers I		
ART 255	Introduction to Graphic Design		
ART 256	Introduction to Electronic Art		
ART 260	Painting I		
ART 265	Printmaking I-Intaglio and Relief		
ART 270	Sculpture I		
Upper-Division Art History[1]		4A,4B	3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	7
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
	Total Credits		31

Junior

PHIL 318	Aesthetics-Visual Arts		3
Select one course from the following not taken elsewhere:			3
ART 136	Introduction to Figure Drawing		
ART 230	Photo Image Making I		
ART 240	Pottery I		
ART 245	Metalsmithing and Jewelry I		
ART 250	Fibers I		
ART 255	Introduction to Graphic Design		
ART 256	Introduction to Electronic Art		
ART 260	Painting I		
ART 265	Printmaking I-Intaglio and Relief		
ART 270	Sculpture I		
ART *** Upper-Division Art History			12
ART *** Upper-Division Art Electives			4

Second Field Course[1]			3
Advanced Writing		2	3
Arts and Humanities		3B	3
	Total Credits		31

Senior

ART 419	Historiography and Methodology of Art History	4C	3
ART *** Upper-Division Art History			6
Second Field Courses[1]			6
Second Field Upper-Division Courses[1]			12
Elective[2]			2
	Total Credits		29
	Program Total Credits:		120

Upper-Division Art History Courses [1]

Code	Title	AUCC	Credits
ART 310	History of American Art to 1945	4A,4B	3
ART 311	Art of West and Central Africa	4A,4B	3
ART 312	Pre-Columbian Art of Mesoamerica	4A,4B	3
ART 313	Art of East and Southern Africa	4A,4B	3
ART 314	Women in Art History	4A,4B	3
ART 315	United States Art 1945-1980	4A,4B	3
ART 316	Art of the Pacific	4A,4B	3
ART 317	Native North American Art	4A,4B	3
ART 320	Global Encounters in Art		3
ART 410	Greek Art	4A,4B	3
ART 411	History of Medieval Art	4A,4B	3
ART 412	History of Renaissance Art	4A,4B	3
ART 414	History of Baroque and Rococo Art	4A,4B	3
ART 415	History of 19th Century European Art	4A,4B	3
ART 416	History of European Art, 1900 to 1945	4A,4B	3
ART 417	Roman Art	4A,4B	3
ART 418	Contemporary Artists and Art Critics	4A,4B	3
ART 492A	Seminar: Art History	4A,4B	3
ART 496H	Group Study: Art History	4A,4B	3

1 Complete a minimum of 21 credits of a minor or second major, or 21 credits from the same non-ART subject code. A minimum of 12 credits from the 21 must be upper-division (300- to 400-level).

2 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400- level).

Major Completion Map

To declare this Concentration: A Portfolio Review is required to be submitted for review upon completion of three ART studio courses for continuing students and upon completion of two ART studio courses for transfer students and students who have changed majors.

Distinctive Requirements for Degree Program: A minimum grade of C (2.000) or better is required in all upper-division Art History coursework.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
ART 105	Issues and Practices in Art		X		1
ART 110	Global Art History I	X			3
ART 135	Foundations - Form and Observation		X		3

CO 150	College Composition (GT-CO2)		X	1A	3
L*** Foreign Language			X		5
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 111	Global Art History II	X			3
ART 160	Foundations - Color and Composition		X		3
L*** Foreign Language					5
Quantitative Reasoning				1B	3
CO 150 and AUCC 1B (Quantitative Reasoning) must be completed by the end of Semester 2.		X			
	Total Credits				14
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 170	Foundations - Materials and Space		X		3
ART 212	Global Art History III	X			3
Arts and Humanities			X	3B	3
Biological and Physical Sciences			X	3A	4
Diversity and Global Awareness			X	3E	3
Portfolio review is strongly recommended by the end of Semester 3.			X		
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
ART 136	Introduction to Figure Drawing				
ART 230	Photo Image Making I				
ART 240	Pottery I				
ART 245	Metalsmithing and Jewelry I				
ART 250	Fibers I				
ART 255	Introduction to Graphic Design				
ART 256	Introduction to Electronic Art				
ART 260	Painting I				
ART 265	Printmaking I-Intaglio and Relief				
ART 270	Sculpture I				
ART*** Upper-Division Art History (See list of approved courses on Major Requirements Tab)		X		4A,4B	3
Biological and Physical Sciences			X	3A	3
Historical Perspectives			X	3D	3
Social and Behavioral Sciences			X	3C	3
Portfolio review must be completed by the end of Semester 4.		X			
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following not previously taken:					3
ART 136	Introduction to Figure Drawing				
ART 230	Photo Image Making I				
ART 240	Pottery I				
ART 245	Metalsmithing and Jewelry I				
ART 250	Fibers I				
ART 255	Introduction to Graphic Design				
ART 256	Introduction to Electronic Art				
ART 260	Painting I				
ART 265	Printmaking I-Intaglio and Relief				
ART 270	Sculpture I				

PHIL 318	Aesthetics-Visual Arts		X		3
ART*** Upper-Division Art History (See list of approved courses on Major Requirements Tab)		X			6
Advanced Writing			X	2	3
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
ART*** Upper-Division Art History (See list of approved courses on Major Requirements Tab)		X			6
ART*** Upper-Division Art Electives			X		4
Second Field Course					3
Arts and Humanities			X	3B	3
	Total Credits				16
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 419	Historiography and Methodology of Art History	X		4C	3
ART*** Upper-Division Art History (See list of approved courses on Major Requirements Tab)		X			3
Second Field Course			X		3
Second Field Upper-Division Courses			X		6
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
ART*** Upper-Division Art History (See list of approved courses on Major Requirements Tab)		X			3
Second Field Course		X			3
Second Field Upper-Division Courses		X			6
Elective		X			2
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				14
	Program Total Credits:				120

Major in Art (BA), Integrated Visual Studies Concentration

The Integrated Visual Studies concentration is an ideal program for students to develop skills as makers and thinkers. Students take a relatively equal ratio of studio and academic classes that foster critical awareness of how society is reflected and produced through visual means in the twenty-first century.

By making work and interpreting images from art, photography, film, television and commercial imagery, students learn to analyze visual communication from a variety of aesthetic, theoretical, scientific, economic, sociological and historical viewpoints. A combination of studio and academic classes are required.

The integrated visual studies concentration enables students to organize multiple approaches to visual thinking that cut across various disciplines into a logical whole. Integrated visual studies students will have the curricular flexibility to pursue other academic interests and extracurricular activities with greater intensity, as well as to pursue explorations in the theoretical and technical aspects of art-making within a studio practice.

Requirements Effective Fall 2018

A Portfolio Review is required to be submitted for review upon completion of three ART studio courses for continuing students and upon completion of two ART studio courses for transfer students and students who have changed majors.

A minimum grade of C (2.000) or better is required in all upper-division Art coursework.

Freshman

		AUCC	Credits
ART 105	Issues and Practices in Art		1
ART 110	Global Art History I		3
ART 111	Global Art History II		3
ART 135	Foundations - Form and Observation		3

ART 136	Introduction to Figure Drawing		3
ART 160	Foundations - Color and Composition		3
ART 170	Foundations - Materials and Space		3
CO 150	College Composition (GT-CO2)	1A	3
Arts and Humanities		3B	6
Quantitative Reasoning		1B	3
	Total Credits		31

Sophomore

ART 212	Global Art History III		3
SPCM 200	Public Speaking		3
Introduction Studio Courses (see list below)			6
Upper-Division Art History course (see list below)			3
Biological and Physical Sciences		3A	7
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
	Total Credits		31

Junior

Introduction Studio Course not previously taken above (see list below)			3
Upper-Division Art History course (see list below)[1]		4A,4B	3
Upper-Division Studio courses (see list below)			8
Second Field courses[2]			6
Upper-Division Second Field courses[2]			6
Advanced Writing		2	3
	Total Credits		29

Senior

ART 425	Integrated Visual Studies	4C	4
ART 3XX or ART 4XX			7
Upper-Division Second Field courses[2]			6
Upper-Division Electives			3
Electives			9
	Total Credits		29
	Program Total Credits:		120

Introduction Studio Courses

Code	Title	Credits
ART 120	Foundations--Time and Structure	3
ART 230	Photo Image Making I	3
ART 235	Intermediate Drawing I	3
ART 240	Pottery I	3
ART 245	Metalsmithing and Jewelry I	3
ART 250	Fibers I	3
ART 255	Introduction to Graphic Design	3
ART 256	Introduction to Electronic Art	3
ART 260	Painting I	3
ART 265	Printmaking I-Intaglio and Relief	3
ART 270	Sculpture I	3

Upper-Division Art History Courses [1]

Code	Title	AUCC	Credits
ART 310	History of American Art to 1945	4A,4B	3
ART 311	Art of West and Central Africa	4A,4B	3
ART 312	Pre-Columbian Art of Mesoamerica	4A,4B	3
ART 313	Art of East and Southern Africa	4A,4B	3
ART 314	Women in Art History	4A,4B	3

ART 315	United States Art 1945-1980	4A,4B	3
ART 316	Art of the Pacific	4A,4B	3
ART 317	Native North American Art	4A,4B	3
ART 320	Global Encounters in Art		3
ART 410	Greek Art	4A,4B	3
ART 411	History of Medieval Art	4A,4B	3
ART 412	History of Renaissance Art	4A,4B	3
ART 414	History of Baroque and Rococo Art	4A,4B	3
ART 415	History of 19th Century European Art	4A,4B	3
ART 416	History of European Art, 1900 to 1945	4A,4B	3
ART 417	Roman Art	4A,4B	3
ART 418	Contemporary Artists and Art Critics	4A,4B	3
ART 492A	Seminar: Art History	4A,4B	3
ART 496H	Group Study: Art History	4A,4B	3

Upper-Division Studio Courses

Code	Title	Credits
ART 330	Photo Image Making II	4
ART 331	Photo Image Making III	4
ART 335	Intermediate Drawing II	4
ART 336	Intermediate Drawing III	4
ART 340	Pottery II	4
ART 341	Pottery III	4
ART 345	Metalsmithing and Jewelry II	4
ART 346	Metalsmithing and Jewelry III	4
ART 350	Fibers II	4
ART 351	Fibers III	4
ART 355	Typography and Design Systems	4
ART 356	Illustration	4
ART 357	Interactive Media	4
ART 358	Experimental Video	4
ART 360	Painting Methods and Materials	4
ART 361	Figure Painting	4
ART 365	Printmaking II-Lithography	4
ART 366	Printmaking III-Studio Workshop	4
ART 370	Sculpture II	4
ART 371	Sculpture III	4
ART 384	Supervised College Teaching	1-4
ART 421	Art and Environment	3
ART 430	Advanced Photo Image Making I	4
ART 431	Advanced Photo Image Making II	4
ART 435	Advanced Drawing I	4
ART 436	Advanced Drawing II	4
ART 440	Pottery IV	4
ART 441	Pottery V	4
ART 445	Metalsmithing and Jewelry IV	4
ART 446	Metalsmithing and Jewelry V	4
ART 450	Fibers IV	4
ART 451	Fibers V	4
ART 455	Advanced Typography and Design Systems	4
ART 456	Advanced Illustration	4
ART 457	Advanced Interactive Media	4
ART 458	Advanced Experimental Video	4
ART 460	Advanced Painting I	4
ART 461	Advanced Painting II	4
ART 465	Printmaking IV-Studio Workshop	4
ART 466	Printmaking V-Studio Workshop	4
ART 470	Sculpture IV	4
ART 471	Sculpture V	4
ART 495A	Independent Study: Painting	1-4
ART 495B	Independent Study: Printmaking	1-4
ART 495C	Independent Study: Sculpture	1-4
ART 495D	Independent Study: Fibers	1-4
ART 495E	Independent Study: Metalsmithing and Jewelry	1-4
ART 495F	Independent Study: Drawing	1-4
ART 495G	Independent Study: Graphic Design	1-4
ART 495H	Independent Study: Art History	1-4
ART 495I	Independent Study: Art Education	1-4
ART 495J	Independent Study: Pottery	1-4
ART 495K	Independent Study: Photo Image Making	1-4
ART 496A	Group Study: Painting	1-4
ART 496B	Group Study: Printmaking	1-4
ART 496C	Group Study: Sculpture	1-4
ART 496D	Group Study: Fibers	1-4
ART 496E	Group Study: Metalsmithing and Jewelry	1-4
ART 496F	Group Study: Drawing	1-4
ART 496G	Group Study: Graphic Design	1-4
ART 496I	Group Study: Art Education	1-4
ART 496J	Group Study: Pottery	1-4
ART 496K	Group Study: Photo Image Making	1-4

[1] Select 6 credits of Upper-Division Art History courses total, at least 3 of which must satisfy AUCC categories 4A and 4B.

[2] Choose in consultation with advisor.

Major Completion Map

To declare this Concentration: A Portfolio Review is required to be submitted for review upon completion of three ART studio courses for

continuing students and upon completion of two ART studio courses for transfer students and students who have changed majors.

Distinctive requirements for Degree Program: A minimum grade of C (2.000) or better is required in all upper-division Art coursework.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 105	Issues and Practices in Art	X			1
ART 110	Global Art History I	X			3
ART 135	Foundations - Form and Observation	X			3
Select one course from the following:		X			3
ART 160	Foundations - Color and Composition				
ART 170	Foundations - Materials and Space				
CO 150	College Composition (GT-CO2)	X		1A	3
Arts and Humanities			X	3B	3
	Total Credits				16

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 111	Global Art History II	X			3
ART 136	Introduction to Figure Drawing	X			3
Select one course from the following not taken Semester 1:		X			3
ART 160	Foundations - Color and Composition				
ART 170	Foundations - Materials and Space				
Arts and Humanities			X	3B	3
Quantitative Reasoning			X	1B	3
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 212	Global Art History III	X			3
SPCM 200	Public Speaking	X			3
Introduction Studio Course (See List on Requirements Tab)		X			3
Biological and Physical Sciences			X	3A	4
Historical Perspectives			X	3D	3
Portfolio review is strongly recommended by the end of Semester 3.			X		
	Total Credits				16

Semester 4	**Critical**	**Recommended**	**AUCC**	**Credits**
Introduction Studio Course (Select one course not previously taken from list on Requirements Tab)	X			3
Biological and Physical Sciences		X	3A	3
Diversity and Global Awareness		X	3E	3
Social and Behavioral Sciences		X	3C	3
Upper-Division Art History Course (see List on Requirements Tab):	X			3
Portfolio review must be completed by the end of Semester 4.				
Total Credits				15

Junior

Semester 5	**Critical**	**Recommended**	**AUCC**	**Credits**
Introduction Studio Course (Select one course not previously taken from list on Requirements Tab):		X		3
Second Field Courses	X			6
Upper-Division Art History course (See List on Requirements Tab)	X		4A,4B	3
Upper-Division Studio Course (See List on Requirements Tab)	X			4
Total Credits				16

Semester 6	**Critical**	**Recommended**	**AUCC**	**Credits**
Upper-Division Studio Course (See List on Requirements Tab)	X			4
Upper-Division Second Field Course	X			6

Advanced Writing			X	2	3
	Total Credits				13
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 3XX or ART 4XX		X			4
Upper-Division Second Field		X			3
Upper-Division Elective			X		3
Elective			X		3
	Total Credits				13
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
ART 425	Integrated Visual Studies	X		4C	4
ART 3XX or ART 4XX		X			3
Upper-Division Second Field Course		X			3
Electives		X			6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				16
	Program Total Credits:				120

Master of Fine Arts (M.F.A.)

The M.F.A. program in studio art promotes a high level of artistic achievement, creative and scholarly research, and relevant professional practice. In addition to required studio courses, the program fosters student engagement with faculty and peers through required coursework in contemporary art theory, art criticism, and art history. In consultation with their advisers, students plan a sequence of elective courses that both complements and challenges their studio practice.

Requirements Effective Spring 2015

Code	Title	Credits
Required Courses in Area of Study		
Select one from the following: [1]		9
ART 575A	Studio Problems: Painting	
ART 575B	Studio Problems: Printmaking	
ART 575C	Studio Problems: Sculpture	
ART 575D	Studio Problems: Fibers	
ART 575E	Studio Problems: Metalsmithing and Jewelry	
ART 575F	Studio Problems: Drawing	
ART 575G	Studio Problems: Graphic Design	
Select one from the following: [2]		9
ART 675A	Studio Problems: Painting	
ART 675B	Studio Problems: Printmaking	
ART 675C	Studio Problems: Sculpture	
ART 675D	Studio Problems: Fibers	
ART 675E	Studio Problems: Metalsmithing and Jewelry	
ART 675F	Studio Problems: Drawing	
ART 675G	Studio Problems: Graphic Design	
Select one from the following: [3]		3
ART 695A	Independent Study: Painting	
ART 695B	Independent Study: Printmaking	
ART 695C	Independent Study: Sculpture	
ART 695D	Independent Study: Fibers	
ART 695E	Independent Study: Metalsmithing and Jewelry	
ART 695F	Independent Study: Drawing	
ART 695G	Independent Study: Graphic Design	
ART 695H	Independent Study: Art History	
Select one from the following: [4]		9
ART 699A	Thesis: Painting	
ART 699B	Thesis: Printmaking	
ART 699C	Thesis: Sculpture	
ART 699D	Thesis: Fibers	
ART 699E	Thesis: Metalsmithing and Jewelry	
ART 699F	Thesis: Drawing	
ART 699G	Thesis: Graphic Design	
Studio Seminar Requirements		
ART 696I	Group Study: Multiple Media [5]	6
Required Art History [6]		
Select 6 credits from the following:		6
ART 510A	Advanced Study in Art History: American Art [7]	
ART 510B	Advanced Study in Art History: African Art [7]	
ART 510C	Advanced Study in Art History: Pre-Colombian Art [7]	
ART 510E	Advanced Study in Art History: United States Art Since 1945 [7]	
ART 510F	Advanced Study in Art History: Greek Art [7]	
ART 510G	Advanced Study in Art History: Medieval Art [7]	
ART 510H	Advanced Study in Art History: Renaissance Art [7]	
ART 510I	Advanced Study in Art History: Baroque and Rococo Art [7]	

ART 510J	Advanced Study in Art History: 19th-Century European Art [7]	
ART 510K	Advanced Study in Art History: 20th Century European Art [7]	
ART 510M	Advanced Study in Art History: Roman Art [7]	
ART 510N	Advanced Study in Art History: Graphic Design [7]	
ART 510O	Advanced Study in Art History: Women in Art [7]	
ART 510P	Advanced Study in Art History: Pacific Art [7]	
ART 695H	Independent Study: Art History	
ART 510Q	Advanced Study in Art History: Contemporary Art and Art Critics	3
ART 592	Art History Seminar	3
Elective Courses		
Department List Electives (see below)		12
Program Total Credits:		60

A minimum of 60 credits are required to complete this program.

M.F.A. Department List Electives

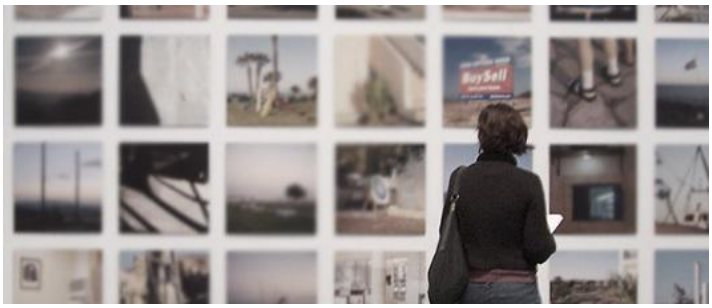
M.F.A. Department List credits support individual studio practice and creative research. Students and advisors determine appropriate courses from, but not limited to, the list below. Students consult with faculty to assess readiness for upper-level courses, to confirm access to advanced courses, and to request overrides.

Code	Title	Credits
Select a minimum of 12 credits from the following:		12
Studio Elective Options:		
ART 435	Advanced Drawing I	
ART 436	Advanced Drawing II	
ART 440	Pottery IV	
ART 441	Pottery V	
ART 445	Metalsmithing and Jewelry IV	
ART 446	Metalsmithing and Jewelry V	
ART 450	Fibers IV	
ART 451	Fibers V	
ART 455	Advanced Typography and Design Systems	
ART 456	Advanced Illustration	
ART 460	Advanced Painting I	
ART 461	Advanced Painting II	
ART 465	Printmaking IV-Studio Workshop	
ART 466	Printmaking V-Studio Workshop	
ART 470	Sculpture IV	
ART 471	Sculpture V	
Other Elective Options in the Department of Art and Art History:		
ART 495A	Independent Study: Painting [8]	
ART 495B	Independent Study: Printmaking [8]	
ART 495C	Independent Study: Sculpture [1]	
ART 495D	Independent Study: Fibers [8]	
ART 495E	Independent Study: Metalsmithing and Jewelry [8]	
ART 495F	Independent Study: Drawing [8]	
ART 495G	Independent Study: Graphic Design [8]	
ART 495H	Independent Study: Art History [8]	
ART 495I	Independent Study: Art Education [8]	
ART 495J	Independent Study: Pottery [8]	
ART 495K	Independent Study: Photo Image Making [8]	
ART 496A	Group Study: Painting	
ART 496B	Group Study: Printmaking	
ART 496C	Group Study: Sculpture	
ART 496D	Group Study: Fibers	
ART 496E	Group Study: Metalsmithing and Jewelry	
ART 496F	Group Study: Drawing	
ART 496G	Group Study: Graphic Design	
ART 496H	Group Study: Art History	
ART 496I	Group Study: Art Education	
ART 496J	Group Study: Pottery	
ART 496K	Group Study: Photo Image Making	
ART 510A	Advanced Study in Art History: American Art [9]	
ART 510B	Advanced Study in Art History: African Art [9]	
ART 510C	Advanced Study in Art History: Pre-Colombian Art [9]	
ART 510E	Advanced Study in Art History: United States Art Since 1945 [9]	
ART 510F	Advanced Study in Art History: Greek Art [9]	
ART 510G	Advanced Study in Art History: Medieval Art [9]	
ART 510H	Advanced Study in Art History: Renaissance Art [9]	
ART 510I	Advanced Study in Art History: Baroque and Rococo Art [9]	
ART 510J	Advanced Study in Art History: 19th-Century European Art [9]	
ART 510K	Advanced Study in Art History: 20th Century European Art [9]	
ART 510M	Advanced Study in Art History: Roman Art [9]	
ART 510N	Advanced Study in Art History: Graphic Design [9]	
ART 510O	Advanced Study in Art History: Women in Art [9]	
ART 510P	Advanced Study in Art History: Pacific Art [9]	
ART 684	Supervised College Teaching	
ART 695A	Independent Study: Painting	
ART 695B	Independent Study: Printmaking	
ART 695C	Independent Study: Sculpture	
ART 695D	Independent Study: Fibers	
ART 695E	Independent Study: Metalsmithing and Jewelry	
ART 695F	Independent Study: Drawing	
ART 695G	Independent Study: Graphic Design	
ART 695H	Independent Study: Art History	
ART 696I	Group Study: Multiple Media [10]	
Elective Options Outside the Department of Art and Art History:		
PHIL 318	Aesthetics-Visual Arts	

Out-of-Department Course(s) [11]	
Program Total Credits:	12

1. Select a minimum total of 9 credits to be taken in the first year over two semesters, e.g., 4 and 5 credits.
2. Select a minimum total of 9 credits to be taken in the second year over two semesters, e.g., 4 and 5 credits.
3. Select a minimum of 9 credits in student's area of study. To be completed within student's first four semesters.
4. Select a minimum of 9 credits to be taken during the student's fifth and sixth semesters, e.g., 4 and 5 credits. Course may be repeated for credit.
5. Students take ART 696I twice: once during the first year and once during the second year.
6. Students may provide their advisors with justification for an alternative course to substitute for one 3-credit art history elective. Students may request advisor approval for an alternative course that would be chosen from among suitable University course offerings.
7. Select up to two subtopics from ART 510A-P. A) American art. B) African art. C) Pre-Columbian art. E) United States art since 1945. F) Greek art. G) Medieval art. H) Renaissance art. I) Baroque and rococo art. J) 19th-century European art. K) 20th-century European art. M) Roman art. N) Graphic design. O) Women in art. P) Pacific art.
8. Maximum of 10 credits. Some subtopics may have a prerequisite.
9. Select ART 510 subtopics not taken elsewhere in the program.
10. To be taken in the third year.
11. Select course(s) at 300-level or higher from any department other than Art and Art History within the University for a minimum of 3 credits, with approval of advisor.

Department of Communication Studies



Office in Behavioral Sciences Building, Room A203
(970) 491-6140
communicationstudies.colostate.edu (http://communicationstudies.colostate.edu)

Professor Greg Dickinson, Chair

Undergraduate Majors

Major in Communication Studies

- Speech Teacher Licensure Concentration

Interdepartmental and Interdisciplinary Minors

Film Studies Interdisciplinary Minor

The Departments of Communication Studies, English, Ethnic Studies, Languages, Literatures and Cultures, and Journalism and Media Communication offer an Interdisciplinary Minor in Film Studies. See the full listing for the Film Studies interdisciplinary minor in the University-Wide Instructional Programs section.

Media Studies Minor

The Departments of Communication Studies and Journalism and Media Communication offer a minor in Media Studies. See the full listing for the minor in the College of Liberal Arts section.

Graduate

Graduate Programs in Communication Studies

The graduate program leads to a Master of Arts in Communication Studies. Graduate coursework, as well as a required thesis for the Plan A master's, enables students to develop expertise in one or a combination of three areas of emphasis:

1. Media and visual culture;
2. Relational and organizational communication; and/or
3. Rhetoric and civic engagement.

In each of these areas, students select course work from among the following topics:

1. Contemporary issues in media, media theories, media audiences, media texts, and media industries;
2. Communication theories, communication and diversity, interpersonal theories, and discourse and organization; or
3. Public address, rhetoric and public affairs, rhetorical theory, rhetorical criticism, rhetoric of everyday life, and feminist theory.

The Plan B master's provides a Deliberative Practices specialization with coursework in deliberative theory and practice, a practicum, and an independent study serving as the culminating report in lieu of a thesis.

Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Communication Studies (http://communicationstudies.colostate.edu).

Master's Programs

- Master of Arts in Communication Studies, Plan A
- Master of Arts in Communication Studies, Plan B, Deliberative Practices Specialization

Ph.D.

- Ph.D in Communication

Courses
Communication Studies (SPCM)

SPCM 100 Communication and Popular Culture (GT-AH1) Credits: 3 (3-0-0)
Course Description: Survey of media studies approaches to understanding popular culture.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Arts & Expression (GT-AH1).

SPCM 130 Relational and Organizational Communication (GT-SS3) Credits: 3 (2-0-1)
Course Description: Basic communication processes and skills central to relating and organizing in interpersonal, small group, and organizational contexts.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).

SPCM 200 Public Speaking Credits: 3 (3-0-0)
Course Description: Fundamentals of public speaking emphasizing content, organization, delivery, audience response.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 201 Rhetoric in Western Thought (GT-AH3) Credits: 3 (3-0-0)
Course Description: Major concepts of Western rhetoric from Greece to modern times and their relationship to present-day approaches to communication.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Ways of Thinking (GT-AH3).

SPCM 207 Public Argumentation Credits: 3 (3-0-0)
Course Description: Key communication principles for democracy, including issue analysis, evidence, reasoning, decision-making, debate, dialogue, and deliberation.
Prerequisite: SPCM 200.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 232 Group Communication Credits: 3 (3-0-0)
Course Description: Principles and methods of group communication emphasizing face-to-face and electronically mediated problem solving and decision making.
Prerequisite: SPCM 200.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 278A Communication Skills: Convention/Meeting Planning Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278B Communication Skills: Interviewing Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278C Communication Skills: Film Festivals Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278D Communication Skills: Friendship Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278E Communication Skills: Intercultural Competence Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278G Communication Skills: Parliamentary Procedure Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278H Communication Skills: Organizational Training Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278I Communication Skills: Social Media Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 300 Advanced Public Speaking Credits: 3 (0-0-3)
Course Description: Advanced technique in public speaking; emphasis on argument construction and refutation, style, and manuscript delivery.
Prerequisite: SPCM 200.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 311 Historical Speeches on American Issues Credits: 3 (3-0-0)
Course Description: Significant speeches and speakers as they reflected and affected American issues from colonial period through early 20th century.
Prerequisite: CO 150.
Registration Information: Must have taken minimum of 30 credits.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 320 Communication and Human Trafficking Credits: 3 (3-0-0)
Course Description: Examines historical and contemporary anti human trafficking movements, assessing the communication strategies employed by anti-trafficking advocates and organizations. Assesses the role language plays in shaping societal attitudes toward victims, survivors, and perpetrators of human trafficking.
Prerequisite: SPCM 100 to 499 - at least 3 credits.
Registration Information: Sophomore standing. Must have completed 3 credits of AUCC Category 3B or at least 3 credits of SPCM 100-499.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 331 Nonverbal Communication Credits: 3 (3-0-0)
Course Description: Non-language communication; systems and functions of nonverbal communication behaviors.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 332 Interpersonal Communication Skills Credits: 3 (3-0-0)
Course Description: Analysis, exploration, and skill enhancement strategies for interpersonal communication in friendship, couple, family, and business relationships.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 333 Professional Communication Credits: 3 (3-0-0)
Course Description: Technological, interpersonal, and ethical dimensions of professional communication, emphasizing interviews, teams, and presentations at work.
Prerequisite: SPCM 200.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 334 Co-Cultural Communication Credits: 3 (3-0-0)
Course Description: Cultural concerns of communication among co-cultures of United States; diversity; self-awareness as cultural imperative for enhanced communication.
Prerequisite: None.
Terms Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 335 Gender and Communication Credits: 3 (3-0-0)
Course Description: Analysis and exploration of communication as it relates to gender and women's and men's roles and identities.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 341 Evaluating Contemporary Television Credits: 3 (3-0-0)
Course Description: Rhetorical standards applied to content, ethical, and artistic aspects of American televised discourse; emphasizing nonentertainment programming.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 342 Critical Media Studies Credits: 3 (3-0-0)
Course Description: Analysis of communication media; history; structure, regulation, policy, and impact upon society.
Prerequisite: None.
Registration Information: Sophomore standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 346 Virtual Culture and Communication Credits: 3 (2-2-0)
Course Description: Rhetorical theory applied to planning, producing, and evaluating computer-mediated messages.
Prerequisite: SPCM 100 or SPCM 342.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both SPCM 346 and SPCM 378.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 347 Visual Communication Credits: 3 (3-0-0)
Course Description: Media/visual aesthetics and literacy, the symbolic and affective dimensions of the codes, conventions, and formulas of media.
Prerequisite: SPCM 100 or SPCM 342.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 349 Freedom of Speech Credits: 3 (3-0-0)
Course Description: Historical and philosophical precedents to freedom of speech; development of free speech principles in the U.S.; ethical obligations of speakers.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 350 Evaluating Contemporary Film Credits: 3 (2-3-0)
Course Description: Theory and development of film criticism; application of critical approaches to modern fiction and nonfiction film.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 354 History and Appreciation of Film Credits: 3 (2-3-0)
Course Description: Screening and evaluation of landmark fiction and nonfiction films; assessment of cinema as an art form and a social force.
Prerequisite: None.
Registration Information: Sophomore standing. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 356 Asians in the U.S. Media Credits: 3 (2-3-0)
Course Description: Asian representations in the U.S. media from the 19th century to the present.
Prerequisite: None.
Registration Information: Sophomore standing. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 357 Film and Social Change Credits: 3 (2-3-0)
Course Description: Ways in which the medium of motion pictures has sparked significant social changes at home and abroad.
Prerequisite: None.
Registration Information: Sophomore standing. Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 358 Gender and Genre in Film Credits: 3 (2-3-0)
Course Description: Gender relations in film genres.
Prerequisite: None.
Registration Information: Sophomore standing. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 360 The Personal Lens – Making Media Credits: 3 (3-0-0)
Course Description: Harnessing smart phone technology to produce video; telling personal stories via video that engage local and global communities; exploring traditional and novel forms of storytelling, representation, documentary, media appropriation, and cultural jamming in the context of fair use; using the internet to distribute self-produced content and communicate with audiences.
Prerequisite: None.
Registration Information: Sophomore standing. Credit not allowed for both SPCM 360 and SPCM 380A2.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 370A Study Abroad: Bridging Cultures-USA-Italy Credits: 3 (3-0-0)
Course Description: Theory, concepts, principles, research methods, and practical skills in the areas of intercultural and cross-cultural communication, construction and negotiation of Italian identity (italianità), and strategies of an effective dialogue with a global mindset. The aim of the course is to transform its participants into culturally aware and skilled global citizens, with the empirical experience of cultural bridging.
Prerequisite: SPCM 200.
Registration Information: Credit allowed for only one of the following: SPCM 370A, SPCM 382, or SPCM 382A.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 378 Virtual Workplace Communication Credits: 3 (0-0-3)
Course Description: Interpersonal/organizational dimensions and communicative processes underpinning virtual/remote/distributed workers and workplaces.
Prerequisite: None.
Registration Information: Sections may be offered: Online. Credit not allowed for both SPCM 346 and SPCM 378.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 382C Study Abroad - South Korea: Cinema, Culture, and History Credits: 3 (0-0-3)
Also Offered As: HIST 382C.
Course Description: A survey of post-1945 South Korean cinema from Golden Age classics of the 1950s and 1960s to the rise of new blockbuster hits and art-house films throughout the contemporary period. Cinematic texts are examined within various historical, sociopolitical, and cultural contexts of postcolonial South Korea, with attention to the issues of Japanese colonialism, national division, civil war, U.S. neocolonialism, military dictatorships, the democratic movement, and globalization.
Prerequisite: None.
Registration Information: Sophomore standing. Required field trips. Credit not allowed for both HIST 382C and SPCM 382C.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 384 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Open only to undergraduate students who are invited to assist in teaching selected courses. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 386 Research Practicum Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: (CO 150) and (SPCM 100 or SPCM 130 or SPCM 201).
Registration Information: Sophomore standing. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 387 Communication Internship Credit: 1 (0-0-1)
Course Description:
Prerequisite: (SPCM 100 or SPCM 342) and (SPCM 200 and SPCM 201 and SPCM 207).
Registration Information: 2.0 GPA.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 401 Rhetoric in Social Movements Credits: 3 (3-0-0)
Course Description: Case studies of campaigns and social movements; genesis, leadership, and use of traditional and electronically mediated rhetoric to achieve objectives.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 407 Public Deliberation Credits: 3 (3-0-0)
Course Description: Communication in collaborative decision-making and community problem-solving, examined through the lens of deliberative democracy.
Prerequisite: SPCM 200 and SPCM 207.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 408 Applied Deliberative Techniques Credits: 3 (3-0-0)
Course Description: Skills development and direct experience in convening, facilitating, and reporting public forums tied to Center for Public Deliberation activities.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 411 Contemporary Speeches on American Issues Credits: 3 (3-0-0)
Course Description: Significant speeches and speakers as they reflect and affect issues, 1930 to present.
Prerequisite: CO 150.
Registration Information: Must have taken minimum of 30 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 412 Evaluating Contemporary Rhetoric Credits: 3 (3-0-0)
Course Description: Exploration and evaluation of contemporary persuasive communication in order to understand and assess a variety of forms of messages and symbols.
Prerequisite: CO 150.
Registration Information: Must have taken minimum of 30 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 420 Political Communication Credits: 3 (3-0-0)
Course Description: Rhetoric of political campaigns.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 429 Environmental Discourse Credits: 3 (3-0-0)
Course Description: Environmental communication in advocacy campaigns, media representations of science, encounters with nature, and public policy.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 431 Communication, Language, and Thought Credits: 3 (3-0-0)
Course Description: Influence of rhetoric, ranging from spoken language to electronically mediated communication, on human understanding and Western thought.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 433 Communication in Organizations Credits: 3 (3-0-0)
Course Description: Communication theory and strategy for empowerment of non-supervisory and supervisory personnel.
Prerequisite: None.
Registration Information: Completion of AUCC category 2, Advanced Writing; minimum of 30 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 434 Intercultural Communication Credits: 3 (3-0-0)
Course Description: Cultural influences on communication between people of different nations; communication rules/norms in specific cultures, cultural adaptation.
Prerequisite: CO 150.
Registration Information: Must have taken minimum of 30 credits.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 436 Conflict Management and Communication Credits: 3 (3-0-0)
Course Description: Theories and principles of communication in conflict management; application to conflict resolution situations.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 437 Studies in Persuasion Credits: 3 (3-0-0)
Course Description: Rhetorical and behavioral theories of persuasion applied to persuasive practice in public and interpersonal arenas of social influence.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 453 Global Media Cultures Credits: 3 (3-0-0)
Course Description: How media and globalization influence each other.
Prerequisite: CO 150.
Registration Information: Junior Standing. Credit not allowed for both SPCM 380A1 and SPCM 453.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 454 Chicanx Film and Video Credits: 3 (2-2-0)
Also Offered As: ETST 454.
Course Description: Emergence of Chicanx cinema from a place of displacement, resistance, and affirmation found in contemporary Chicanx film, video.
Prerequisite: ETST 100 to 499 - at least 3 credits or SPCM 100 to 499 - at least 3 credits.
Registration Information: Sophomore standing. Must register for lecture and laboratory. Credit not allowed for both ETST 454 and SPCM 454.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 455 Narrative Fiction Film as a Liberal Art Credits: 3 (2-3-0)
Also Offered As: LB 455.
Course Description: Narrative fiction film and its role in human history, culture, and social interaction.
Prerequisite: None.
Restriction: .
Registration Information: Junior standing. Must register for lecture and laboratory. Credit not allowed for both SPCM 455 and LB 455.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 470A Study Abroad: Cinematic Rome Credits: 3 (0-0-3)
Course Description: Evaluate and discuss ten primary films, along with excerpts from a number of others. Topics: Images of Ancient Rome; Italian Fascism and Its Memory; Italian Neorealism; Images of "Americans" in Rome, and Rome in America; Fellini's Rome; and Urban Angst, Roman Style. Analyze how Rome functions as a "character" in the movies, the artistic representations of Roman monuments and streetscapes, and the rhetorical functions of Italian cinema.
Prerequisite: None.
Registration Information: Must have concurrent registration in SPCM 370A. Completion of AUCC Category 2. Credit allowed for only one of the following: SPCM 470A, SPCM 482, or SPCM 482A.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 479 Communication Studies Capstone Credits: 3 (3-0-0)
Course Description: Synthesis of central issues in Communication Studies; examination of their relevance to students' professional, personal, and civic endeavors.
Prerequisite: SPCM 100 and SPCM 201 and SPCM 207 and SPCM 130.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Seniors in Communication Studies major only
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 482B Study Abroad: Social Support & Communication in Spain Credits: 3 (0-0-3)
Course Description: Theory and research regarding personal and community experiences of social support, its influences on interpersonal relationships and health, and its social functions within the context of study abroad and intercultural experiences in Spain.
Prerequisite: None.
Registration Information: Sophomore standing.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 486 Practicum Credits: Var[1-18] (0-0-0)
Course Description: Directed experience of communication techniques and procedures in the community with periodic faculty consultation.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 486C Practicum: Civic Engagement Credits: 3 (1-0-4)
Also Offered As: POLS 486C.
Course Description: Participatory study of civic engagement in public education. Examination of civic engagement pedagogies and their role in public life. Evaluation of and participation in Public Achievement program in partnership with local K-12 schools.
Prerequisite: None.
Registration Information: Must register for lecture and practicum. POLS 486C and SPCM 486C may not be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 508 Deliberative Theory and Practice Credits: 3 (0-0-3)
Course Description: Survey of current theory and practice connected to deliberative democracy.
Prerequisite: SPCM 408.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 511 Topics in Public Address Credits: 3 (3-0-0)
Course Description: Theoretical and methodological issues in public address research; analysis of public discourse of selected movements or periods in U.S. history.
Prerequisite: SPCM 311 or SPCM 411.
Registration Information: Graduate standing with 12 additional 300- and 400-level credits in communication studies, history, or English.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 538 Relating and Organizing for Health Credits: 3 (3-0-0)
Course Description: Organizational, interpersonal, and intercultural dimensions of communicating in health care organizations.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 540 Rhetoric, Race, and Identity Credits: 3 (3-0-0)
Course Description: Critical race theory and its relevance to rhetorical studies.
Prerequisite: SPCM 434 and SPCM 300 to 481 - at least 12 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 570 Instructional Communication Theory and Practice Credits: 3 (0-0-3)
Course Description: Communication theory and research in instructional contexts. Designed for current or prospective teachers.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 592 Seminar-Topics in Speech Communication Credits: 3 (0-0-3)
Course Description:
Prerequisite: SPCM 3**** to 499 - at least 15 credits or SPCM 3** to 499 - at least 15 credits or E 3**** to 499 - at least 15 credits or E 3** to 499 - at least 15 credits or SP 3**** to 499 - at least 15 credits or SP 3** to 499 - at least 15 credits or SPCC 3**** to 499 - at least 15 credits or SPCC 3** to 499 - at least 15 credits or E CC 3**** to 499 - at least 15 credits or E CC 3** to 499 - at least 15 credits.
Registration Information: Graduate standing can substitute for 300-400 level credits.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 601 History of Rhetorical Theory Credits: 3 (3-0-0)
Course Description: Rhetorical theories and theorists from the classical period to the present.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Fifteen 300- and 400-level credits in communication studies and/or English.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 604 Rhetoric of Everyday Life Credits: 3 (3-0-0)
Course Description: Contemporary theories of rhetoric and of everyday life.
Prerequisite: SPCM 412 and SPCM 300 to 400 - at least 12 credits.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing can substitute for 300-400 SPCM credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 611 Topics in Public Address Credits: 3 (3-0-0)
Course Description: Theoretical and methodological issues in public address research; analysis of public discourse of selected movements or periods in U.S. history.
Prerequisite: SPCM 311 or SPCM 411.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing can substitute for SPCM 311 or SPCM 411; 12 additional credits of 300-400 level in Communication Studies, History, or English.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 612 Rhetorical Criticism Credits: 3 (3-0-0)
Course Description: Traditional and contemporary methods for analyzing persuasive discourse.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Fifteen credits of 300-400 level communication studies or journalism.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 620 Rhetoric and Public Affairs Credits: 3 (0-0-3)
Course Description: Rhetoric's role in contemporary politics and civil society.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to graduate school.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 623 Feminist Theories of Discourse Credits: 3 (0-0-3)
Course Description: Exploration and evaluation of contemporary feminist theories of rhetoric and discourse.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to graduate school.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 632 Theories of Interpersonal Communication Credits: 3 (0-0-3)
Course Description: Theories of communication in development, maintenance, and deterioration of friendship, couple, family, group, and business relationships.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Admission to graduate school.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 633 Discourse, Work, and Organization Credits: 3 (0-0-3)
Course Description: How organizing processes and discursive practices create, maintain, and destroy diverse forms of work in society.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to graduate school.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 634 Communication and Cultural Diversity Credits: 3 (0-0-3)
Course Description: Ethnographic approach to communication issues and concerns in a global context.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Admission to graduate school.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 638 Communication Research Methods Credits: 3 (3-0-0)
Course Description: Historical and philosophical context of communication research; relationship between theory and method; dominant forms of communication research.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 639 Communication Theory Credits: 3 (3-0-0)
Course Description: Examination of communication philosophies and perspectives; analysis of modern theories of face-to-face communication.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Graduate standing or 15 additional 300-400 level credits in Communication Studies and/or English.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 646 Media Theory Credits: 3 (3-0-0)
Course Description: Survey of the broad range of rhetorical/qualitative theories that inform media studies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing or fifteen 300- and 400-level credits in Communication Studies and/or English or JTC.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 647 Media Industries Credits: 3 (3-0-0)
Course Description: Political economy of the media both in the U.S. and globally, including how the media system operates and with what effects.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing or fifteen 300- and 400-level credits in Communication Studies and/or English.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 648 Media Texts Credits: 3 (3-0-0)
Course Description: Practical and theoretical implications for criticism in treating media products as texts; various approaches to textual or discourse analysis.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing or fifteen 300- and 400-level credits in Communication Studies and/or English.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 649 Media Audiences Credits: 3 (3-0-0)
Course Description: Theoretical and methodological issues concerning how audiences use and interpret media.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing or fifteen 300- and 400-level credits in Communication Studies and/or English.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 650 Contemporary Issues in Media Credits: 3 (0-0-3)
Course Description: Ever-changing media culture and landscape and how it affects personal, professional, and public lives.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to graduate school.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 675 Speech Communication Pedagogy Credits: 3 (3-0-0)
Course Description: Instructional practices and theories in speech.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to communication studies master's program.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

SPCM 684 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 686 Practicum Credits: Var[1-18] (0-0-0)
Course Description: Direction of communication studies fieldwork connected to the CSU Center for Public Deliberation under professional supervision.
Prerequisite: SPCM 408 and SPCM 508, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 692 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 701 Seminar in Academic Writing Credits: 3 (3-0-0)
Course Description: Best practices of academic writing for publication in communication studies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 702 Professional Writing and Public Scholarship Credits: 3 (3-0-0)
Course Description: Writing in specialized professional contexts. Adapting scholarly information for extra-disciplinary and lay audiences.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 712 Critical/Cultural Analysis in Communication Credits: 3 (0-0-3)
Course Description: Advanced instruction in critical/cultural analysis as understood by the field of Communication Studies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

SPCM 792A Seminar: Rhetoric and Civic Engagement Credits: 3 (0-0-3)
Course Description: Advanced readings in particular themes, questions, and topics pertaining to rhetoric and/or civic engagement.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 792B Seminar: Relational/Organizational Communication Credits: 3 (0-0-3)
Course Description: Advanced readings in particular themes, questions, and topics pertaining to relational and/or organizational communication.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 792C Seminar: Media and Visual Culture Credits: 3 (0-0-3)
Course Description: Advanced readings in particular themes, questions, and topics pertaining to media and/or visual culture.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 793 Seminar: Communications Research Methods Credits: 3 (0-0-3)
Course Description: Advanced research method(s) in the field of Communication Studies.
Prerequisite: SPCM 638.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 798 Research Credits: Var[1-18] (0-0-0)
Course Description: PhD students in Communication will work on Qualifying Exam/Portfolio.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

SPCM 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Major in Communication Studies

Communication Studies majors receive a broad-based, liberal arts education, designed to equip them for the challenges of the 21st century, the need to adapt to a rapidly changing workplace, and the likelihood of more than one career. The major encompasses many facets of media and visual culture, relational and organizational communication, and rhetoric and civic engagement. Along with courses in communication studies, the major requires courses in the arts and humanities, the social sciences, and history, and a minor or second major.

The department's goals for undergraduate majors include helping students to achieve an outstanding education in communication studies, to further their knowledge and understanding of human communication, and to provide leadership in communication activities. In so doing, we hope to help students prepare for successful careers, the duties of citizenship, and productive and rewarding lives.

Learning Outcomes

Students will demonstrate:

Knowledge about the history and practice of our discipline in three specific areas: rhetoric and civic engagement, media and visual culture, and relational and organizational communication. Students will be able to explain the utility of theories from these areas and be able to utilize research methods to explore questions from each area of inquiry.

Skills that allow them apply their knowledge of the major as they address contemporary issues salient to their personal, professional, and civic lives. They will be skilled in both oral and written communication, being able to develop and deliver coherent, well-organized claims to specific audiences. Students will also develop critical thinking skills that allow them to analyze texts, situations, or issues using credible evidence and following a logical, systematic, and/or precise structure.

Potential Occupations

The Communication Studies major, like many liberal arts majors, provides students with a broad academic background suitable for a variety of jobs in the public and private sectors. Majors are trained to think independently and critically, communicate effectively, and function in a multicultural world. Employers appreciate communication studies majors for their multiple skills and their ability to adapt to a variety of tasks and work environments.

Many majors find employment in public relations/marketing, politics, sales, human relations, government, business management, convention and meeting planning, education, and computer-mediated communication. Some students move on to graduate work in communication studies and to post-graduate study in law and theology.

Career opportunities include, but are not limited to employee relations specialist, employment counselor, human resource consultant, industrial relations representative, public relations specialist, labor relations consultant, training director, vocational rehabilitation counselor, advance agent, business communicator, equal opportunity representative, foreign service officer, cooperative extension service worker, politician, lobbyist, speechwriter, press agent, literary agent, interviewer, sales representative, scriptwriter, lawyer, teacher.

Internships are available to Communication Studies majors and are highly recommended to enhance practical training and development. Graduates who seek advanced studies can attain more responsible positions with the possibility of rising to top professional levels.

Concentrations

- Speech Teacher Licensure Concentration

Requirements Effective Fall 2014

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
SPCM 100	Communication and Popular Culture (GT-AH1)	3B	3
SPCM 130	Relational and Organizational Communication (GT-SS3)	3C	3
SPCM 200	Public Speaking		3

Biological and Physical Sciences		3A	7
Historical Perspectives[1]		3D	3
Mathematics		1B	3
Electives			6
	Total Credits		31
Sophomore			
SPCM 201	Rhetoric in Western Thought (GT-AH3)	3B	3
SPCM 207	Public Argumentation		3
Advanced Writing		2	3
Global and Cultural Awareness		3E	3
Additional Arts and Humanities[2]			6
Additional History[3]			6
Additional Social and Behavioral Sciences[4]			6
	Total Credits		30
Junior			
Minor or Interdisciplinary Minor[5]			15
Communication Studies Electives[6]			15
	Total Credits		30
Senior			
Select one course from the following:			3
SPCM 311	Historical Speeches on American Issues	4A,4B	
SPCM 341	Evaluating Contemporary Television	4A,4B	
SPCM 342	Critical Media Studies	4A,4B	
SPCM 350	Evaluating Contemporary Film	4A,4B	
SPCM 354	History and Appreciation of Film	4A,4B	
SPCM 411	Contemporary Speeches on American Issues	4A,4B	
SPCM 412	Evaluating Contemporary Rhetoric	4A,4B	
SPCM 415		4A,4B	
SPCM 420	Political Communication	4A,4B	
SPCM 434	Intercultural Communication	4A,4B	
SPCM 479	Communication Studies Capstone	4C	3
Minor or Interdisciplinary Minor[5]			6
Communication Studies Electives[6]			9
Electives[7]			8
	Total Credits		29
	Program Total Credits:		120

1. Select one course with the subject code of HIST from the list of courses in All-University Core Curriculum (AUCC) 3D.
2. Select six credits from the following subject codes: ART, D, E, ETST, L***, MU, PHIL, TH, or WS. No more than one WS course can be counted toward the completion of this requirement.
3. Select six additional credits from courses with a HIST subject code.
4. Select a total of six credits from the following subject codes: ANTH, ECON, ETST, HIST, JTC, POLS, PSY, SOC, or WS. No more than one WS course can be counted toward the completion of this requirement.
5. Students must complete a university approved minor or interdisciplinary minor.
6. Select a total of 24 credits of SPCM subject code courses excluding SPCM 479 and SPCM 495. Students may count up to 3 credits total, in any combination (1 credit maximum per semester, per class), of the following courses toward Communication Studies electives: SPCM 278A-SPCM 278G; SPCM 384; SPCM 387; and SPCM 486 .
7. Select enough elective credits to bring program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
SPCM 100	Communication and Popular Culture (GT-AH1)			3B	3
Biological and Physical Sciences				3A	3
Historical Perspectives				3D	3
Elective					3
	Total Credits				15

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
SPCM 130	Relational and Organizational Communication (GT-SS3)			3C	3
SPCM 200	Public Speaking				3
Biological and Physical Sciences				3A	4
Mathematics		X		1B	3
Elective					3
CO 150 must be completed on the end of Semester 2.		X			
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
SPCM 201	Rhetoric in Western Thought (GT-AH3)			3B	3
Global and Cultural Awareness				3E	3
Additional Arts and Humanities (See allowable subject codes on Concentration Requirements Tab)					3
Additional History (See allowable subject codes on Concentration Requirements Tab)					3
Additional Social and Behavioral Science (See allowable subject codes on Concentration Requirements Tab)					3
	Total Credits				15

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
SPCM 207	Public Argumentation				3
Advanced Writing				2	3
Additional Arts and Humanities (See allowable subject codes on Concentration Requirements Tab)					3
Additional History (See allowable subject codes on Concentration Requirements Tab)					3
Additional Social and Behavioral Science (See allowable subject codes on Concentration Requirements Tab)					3
AUCC 3A (Biological and Physical Sciences), AUCC 3E (Global and Cultural Awareness), AUCC 3D (Historical Perspectives) must be completed by the end of Semester 4.		X			
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
SPCM***					9
Minor or Interdisciplinary Minor Courses					6
	Total Credits				15

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
SPCM***					6
Minor or Interdisciplinary Minor Courses					9
	Total Credits				15

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3

SPCM 311	Historical Speeches on American Issues		X	4A,4B	
SPCM 341	Evaluating Contemporary Television		X	4A,4B	
SPCM 342	Critical Media Studies		X	4A,4B	
SPCM 350	Evaluating Contemporary Film		X	4A,4B	
SPCM 354	History and Appreciation of Film		X	4A,4B	
SPCM 411	Contemporary Speeches on American Issues		X	4A,4B	
SPCM 412	Evaluating Contemporary Rhetoric		X	4A,4B	
SPCM 415			X	4A,4B	
SPCM 420	Political Communication		X	4A,4B	
SPCM 434	Intercultural Communication		X	4A,4B	
SPCM***					5
Minor or Interdisciplinary Minor Course					3
Electives					4
AUCC 2 (Advanced Writing), SPCM 100, SPCM 130, SPCM 200, SPCM 201, SPCM 207 must be completed by the end of Semester 7.					
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
SPCM 479	Communication Studies Capstone	X		4C	3
SPCM***		X			4
Minor or Interdisciplinary Minor Course		X			3
Electives		X			4
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				14
	Program Total Credits:				120

Major in Communication Studies, Speech Teacher Licensure Concentration

Students interested in pursuing a teaching license through CSU may refer to the Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu) and the School of Education for general information.

Requirements Effective Spring 2014

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
SPCM 100	Communication and Popular Culture (GT-AH1)	3B	3
SPCM 200	Public Speaking	2A	3
Biological and Physical Sciences		3A	7
Global and Cultural Awareness[1]		3E	3
Historical Perspectives[1]		3D	3
Mathematics		1B	3
Electives			5
	Total Credits		30

Sophomore

EDUC 275	Schooling in the United States (GT-SS3)	3C	3
SPCM 201	Rhetoric in Western Thought (GT-AH3)	3B	3
SPCM 207	Public Argumentation		3
Select two courses from the following:			6
SPCM 331	Nonverbal Communication		
SPCM 332	Interpersonal Communication Skills		

SPCM 436	Conflict Management and Communication		
Additional Endorsement Area Electives[2]			15
	Total Credits		30

Junior

Select one course from the following:			3
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)	2	
EDUC 331	Educational Technology and Assessment		2
EDUC 340	Literacy and the Learner		3
EDUC 350	Instruction I-Individualization/Management		3
EDUC 386	Practicum-Instruction I		1
EDUC 463	Methods in Teaching Language Arts		4
Select one from the following:			3
SPCM 300	Advanced Public Speaking		
SPCM 333	Professional Communication		
Select one course from the following:			3
SPCM 341	Evaluating Contemporary Television	4A,4B	
SPCM 342	Critical Media Studies	4A,4B	
SPCM 350	Evaluating Contemporary Film	4A,4B	
SPCM 354	History and Appreciation of Film	4A,4B	
Select one from the following:			3
SPCM 334	Co-Cultural Communication		
SPCM 434	Intercultural Communication	4A,4B	
Additional Endorsement Area Elective[2]			6
	Total Credits		31

Senior

EDUC 450	Instruction II-Standards and Assessment		4
EDUC 485B	Student Teaching: Secondary		11
EDUC 486E	Practicum: Instruction II		1
EDUC 493A	Seminar: Professional Relations		1
Select two courses from the following:			6
SPCM 232	Group Communication		
SPCM 407	Public Deliberation		
SPCM 433	Communication in Organizations		
Select one course from the following:			3
SPCM 357	Film and Social Change		
SPCM 401	Rhetoric in Social Movements		
SPCM 412	Evaluating Contemporary Rhetoric	4A,4B	
SPCM 420	Political Communication	4A,4B	
SPCM 431	Communication, Language, and Thought		
SPCM 437	Studies in Persuasion		
SPCM 479	Communication Studies Capstone	4C	3
	Total Credits		29
	Program Total Credits:		120

[1] Can be double-counted as a major requirement.

[2] Twenty-one (21) elective credits should apply toward student's additional endorsement area. Consult advisor and the Colorado Department of Education website for the list of appropriate courses.

Major Completion Map

Distinctive Requirements for Degree Program:
Twenty-one (21) elective credits should apply toward student's additional endorsement area. Consult advisor and the Colorado Department of Education website for the list of appropriate courses.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
SPCM 100	Communication and Popular Culture (GT-AH1)			3B	3
Biological and Physical Sciences				3A	3
Historical Perspectives				3D	3
Elective					3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
SPCM 200	Public Speaking				3
Biological and Physical Sciences				3A	4
Global and Cultural Awareness				3E	3
Mathematics		X		1B	3
Elective					2
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 275	Schooling in the United States (GT-SS3)	X		3C	3
SPCM 201	Rhetoric in Western Thought (GT-AH3)			3B	3
Additional Endorsement Area Electives					9
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
SPCM 207	Public Argumentation				3
Select two courses from the following:					6
SPCM 331	Nonverbal Communication				
SPCM 332	Interpersonal Communication Skills				
SPCM 436	Conflict Management and Communication				
Additional Endorsement Area Electives					6
AUCC 3A (Biological and Physical Sciences), AUCC 3E (Global and Cultural Awareness), AUCC 3D (Historical Perspectives), SPCM 200 must be completed by the end of Semester 4.		X			
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)			2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)			2	
EDUC 340	Literacy and the Learner	X			3
Select one course from the following:					3
SPCM 300	Advanced Public Speaking				
SPCM 333	Professional Communication				
Select one course from the following:					3
SPCM 341	Evaluating Contemporary Television			4A,4B	

SPCM 342	Critical Media Studies			4A,4B	
SPCM 350	Evaluating Contemporary Film			4A,4B	
SPCM 354	History and Appreciation of Film			4A,4B	
Additional Endorsement Area Elective					3
SPCM 100 must be completed by the end of Semester 5.		X			
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 331	Educational Technology and Assessment	X			2
EDUC 350	Instruction I-Individualization/Management	X			3
EDUC 386	Practicum-Instruction I	X			1
EDUC 463	Methods in Teaching Language Arts				4
Select one course from the following:					3
SPCM 334	Co-Cultural Communication				
SPCM 434	Intercultural Communication			4A,4B	
Additional Endorsement Area Elective					3
	Total Credits				16
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 450	Instruction II-Standards and Assessment	X			4
EDUC 486E	Practicum: Instruction II	X			1
Select two courses from the following:					6
SPCM 232	Group Communication				
SPCM 407	Public Deliberation				
SPCM 433	Communication in Organizations				
Select one course from the following:					3
SPCM 357	Film and Social Change				
SPCM 401	Rhetoric in Social Movements				
SPCM 412	Evaluating Contemporary Rhetoric			4A,4B	
SPCM 420	Political Communication			4A,4B	
SPCM 431	Communication, Language, and Thought				
SPCM 437	Studies in Persuasion				
AUCC 4A & AUCC4B (Depth and Integration), AUCC 2 (Advanced Writing), SPCM 201, SPCM 207 must be completed by the end of Semester 7.		X			
	Total Credits				14
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 485B	Student Teaching: Secondary	X			11
EDUC 493A	Seminar: Professional Relations	X			1
SPCM 479	Communication Studies Capstone	X		4C	3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Master of Arts in Communication Studies, Plan A

Requirements Effective Fall 2017

Code	Title	Credits
Core:		
SPCM 601	History of Rhetorical Theory	3
SPCM 612	Rhetorical Criticism	3
SPCM 638	Communication Research Methods	3
SPCM 639	Communication Theory	3
SPCM 646	Media Theory	3
SPCM 692	Seminar	3
SPCM 699	Thesis	6
Electives		12
Take 12 graduate credits (500 and above) – at least 9 SPCM credits and no more than 3 credits from outside the department		

Students on graduate teaching assistantships must take the following courses in addition to the above requirements:		6
SPCM 675	Speech Communication Pedagogy	
SPCM 684	Supervised College Teaching	
Program Total Credits:		36-42

A minimum of 36 credits are required to complete this program.

Master of Arts in Communication Studies, Plan B, Deliberative Practices Specialization

Requirements Effective Fall 2017

Code	Title	Credits
Core		
SPCM 408	Applied Deliberative Techniques	3
SPCM 508	Deliberative Theory and Practice	3
SPCM 601	History of Rhetorical Theory	3
SPCM 612	Rhetorical Criticism	3
SPCM 638	Communication Research Methods	3
SPCM 639	Communication Theory	3
SPCM 646	Media Theory	3
SPCM 686	Practicum	3
SPCM 692	Seminar	3
SPCM 695	Independent Study [1]	3
Electives [2]		9
Program Total Credits:		39

A minimum of 39 credits are required to complete this program.

1. Students must complete a deliberative practices project in SPCM 695. Project will be based on Center for Public Deliberation program.
2. All credits must be taken at the graduate level (500- or 600-level). A minimum of 6 credits must be SPCM subject code courses.

Ph.D. in Communication

The Ph.D. in Communication trains scholars, teachers, and professionals to engage social, political, and professional challenges using advanced expertise in the field of communication.

The program is shaped by the three areas of expertise present in our department. These three areas examine communication and engagement from three perspectives:

1. **Interpersonal, Intercultural, and Organizational Communication:** For many individuals, engagement with the public world grows out of their relational lives and is expressed in the organizations to which they belong and in which they work. Professors and students in this area will explore communication in relational or interpersonal systems, organizing and work contexts, and within national and global arenas. Here, the focus is on exploring how individuals respond to and participate as active members in various forms of community, paying special attention to the ways in which communicative actions can create, sustain, and disable engaged citizenship.
2. **Media and Visual Culture:** In the contemporary, globalized world, engaged citizenship often flows through media and is represented and enacted within popular culture. Professors and students in the area explore the mediation of public culture with particular attention to film, television, digital discourse, and the globalization of media institutions. Here, the focus is on the construction of critical media literacies and understandings of how our mediated forms of communication engage or disengage individuals as community members, empowering or disempowering them as political agents.
3. **Rhetoric and Civic Engagement:** In popular conversation, "rhetoric" is often understood to mean empty speech. Communication scholars, however, trace the meaning of "rhetoric" to antiquity when thinkers such as Aristotle and Cicero placed rhetorical studies at the center of democratic engagement. Since then, rhetorical studies have explored public engagement and community building, examining the role of communication in civic life. The resurgence of rhetorical studies in the humanities is founded on a renewed sense of the importance of rhetoric to engaged citizenship in the 21st century. Professors and students in this area explore the role of public communication in creating, maintaining, and undermining civic culture.

Although these three areas of departmental emphasis are distinct, the strength of the program is the collaborative overlapping of these three areas. As a community, we have developed a cutting-edge doctoral program that takes advantage of the shared commitment to study and engage in transformative communication.

Requirements Effective Fall 2017

Students must have earned an M.A. in Communication Studies or a related discipline. A maximum of 27 credits at the master's degree level may be accepted toward the Ph.D.

Code	Title	Credits
Master's Degree Credit		27
The following prerequisite courses should be included/ transferred in from the M.A. degree: [1]		
SPCM 601	History of Rhetorical Theory	
SPCM 612	Rhetorical Criticism	
SPCM 638	Communication Research Methods	
SPCM 639	Communication Theory	
SPCM 646	Media Theory	
SPCM 675	Speech Communication Pedagogy	
Required Ph.D. Courses		54
SPCM 701	Seminar in Academic Writing	3
SPCM 702	Professional Writing and Public Scholarship	3
SPCM 712	Critical/Cultural Analysis in Communication	3
SPCM 793	Seminar: Communications Research Methods	3
SPCM 798	Research	6
SPCM 799	Dissertation	12

SPCM Graduate Electives	24
Program Total Credits:	81

A minimum of 81 credits are required to complete this program.

[1] If equivalent coursework is not transferred in as part of the M.A. degree, these prerequisite courses must be completed in addition to the 54 credits required for the Ph.D.

Department of Economics

Office in Clark Building, Room C306
(970) 491-6324
economics.colostate.edu (http://economics.colostate.edu)

Professor Elissa Braunstein, Department Chair

Professor Daniele Tavani, Graduate Coordinator

Professor Nancy Jianakoplos, Undergraduate Coordinator

Undergraduate

Major

- Major in Economics

Minor

- Minor in Economics

Graduate

Graduate Programs in Economics

Programs lead to the degrees of Master of Arts and Doctor of Philosophy. Five primary areas of study are presently emphasized: international economics, public economics, political economy, environmental economics, and regional economics. Core requirements include micro, macro, and heterodox theory, as well as history of economic thought and applied econometrics.

More information is available at the Graduate and Professional Bulletin.

Master's Programs

- Master of Arts in Economics, Plan A
- Master of Arts in Economics, Plan B, Technical Paper Option

Ph.D.

- Ph.D. in Economics

Courses

Economics (ECON)

ECON 101 Economics of Social Issues (GT-SS1) Credits: 3 (3-0-0)
Course Description: Economic analysis of poverty, crime, education, and other social issues. Basics of micro, macro, and political economy.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

ECON 202 Principles of Microeconomics (GT-SS1) Credits: 3 (2-0-1)
Course Description: Introduction to decision-making by households, firms, and government, and resulting allocation of resources through markets.
Prerequisite: MATH 117 or MATH 118 or MATH 141 or MATH 155 or MATH 160.
Registration Information: Must register for lecture and recitation. Credit not allowed for both ECON 202 and AREC 202. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

ECON 204 Principles of Macroeconomics (GT-SS1) Credits: 3 (2-0-1)
Course Description: Determinants of national output, employment, and price level; inflation and unemployment; fiscal and monetary policy.
Prerequisite: (MATH 117 or MATH 118 or MATH 141 or MATH 155 or MATH 160) and (ECON 202 or AREC 202).
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

ECON 211 Gender in the Economy (GT-SS1) Credits: 3 (3-0-0)
Course Description: Role gender plays in economies; the way gender affects economic outcomes for individuals and societies.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Economic or Political Systems (GT-SS1).

ECON 212 Racial Inequality and Discrimination (GT-SS1) Credits: 3 (3-0-0)
Course Description: Economic inequality between Afro-Americans-and Euro-Americans. Debates about causes, consequences, and remedies.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

ECON 235 Working With Data Credits: 3 (3-0-0)
Also Offered As: LB 235.
Course Description: Data management and spreadsheet skills; what data is and how it is used (and misused) in social and economic research; applied questions such as how data is collected, types of data, where to find data, how to summarize and tabulate data, and data visualization and presentation.
Prerequisite: None.
Registration Information: Sections may be offered: Online. Credit allowed for only one of the following ECON 235, ECON 280A1, or LB 235.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 240 Issues in Environmental Economics (GT-SS1) Credits: 3 (3-0-0)
Also Offered As: AREC 240.
Course Description: Discussion and economic analysis of current environmental issues with special emphasis on the impact of economic growth.
Prerequisite: None.
Registration Information: Credit not allowed for both ECON 240 and AREC 240. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

ECON 304 Intermediate Macroeconomics Credits: 3 (3-0-0)
Course Description: Theory of national income, its measurement and determinants; analysis of inflation, growth, debt, and public policy.
Prerequisite: (ECON 204) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 306 Intermediate Microeconomics Credits: 3 (3-0-0)
Course Description: Analysis of competitive and noncompetitive markets in terms of efficiency of resource utilization.
Prerequisite: (AREC 202 or ECON 202) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 310 Poverty and the Welfare State Credits: 3 (3-0-0)
Course Description: Description and analysis of US poverty; the "underclass"; feminization of poverty; working poor; the welfare state.
Prerequisite: AREC 202 or ECON 101 or ECON 202.
Terms Offered: Spring, Summer (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 315 Money and Banking Credits: 3 (3-0-0)
Course Description: Monetary theory and policy; description of financial institutions and markets.
Prerequisite: ECON 204.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 317 Population Economics Credits: 3 (3-0-0)
Course Description: Economics analysis of population issues.
Prerequisite: AREC 202 or ECON 202.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 320 Economics of Public Finance Credits: 3 (3-0-0)
Course Description: Impact of taxes, government expenditures on allocation of resources, distribution of income; evaluation of government expenditure program, tax policies.
Prerequisite: ECON 204.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 325 Health Economics Credits: 3 (3-0-0)
Course Description: Economic analysis of health care markets, health insurance markets, and public policy regarding health care.
Prerequisite: ECON 202 or AREC 202.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 327 Law and Economics Credits: 3 (3-0-0)
Course Description: Economic analysis of the common law.
Prerequisite: ECON 202 or AREC 202.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 332 International Political Economy Credits: 3 (3-0-0)
Also Offered As: POLS 332.
Course Description: Theories on relations between international politics and economics. Policy implications of different theories and case studies.
Prerequisite: (ECON 202 or AREC 202) and (POLS 232).
Registration Information: Credit not allowed for both ECON 332 and POLS 332.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 335 Introduction to Econometrics Credits: 3 (3-0-0)
Also Offered As: AREC 335.
Course Description: Estimating statistical regression models of economic relationships; treatment of special problems that may arise in analysis of economic data.
Prerequisite: (ECON 204) and (STAT 201 or STAT 204 or STAT 301 or STAT 307 or STAT 311 or STAT 315) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Credit not allowed for both ECON 335 and AREC 335. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 340 Introduction-Economics of Natural Resources Credits: 3 (3-0-0)
Also Offered As: AREC 340.
Course Description: Concepts, theories, institutions; analytical methods for economic evaluation of alternative resource use patterns and land use plans.
Prerequisite: ECON 202 or AREC 202.
Registration Information: Sections may be offered: Online. Credit not allowed for both AREC 340 and ECON 340.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 346 Economics of Outdoor Recreation Credits: 3 (3-0-0)
Also Offered As: AREC 346.
Course Description: Benefit cost framework in public planning for outdoor recreation, pricing problems, projecting demand, and regional economic development.
Prerequisite: ECON 202 or AREC 202.
Registration Information: Credit not allowed for both ECON 346 and AREC 346.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 370 Comparative Economic Systems Credits: 3 (3-0-0)
Course Description: Place of the economy in different societies; nature and evolution of capitalism; crisis of command economies and capitalist restoration.
Prerequisite: ECON 101 or ECON 202 or AREC 202.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 372 History of Economic Institutions and Thought Credits: 3 (3-0-0)
Course Description: Origins and development of capitalist institutions including contemporary issues of alienation, loss of community, and changing values.
Prerequisite: ECON 101 or ECON 202 or AREC 202.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 376 Marxist Economic Thought Credits: 3 (3-0-0)
Course Description: Marxist critique of capitalism and orthodox economics in both its original 19th century and contemporary settings.
Prerequisite: ECON 101 or ECON 202 or AREC 202.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 379 Economic History of the United States Credits: 3 (3-0-0)
Also Offered As: HIST 379.
Course Description: Economic analysis of growth and welfare from beginning of industrialization to present.
Prerequisite: ECON 101 or ECON 202 or AREC 202.
Registration Information: ECON 101 or ECON 202 or AREC 202 or any 2 courses in American history. Credit not allowed for both ECON 379 and HIST 379.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 404 Macroeconomic Policy Credits: 3 (3-0-0)
Course Description: Alternative macroeconomic policies, policy coordination; application to current macroeconomic problems, policies, proposals.
Prerequisite: ECON 304.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 410 Labor Economics Credits: 3 (3-0-0)
Course Description: Capital/labor relationship; supply, demand of labor; wage determination; role of unions; unemployment and instability; structure of modern working class.
Prerequisite: ECON 306.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 435 Intermediate Econometrics Credits: 3 (3-0-0)
Course Description: Econometric theory, model identification, testing, and estimation.
Prerequisite: (ECON 204) and (AREC 335 or ECON 335 or STAT 341).
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 440 Economics of International Trade and Policy Credits: 3 (3-0-0)
Course Description: Theory of international trade; payments, commercial policies, and economic integration.
Prerequisite: ECON 306.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 442 Economics of International Finance and Policy Credits: 3 (3-0-0)
Course Description: Balance of payments, adjustment mechanisms, and international monetary systems.
Prerequisite: ECON 304.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 444 Economics of Energy Resources Credits: 3 (3-0-0)
Also Offered As: AREC 444.
Course Description: Supply, consumption trends, and projected demand for alternative energy resources in domestic and world perspective; economics of public energy policies.
Prerequisite: ECON 306.
Registration Information: Junior standing. Written consent of instructor. Credit allowed for only one of the following: AREC 444, ECON 344, or ECON 444.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 460 Economic Development Credits: 3 (3-0-0)
Course Description: Economic problems of underdeveloped nations.
Prerequisite: ECON 304.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 463 Regional Economics Credits: 3 (3-0-0)
Course Description: Introduction to economic importance of location for firms, consumers, and policy makers. Basic tools, applications, and student research.
Prerequisite: ECON 306.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 474 Recent Economic Thought Credits: 3 (3-0-0)
Course Description: Nontraditional schools of economic thought, such as institutionalism and neo-Marxism, that critique neoclassical economic theory.
Prerequisite: ECON 304 and ECON 306.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Assistance in teaching introductory economics courses.
Prerequisite: ECON 304 and ECON 306.
Registration Information: Written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 487 Internship Credits: Var[1-3] (0-0-0)
Course Description: Supervised work experience integrating disciplinary learning and career exploration.
Prerequisite: ECON 202 with a minimum grade of C and ECON 204 with a minimum grade of C.
Registration Information: Written consent of instructor. Economics majors and minors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ECON 492 Seminar Credits: 3 (0-0-3)
Course Description: Summarizes, discusses, and applies issues and policies chosen by the instructor. Emphasis on student participation, discussion, and research.
Prerequisite: (AREC 335, may be taken concurrently or ECON 335, may be taken concurrently) and (ECON 304, may be taken concurrently and ECON 306, may be taken concurrently).
Restriction: .
Registration Information: Senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a special topic in economics under direction of faculty.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 501 Quantitative Methods for Economists Credits: 3 (3-0-0)
Course Description: Quantitative methods essential for graduate study in economics; functional forms, optimization, matrix methods, topological modeling.
Prerequisite: MATH 141 or MATH 155 or MATH 160.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 504 Applied Macroeconomics Credits: 3 (3-0-0)
Course Description: Application of macroeconomic models to economic growth, economic fluctuations, and policy analysis.
Prerequisite: ECON 304 and ECON 306.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 505 History of Economic Thought Credits: 3 (3-0-0)
Course Description: History of economic thought as a foundation for studying economic theory.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 506 Applied Microeconomic Theory Credits: 3 (3-0-0)
Also Offered As: AREC 506.
Course Description: Introduction to mathematical models in modern microeconomics, including choices and demand, production and supply, and market structures and failures.
Prerequisite: ECON 306.
Registration Information: Credit not allowed for both ECON 506 and AREC 506.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 510 Labor Market Analysis Credits: 3 (3-0-0)
Course Description: Determination of wages and employment. Focus on theoretical and applied controversies.
Prerequisite: ECON 304 and ECON 306.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 515 Financial Institutions-Structure/Regulation Credits: 3 (3-0-0)
Course Description: Regulation of financial institutions in the U.S.; international banking and international financial institutions, and financial modernization.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 520 Public Economics I Credits: 3 (3-0-0)
Course Description: Analysis and evaluation of tax policy in terms of efficiency and equity.
Prerequisite: ECON 506 or AREC 506 or ECON 606 or AREC 606.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 530 Methodology of Economic Research Credits: 3 (3-0-0)
Also Offered As: AREC 570.
Course Description: Philosophical foundations of science and research. Concepts and skills for planning, performing, reporting, and evaluating economic research.
Prerequisite: ECON 304 and ECON 306.
Registration Information: Credit not allowed for both ECON 530 and AREC 570.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 535 Applied Econometrics Credits: 3 (3-0-0)
Also Offered As: AREC 535.
Course Description: Econometric techniques applied to testing and quantification of theoretical economic relationships drawn from both microeconomics, macroeconomics.
Prerequisite: (ECON 335 or AREC 335) and (ECON 304 or ECON 306).
Registration Information: Credit not allowed for both ECON 535 and AREC 535.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 540 Environmental and Natural Resource Economics Credits: 3 (3-0-0)
Also Offered As: AREC 540.
Course Description: Theory, methods, and policy in environmental and natural resource economics.
Prerequisite: AREC 506 or ECON 506.
Registration Information: Credit not allowed for both ECON 540 and AREC 540.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 541 Environmental Economics Credits: 3 (3-0-0)
Also Offered As: AREC 541.
Course Description: Economics of environmental policy; partial equilibrium and general equilibrium model; pollution; natural environments; population and economic growth.
Prerequisite: ECON 306.
Registration Information: Credit not allowed for both ECON 541 and AREC 541.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 563 Regional Economics-Theory, Methods, and Issues Credits: 3 (3-0-0)
Also Offered As: AREC 563.
Course Description: Tools and methods of regional economics, including supply, demand, and externality analysis. Applications to current urban and regional policy issues.
Prerequisite: ECON 306 and ECON 501, may be taken concurrently.
Registration Information: Credit not allowed for both ECON 563 and AREC 563.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 570 Evolution of Economic Thought Credits: 3 (3-0-0)
Course Description: From Plato and Aristotle to the modern period.
Prerequisite: ECON 304 and ECON 306.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 604 Macroeconomic Analysis I Credits: 3 (3-0-0)
Course Description: Theoretical and empirical analysis of short-run and long-run macroeconomic performance across countries using dynamic models.
Prerequisite: ECON 304 and ECON 501.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 606 Microeconomic Analysis I Credits: 3 (3-0-0)
Also Offered As: AREC 606.
Course Description: Advanced price/allocation theory: consumer/producer decisions; uncertainty; market structure; partial/general equilibrium; efficiency/welfare.
Prerequisite: ECON 306 and ECON 501.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECON 606 and AREC 606.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 635 Econometric Theory I Credits: 3 (3-0-0)
Also Offered As: AREC 635.
Course Description: Theory of mathematical statistics and classical linear regression model in context of economic application.
Prerequisite: (AREC 535 or ECON 535) and (ECON 501, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECON 635 and AREC 635.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 640 International Trade Theory Credits: 3 (3-0-0)
Course Description: Theory of international trade including comparative advantage, factor growth, market distortions, and commercial policy.
Prerequisite: ECON 306 or ECON 506.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 663 Urban and Regional Modeling Credits: 3 (3-0-0)
Course Description: Methodological approaches in regional economics: general equilibrium, input-output, computable general equilibrium models; social accounting matrices.
Prerequisite: ECON 506.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 698 Research--Technical Paper Credits: 3 (0-0-3)
Course Description:
Prerequisite: (ECON 504 and ECON 506 and ECON 705) and (AREC 735 or ECON 735).
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 704 Macroeconomic Analysis II Credits: 3 (3-0-0)
Course Description: Theoretical and empirical frameworks for analyzing macroeconomic policies and their impact on economic growth, employment, and income distribution.
Prerequisite: ECON 604.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 705 Heterodox Approaches to Economics Credits: 3 (3-0-0)
Course Description: Contemporary heterodox approaches to economic research.
Prerequisite: ECON 505.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 706 Microeconomic Analysis II Credits: 3 (3-0-0)
Also Offered As: AREC 706.
Course Description: Advanced topics in microtheory: game theory; market imperfections; adverse selection; principal-agent problems; social choice theory; incentives, etc.
Prerequisite: ECON 606.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECON 706 and AREC 706.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 715 Monetary Economics Credits: 3 (3-0-0)
Course Description: Principle issues of monetary theory: money supply and demand, interest rates, and current problems of monetary policy.
Prerequisite: ECON 504.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 720 Public Economics II Credits: 3 (3-0-0)
Course Description: Analysis of welfare foundations of public expenditure, including cost-benefit analysis.
Prerequisite: ECON 506.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 735 Econometric Theory II Credits: 2 (2-0-0)
Also Offered As: AREC 735.
Course Description: Econometrics models and estimators in econometrics, from fully parametric to semiparametric and nonparametric approaches.
Prerequisite: AREC 635 or ECON 635.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 735 and ECON 735. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 736A Advanced Econometric Methods: Discrete Choice Models Credit: 1 (1-0-0)
Also Offered As: AREC 736A.
Course Description: Econometrics analysis of: Discrete Choice Models.
Prerequisite: AREC 735, may be taken concurrently or ECON 735, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECON 736A-C and AREC 736A-C. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 736B Advanced Econometric Methods: Panel Data Models Credit: 1 (1-0-0)
Also Offered As: AREC 736B.
Course Description: Econometrics analysis of: Panel Data Models.
Prerequisite: AREC 735, may be taken concurrently or ECON 735, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECON 736A-C and AREC 736A-C. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 736C Advanced Econometric Methods: Time Series Models Credit: 1 (1-0-0)
Also Offered As: AREC 736C.
Course Description: Econometrics analysis of: Time Series Models.
Prerequisite: AREC 735, may be taken concurrently or ECON 735, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECON 736A-C and AREC 736A-C. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 740 Advanced Natural Resource Economics Credits: 3 (3-0-0)
Also Offered As: AREC 740.
Course Description: Advanced theory, methods, and literature in natural resource economics, including dynamic programming and optimal control.
Prerequisite: AREC 706 or ECON 706.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 740 and ECON 740.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 741 Advanced Environmental Economics Credits: 3 (3-0-0)
Also Offered As: AREC 741.
Course Description: Advanced theory, methods, and literature in environmental economics.
Prerequisite: AREC 706 or ECON 706.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECON 741 and AREC 741.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 742 International Production and Monetary Theory Credits: 3 (3-0-0)
Course Description: Factor movements, theory of international production (multinationalism), balance of payments, and international monetary system.
Prerequisite: ECON 304 or ECON 504.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 760 Theories of Economic Development Credits: 3 (3-0-0)
Course Description: Analysis of fundamentals of economic development (processes, problems, and strategies) with special reference to developing nations.
Prerequisite: ECON 460.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 770 Economic Thought and Systems Credits: 3 (3-0-0)
Course Description: Aspects of modern economic thought and comparative economics selected according to backgrounds and interests of the class.
Prerequisite: ECON 570.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 771 Political Economy of Race and Gender Credits: 3 (3-0-0)
Course Description: Economic approaches to inequality based on race/ethnicity, gender, and class.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 772 Marxian Political Economy Credits: 3 (3-0-0)
Course Description: Marxian method, relevance of Marxian approach, and relation to other economic approaches.
Prerequisite: ECON 505.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 792A Seminar: Theory Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 792C Seminar: Social and Political Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 792D Seminar: Quantitative Analysis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 792E Seminar: Development Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 793 Seminar--Doctoral Research Credits: 3 (0-0-3)
Course Description:
Prerequisite: (ECON 704 and ECON 705 and ECON 706) and (AREC 735 or ECON 735).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Economics

Economics is the study of how people and societies use scarce resources to produce the things they want. Economic theory provides a framework for understanding economic issues, analyzing and predicting the likely effects of economic behavior and government policies, and formulating efficient and equitable solutions to pressing economic problems.

A strong liberal arts curriculum including arts and humanities, social and natural sciences, advanced composition, mathematics, and statistics provides the depth and breadth of knowledge needed to systematically and logically analyze problems, generate and test ideas, and develop effective communication and quantitative skills. Economics majors develop an appreciation of economic issues, and learn to analyze and critically evaluate economic phenomena and policies. The major core includes four semesters of economic theory, a semester of econometrics, a senior capstone seminar, and several semesters of economics electives covering a wide variety of economic topics from environmental and natural resource economics to the history of economic institutions and political economy.

Learning Outcomes

Students will:

- Display command of basic microeconomic concepts such as rationality, cost/benefit, supply and demand theory, decision making at the margin, monopoly and competition, and efficiency and equity.
- Display command of basic macroeconomic concepts such as aggregate demand and supply, fiscal and monetary policy, and the use of these policies in the macro-economy.
- Understand and analyze a broad array of economic issues found in the news and understand how the economic aspects of society work.

Potential Occupations

Economists are employed in a wide variety of fields from education and research to business and government. Nonprofit and international organizations use economists in overseas development, environmental conservation, and international relations. Economics, like many liberal arts majors, provides students with a broad academic background suitable for a variety of jobs. Economics majors are trained to think independently and critically, communicate effectively, and function in a multicultural world. Many employers appreciate liberal arts majors for their multiple skills and their ability to adapt to a variety of tasks and work environments. Careers for graduates are available in education, business, and government. Participation in internships or cooperative education opportunities is highly recommended to enhance practical training and development. Graduates who go on for advanced studies can pursue careers in economics or attain advanced positions with the possibility of rising to top professional levels.

Depending on interests, the electives taken, or the minor selected, available career choices include, but are not limited to: commodities/stock broker, financial analyst, economic forecaster, trust administrator, loan counselor, pension funds administrator, foreign trade analyst, public policy analyst, regional/urban planner, foreign service officer, tax auditor, natural resource analyst, educator, program administrator, researcher, community organizer, environmental activist, international aid organization analyst or administrator, marketing analyst, purchasing agent, public relations/media planner, program consultant, contract administrator, systems evaluator, personnel planner, portfolio administrator, finance manager, secondary school teacher.

Requirements Effective Fall 2019

Economics majors must achieve a minimum grade of 1.670 (C-) in each of the economics courses counted toward the major.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
Select one course from the following:			3-4
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	
Arts and Humanities		3B	6
Historical Perspectives		3D	3
Electives			11-12
	Total Credits		30

Sophomore

ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
Select one course from the following:			3
STAT 201	General Statistics		
STAT 204	Statistics for Business Students		
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
STAT 315	Statistics for Engineers and Scientists		
Biological and Physical Sciences		3A	7
Diversity and Global Awareness		3E	3
Minor/second major/interdisciplinary minor[1]			6
Electives			8
	Total Credits		30

Junior

ECON 304	Intermediate Macroeconomics		3
ECON 306	Intermediate Microeconomics	4A,4B	3
ECON 335/AREC 335	Introduction to Econometrics		3
Select one course from the following:			3
ECON 332/POLS 332	International Political Economy		
ECON 372	History of Economic Institutions and Thought		
ECON 376	Marxist Economic Thought		
ECON 379/HIST 379	Economic History of the United States		
ECON 474	Recent Economic Thought		
ECON XXX[2]			6
Minor/second major/interdisciplinary minor[1]			6
Advanced Writing		2	3
Electives			3
	Total Credits		30

Senior

ECON 492	Seminar	4A,4B,4C	3
ECON 3XX or ECON 4XX[3]			3
ECON 4XX[3]			3
Minor/second major/interdisciplinary studies minor[1]			9-15

Electives[4]		6-12
	Total Credits	30
	Program Total Credits:	120

1 Students must complete a minor, second major, or interdisciplinary minor.

2 Select any 2 ECON courses except ECON 484 or ECON 487.

3 ECON 484 and ECON 487 may not be selected.

4 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Economics majors must achieve a minimum grade of 1.670 (C-) in each of the economics courses counted toward the major.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
Arts and Humanities				3B	3
Historical Perspectives				3D	3
Electives					6
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
Select one course from the following:					3-4
MATH 141	Calculus in Management Sciences (GT-MA1)	X		1B	
MATH 155	Calculus for Biological Scientists I (GT-MA1)	X		1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	
Arts and Humanities				3B	3
Electives					5-6
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ECON 204	Principles of Macroeconomics (GT-SS1)		X	3C	3
Biological and Physical Sciences				3A	3
Diversity and Global Awareness				3E	3
Minor/second major/interdisciplinary minor course					3
Elective					3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
STAT 201	General Statistics	X			
STAT 204	Statistics for Business Students	X			
STAT 301	Introduction to Statistical Methods	X			
STAT 307	Introduction to Biostatistics	X			
STAT 315	Statistics for Engineers and Scientists	X			
Biological and Physical Sciences				3A	4
Minor/second major/interdisciplinary minor course					3
Electives					5
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
ECON 304	Intermediate Macroeconomics	X			3
ECON 335/ AREC 335	Introduction to Econometrics		X		3

Advanced Writing				2	3
Economics XXX					3
Minor/second major/interdisciplinary minor course					3
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
ECON 306	Intermediate Microeconomics	X		4A,4B	3
Select one course from the following:					3
ECON 332/ POLS 332	International Political Economy				
ECON 372	History of Economic Institutions and Thought				
ECON 376	Marxist Economic Thought				
ECON 379/ HIST 379	Economic History of the United States				
ECON 474	Recent Economic Thought				
Economics XXX					3
Minor/second major/interdisciplinary minor course					3
Electives					3
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Minor/second major/interdisciplinary minor courses					6
ECON 3XX or 4XX					3
Electives					6
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
ECON 492	Seminar	X		4A,4B,4C	3
Minor/second major/interdisciplinary minor course		X			3-9
ECON 4XX		X			3
Electives		X			0-6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Minor in Economics

The minor in Economics is designed to prepare students for understanding current socioeconomic problems in the areas of resource allocation, inflation, unemployment, income distribution, environmental degradation, international trade, and monopoly power. The program can be of help to students interested in careers in business management, teaching, government, banking, public policy, and related areas.

Learning Outcomes

Students will:

- Display command of basic microeconomic concepts such as rationality, cost/benefit, supply and demand theory, decision making at the margin, monopoly and competition, and efficiency and equity.
- Display command of basic macroeconomic concepts such as aggregate demand and supply, fiscal and monetary policy, and the use of these policies in the macro-economy.
- Understand and analyze basic economic issues found in the news and understand how the economic aspects of society work.

To declare the minor in Economics, please visit the Economics Department office in Clark C306.

Requirements Effective Fall 2019

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Economics minors must achieve a 2.000 grade point average in all courses taken for the minor.

Code	Title	Credits
Lower Division		
ECON 202	Principles of Microeconomics (GT-SS1)	3
ECON 204	Principles of Macroeconomics (GT-SS1)	3
Upper Division		
ECON 304	Intermediate Macroeconomics	3
ECON 306	Intermediate Microeconomics	3

ECON 3XX or ECON 4XX	9
Program Total Credits:	21

Master of Arts in Economics, Plan A

Requirements Effective Fall 2014

Code	Title	Credits
Core Courses		
AREC 506/ECON 506	Applied Microeconomic Theory	3
AREC 507	Applied Welfare and Policy Analysis	3
AREC 535/ECON 535	Applied Econometrics	3
ECON 501	Quantitative Methods for Economists	3
ECON 504	Applied Macroeconomics	3
Electives		
Electives [1]		12
Thesis		
ECON 699	Thesis	6
Program Total Credits:		33

A minimum of 33 credits are required to complete this program.

1. Complete 12 credits of elective courses, 500-level or above, that add depth and breadth to the program of study, chosen with advisor approval. Electives do not include ECON 698, ECON 699, ECON 784, or ECON 799. Of the 12 credits, at least 6 must be in regular economics courses.

Master of Arts in Economics, Plan B

Requirements Effective Fall 2011

Code	Title	Credits
Core Courses		
AREC 506/ECON 506	Applied Microeconomic Theory	3
AREC 635/ECON 635	Econometric Theory I	3
AREC 735/ECON 735	Econometric Theory II	2
ECON 501	Quantitative Methods for Economists	3
ECON 504	Applied Macroeconomics	3
ECON 505	History of Economic Thought	3
ECON 704	Macroeconomic Analysis II	3
ECON 705	Heterodox Approaches to Economics	3
ECON 706/AREC 706	Microeconomic Analysis II	3
Electives		
Electives [1]		3
Technical Paper		
ECON 698	Research--Technical Paper	3
Program Total Credits:		32

A minimum of 32 credits are required to complete this program.

1. Electives must be 400-level or above and do not include ECON 784.

Ph.D. in Economics

Requirements Effective Fall 2014

Code	Title	Credits
Core Courses		
AREC 606/ECON 606	Microeconomic Analysis I	3
AREC 635/ECON 635	Econometric Theory I	3
AREC 706/ECON 706	Microeconomic Analysis II	3
AREC 735/ECON 735	Econometric Theory II	2
Select one from the following:		1
AREC 736A/ ECON 736A	Advanced Econometric Methods: Discrete Choice Models	
AREC 736B/ ECON 736B	Advanced Econometric Methods: Panel Data Models	
AREC 736C/ ECON 736C	Advanced Econometric Methods: Time Series Models	
ECON 501	Quantitative Methods for Economists	3
ECON 505	History of Economic Thought	3
ECON 604	Macroeconomic Analysis I	3
ECON 704	Macroeconomic Analysis II	3
ECON 705	Heterodox Approaches to Economics	3
Field Courses		
Two pairs of field courses from among those designated by the department		12
Electives		
Electives [1]		9
Research and Dissertation		
ECON 698	Research--Technical Paper [2]	3
ECON 793	Seminar--Doctoral Research	3
ECON 799	Dissertation	18
Exams [3]		
Program Total Credits:		72

A minimum of 72 credits are required to complete this program.

1. Electives do not include ECON 699 or ECON 784 or ECON 799. Electives must be at the 500-level or above, chosen with advisor approval.
2. Completion of the Technical Paper, with satisfactory oral defense along with appropriate course work, satisfies the requirements for the Plan B M.A. degree.
3. Students must pass the written Ph.D. Qualifying Examination, the preliminary Oral Examination, and the final Oral Examination.

Department of English

The English Department at CSU is a vibrant & diverse place.

It is home to poets and linguists, literacy researchers and teacher educators, novelists and literary scholars, composition specialists and writers of creative nonfiction. We share a passion for exploring the multiple and dynamic ways that the English language is used to meet the demands of life in the twenty-first century.

Office in Eddy Hall, Room 359
(970) 491-6428
english.colostate.edu (http://english.colostate.edu)

Professor Louann Reid, Chair
Professor Dan Beachy-Quick, Undergraduate Coordinator
Professor Debby Thompson, Graduate Coordinator

Undergraduate Majors

- Major in English
  - Creative Writing Concentration
  - English Education Concentration
  - Language Concentration
  - Literature Concentration
  - Writing, Rhetoric and Literacy Concentration

Minors

- Minor in Creative Writing
- Minor in English

Graduate Graduate Programs in English

The Department of English offers programs of study leading to the Master of Fine Arts in Creative Writing or the Master of Arts in English, with specializations in Creative Non-Fiction; Literature; Teaching English as a Foreign Language or Second Language (TESL/TEFL); and Writing, Rhetoric, and Social change. The department shares a joint Master of Arts degree in Foreign Languages and the Teaching of English as a Second Language.

Students interested in graduate work should refer to the Graduate and Professional Bulletin (http://graduateschool.colostate.edu/current-students/bulletin.aspx).

Certificate

- TESOL Education

Master's Programs

- Master of Arts in English, Creative Nonfiction Specialization (No new students are being accepted into this specialization.)
- Master of Arts in English, English Education Specialization, Plan A and Plan B
- Master of Arts in English, Plan A, Literature Specialization
- Master of Arts in English, Plan B, Literature Specialization
- Master of Arts in English, Plan A, TESL/TEFL Specialization
- Master of Arts in English, Plan B, TESL/TEFL Specialization
- Master of Arts in English, Writing, Rhetoric, and Social Change Specialization, Plan A and Plan B
- Master of Fine Arts in Creative Writing

Courses

Subjects in this department include: American Studies (AMST), Composition (CO), English (E), and English for Academic Purposes (EAP).

American Studies (AMST)

AMST 100 Self/Community in American Culture, 1600-1877 (GT-AH2) Credits: 3 (3-0-0)
Course Description: Meaning and development of American culture, 1600-1877, through themes of self and community in art, politics, society, and religion.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, Literature & Humanities (GT-AH2).

AMST 101 Self/Community in American Culture Since 1877 (GT-AH2) Credits: 3 (3-0-0)
Course Description: Meaning and development of American culture since 1877, through themes of self and community in art, politics, society, and religion.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, Literature & Humanities (GT-AH2).

AMST 300 American Lives-Methods in American Studies Credits: 3 (3-0-0)
Also Offered As: E 300.
Course Description: Methods and changing approaches of American studies since 1950s using autobiography as organizing theme.
Prerequisite: AMST 100 and AMST 101.
Registration Information: Credit not allowed for both AMST 300 and E 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AMST 492 Seminar in American Studies Credits: 3 (0-0-3)
Course Description: Seminar for seniors in Liberal Arts involving critical reading, writing, research, and discussion. Topics vary.
Prerequisite: AMST 300 or E 300.
Registration Information: Senior standing or written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AMST 495 Independent Study in American Studies Credits: Var[1-3] (0-0-0)
Course Description: Individually-guided studies in interdisciplinary work in American culture.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AMST 499 Thesis in American Studies Credits: 3 (0-0-3)
Course Description:
Prerequisite: AMST 492.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Composition (CO)

CO 130 Academic Writing (GT-CO1) Credits: 3 (3-0-0)
Course Description: Academic writing, critical thinking, and critical reading through study of a key academic issue.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Introductory Writing (GT-CO1).

CO 150 College Composition (GT-CO2) Credits: 3 (3-0-0)
Course Description: Understanding and writing for rhetorical situations; critical reading and response; writing source-based argument for academic and public audiences.
Prerequisite: CO 130.
Registration Information: Must have taken CO 130 or Composition Challenge Essay (score of 3, 4, or 5) or SAT Verbal/Critical reading score of minimum 570 or SAT Evidence Based Reading/Writing score of minimum 620 or ACT COMPOSITE score of minimum 26 or Directed Self-Placement Survey code of 15. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Intermediate Writing 1A, Intermediate Writing (GT-CO2).

CO 300 Writing Arguments (GT-CO3) Credits: 3 (3-0-0)
Course Description: Reading, analyzing, researching, and writing arguments.
Prerequisite: CO 150 or HONR 193.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Advanced Writing 2, Advanced Writing (GT-CO3).

CO 301A Writing in the Disciplines: Arts and Humanities (GT-CO3) Credits: 3 (3-0-0)
Course Description: Learning writing strategies for addressing general audiences in arts and humanities.
Prerequisite: CO 150 or HONR 193.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Advanced Writing 2, Advanced Writing (GT-CO3).

CO 301B Writing in the Disciplines: Sciences (GT-CO3) Credits: 3 (3-0-0)
Course Description: Learning writing strategies for addressing general audiences in sciences.
Prerequisite: CO 150 or HONR 193.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Advanced Writing 2, Advanced Writing (GT-CO3).

CO 301C Writing in the Disciplines: Social Sciences (GT-CO3) Credits: 3 (3-0-0)
Course Description: Learning writing strategies for addressing general audiences in social sciences.
Prerequisite: CO 150 or HONR 193.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Advanced Writing 2, Advanced Writing (GT-CO3).

CO 301D Writing in the Disciplines: Education (GT-CO3) Credits: 3 (3-0-0)
Course Description: Learning writing strategies for addressing general audiences in education.
Prerequisite: CO 150 or HONR 193.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Advanced Writing 2, Advanced Writing (GT-CO3).

CO 302 Writing in Digital Environments (GT-CO3) Credits: 3 (3-0-0)
Course Description: Writing strategies, patterns and approaches for online materials.
Prerequisite: CO 150 or HONR 193.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Advanced Writing 2, Advanced Writing (GT-CO3).

CO 401 Writing and Style Credits: 3 (3-0-0)
Course Description: Advanced expository and persuasive writing emphasizing modes, strategies, and styles for a variety of audiences and purposes.
Prerequisite: CO 300 or CO 301A to 301D or CO 302.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CO 402 Principles of Digital Rhetoric and Design Credits: 3 (3-0-0)
Course Description: Advanced study of rhetorical contexts shaping online texts. Includes instruction in coding and digital design.
Prerequisite: None.
Registration Information: Must have completed AUCC category 2.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

English (E)

E 140 The Study of Literature (GT-AH2) Credits: 3 (3-0-0)
Course Description: Basic principles of reading literary texts.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

E 142 Reading Without Borders (GT-AH2) Credits: 3 (3-0-0)
Course Description: Authors from a range of international, cross-national, cultural, and ethnic backgrounds focusing on themes of immigration, exile, or education.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Literature & Humanities (GT-AH2).

E 179 Western American Literature Credits: 3 (3-0-0)
Course Description: Trans-Mississippi West in fiction and other literary forms.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 210 Beginning Creative Writing Credits: 3 (3-0-0)
Course Description: Basic techniques of writing fiction and poetry, including writer workshops. May include some elements of drama and/or creative non-fiction.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 232 Introduction to Humanities (GT-AH2) Credits: 3 (3-0-0)
Course Description: Great literature of Western cultural tradition from ancient times to present.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

E 234 Introduction to Native American Literature Credits: 3 (3-0-0)
Also Offered As: ETST 234.
Course Description: Native American writings and their significance in American culture.
Prerequisite: None.
Registration Information: Credit not allowed for both E 234 and ETST 234.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 236 Short Fiction Credits: 3 (3-0-0)
Course Description: Examines form, technique and interpretation in short fiction.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B.

E 237 Introduction to Science Fiction Credits: 3 (3-0-0)
Course Description: Historical development and major themes of science fiction, featuring writers such as Wells, Huxley, Bradbury, and LeGuin.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 238 20th-Century Fiction (GT-AH2) Credits: 3 (3-0-0)
Course Description: 20th-century fiction chosen for its relevance to global and cultural awareness.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Literature & Humanities (GT-AH2).

E 239 Introduction to Chicano Literature Credits: 3 (3-0-0)
Also Offered As: ETST 239.
Course Description: Chicano fiction and poetry with consideration of historical roots and influences.
Prerequisite: None.
Registration Information: Credit not allowed for both E 239 and ETST 239.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 240 Introduction to Poetry Credits: 3 (3-0-0)
Course Description: Development of critical skills necessary to understand and enjoy poetry.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 242 Reading Shakespeare (GT-AH2) Credits: 3 (3-0-0)
Course Description: Reading of Shakespeare texts, using various approaches of interpretation for understanding and relation to our contemporary cultural situation.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

E 245 World Drama (GT-AH2) Credits: 3 (3-0-0)
Course Description: World drama in cultural contexts.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Literature & Humanities (GT-AH2).

E 270 Introduction to American Literature (GT-AH2) Credits: 3 (3-0-0)
Course Description: History and development of American writings from 16th-century travel narratives through early 20th-century modernism.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

E 276 Survey of British Literature I (GT-AH2) Credits: 3 (3-0-0)
Course Description: British literature from Beowulf through the 18th century in relation to its historical contexts.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

E 277 Survey of British Literature II (GT-AH2) Credits: 3 (3-0-0)
Course Description: British literature from the Romantics to the present in relation to its historical contexts.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

E 300 American Lives-Methods in American Studies Credits: 3 (3-0-0)
Also Offered As: AMST 300.
Course Description: Methods and changing approaches of American studies since 1950s using autobiography as organizing theme.
Prerequisite: AMST 100 and AMST 101.
Registration Information: Credit not allowed for both E 300 and AMST 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 302 Reading and the Web Credits: 3 (3-0-0)
Course Description: Critical examination of reading processes, as well as the rhetorical and cultural contexts of readers on the web.
Prerequisite: CO 150 or HONR 193.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 305 Principles of Writing and Rhetoric Credits: 3 (3-0-0)
Course Description: Humanities-based exploration of central principles of rhetoric in written communication.
Prerequisite: CO 300 or CO 301A to 301D - at least 1 course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 310 Researching and Writing Literary Criticism Credits: 3 (3-0-0)
Course Description: Discipline-specific conventions of literary criticism and composing essays framed for literary scholars. Preparation for sharing research with public audiences, outside the classroom, in undergraduate research conferences and appropriate publication venues.
Prerequisite: E 100 to 499 - at least 3 credits or CO 100 to 499 - at least 3 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 311A Intermediate Creative Writing: Fiction Credits: 3 (2-0-1)
Course Description: Group discussion of student writing, literary models, and theory; emphasis on developing individual style.
Prerequisite: E 210 with a minimum grade of B-.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 311B Intermediate Creative Writing: Poetry Credits: 3 (2-0-1)
Course Description: Group discussion of student writing, literary models, and theory; emphasis on developing individual style.
Prerequisite: E 210 with a minimum grade of B-.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 311C Intermediate Creative Writing: Nonfiction Credits: 3 (2-0-1)
Course Description: Group discussion of student writing, literary models, and theory; emphasis on developing individual style.
Prerequisite: (CO 150 or HONR 193) and (E 210 with a minimum grade of B- or JTC 210 with a minimum grade of B-).
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 320 Introduction to the Study of Language Credits: 3 (3-0-0)
Course Description: Covers a range of topics including general linguistics, the relationships between language and literature, or society and science.
Prerequisite: CO 150.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 322 English Language for Teachers I Credits: 3 (3-0-0)
Course Description: Foundations of language structure, emphasizing grammar, sounds, spelling, word structure, linguistic variation, usage, acquisition, and pedagogy.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 323 English Language for Teachers II Credits: 3 (3-0-0)
Course Description: Advanced grammar; language history; meaning; applications to teaching composition, reading, and literature.
Prerequisite: E 322.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 324 Teaching English as a Second Language Credits: 3 (3-0-0)
Course Description: Introduction to teaching English to speakers of other languages for teacher certification candidates and for those wanting to teach abroad.
Prerequisite: E 320 or E 322.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 326 Development of the English Language Credits: 3 (3-0-0)
Course Description: Chronological study of four historical stages of English (Old, Middle, Early Modern, Modern) with emphasis on grammar, vocabulary, and phonology.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 327 Syntax and Semantics Credits: 3 (3-0-0)
Course Description: Linguistic study of sentence structure and grammatical relations, semantic roles and representation.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 328 Phonology, Morphology, and Lexis Credits: 3 (3-0-0)
Course Description: Linguistic study of pronunciation, word-formation, and vocabulary.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 329 Pragmatics and Discourse Analysis Credits: 3 (3-0-0)
Course Description: Linguistic study of general principles of interpretation and textual patterns.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 330 Gender in World Literature Credits: 3 (3-0-0)
Course Description: Selected world literature ranging from ancient world to present, considered in light of various complexities of gender relations.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 331 Early Women Writers Credits: 3 (3-0-0)
Course Description: Selected women writers from any period before the 20th century.
Prerequisite: E 276 or E 277.
Registration Information: May be taken twice for a maximum of 6 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 332 Modern Women Writers Credits: 3 (3-0-0)
Course Description: Selected 20th-century women writers in variety of genres emphasizing relationships between gender, writing, and reading.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 333 Critical Studies of Popular Texts Credits: 3 (3-0-0)
Course Description: Texts representing one or more popular modes focusing on issues of gender, sexuality, racial or ethnic identity, technology, and colonialism.
Prerequisite: CO 150.
Registration Information: May be taken twice for a maximum of 6 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 334 Gay and Lesbian Literature Credits: 3 (3-0-0)
Course Description: Literature by gay and lesbian authors on gay and lesbian themes.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 337 Western Mythology Credits: 3 (3-0-0)
Course Description: Major themes in western myth: classical, Biblical, and Germanic.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 338 Ethnic Literature in the United States Credits: 3 (3-0-0)
Course Description: Comparative study of literatures from a range of U.S. ethnic experiences and perspectives.
Prerequisite: ETST 100 to 481 - at least 1 course or E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 339 Literature of the Earth Credits: 3 (3-0-0)
Course Description: Non-fiction, fiction, and poetry on landscape, climate, animality, ecology, place.
Prerequisite: CO 150.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 340 Literature and Film Studies Credits: 3 (3-0-0)
Course Description: Studies film adaptations of literary works with attention to narrative, style, theme, adaptation, and revision.
Prerequisite: E 100 to 499.
Registration Information: Freshman not allowed.
Grade Mode: Traditional.
Special Course Fee: No.

E 341 Literary Criticism and Theory Credits: 3 (3-0-0)
Course Description: Theory and practice of modern literary analysis and evaluation; writing about literature.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 342 Shakespeare I Credits: 3 (3-0-0)
Course Description: Shakespeare's development as a poet and dramatist from the early plays through Hamlet.
Prerequisite: E 240 or E 276.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 343 Shakespeare II Credits: 3 (3-0-0)
Course Description: Shakespeare's development as a poet and dramatist after Hamlet.
Prerequisite: E 240 or E 276.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 345 American Drama Credits: 3 (3-0-0)
Course Description: Representative examples from mainstream and alternative drama.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 350 The Gothic in Literature and Film Credits: 3 (3-0-0)
Course Description: Interdisciplinary, cross-cultural approach to gothic works from the 18th to the 20th centuries.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 352 Study Abroad: Reading and Writing the Zambia Experience Credits: 3 (0-0-3)
Course Description: Community education and health initiatives in Livingstone, Zambia, in the context of fiction and nonfiction about such development work.
Prerequisite: None.
Registration Information: This is a partial semester course. Completion of AUCC Category 2.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 356 Asian Literature Credits: 3 (3-0-0)
Course Description: Masterpieces of classical and contemporary literature of China, India, and Japan.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 370 American Literature in Cultural Contexts Credits: 3 (3-0-0)
Course Description: American literature in social, political, economic, aesthetic, intellectual, and multimedia contexts.
Prerequisite: E 270.
Registration Information: May be taken twice for a maximum of 6 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 382B Study Abroad: Shakespeare in Oxford Credits: 3 (0-0-3)
Course Description: Experiential study of Shakespeare's plays in text and performance in Oxford and surrounding areas of the UK.
Prerequisite: CO 150.
Restriction: Must be a: Undergraduate.
Registration Information: Sophomore standing. This is a partial semester course. Registration is through the Office of International Programs.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 382C Study Abroad: Writing Stories of Community in Todos Santos Credits: 3 (0-0-3)
Course Description: Explores writing, representation, community literacy, ethnography and autoethnography, and human intersections with built and natural environments, in Baja California Sur, Mexico. Employs theories and tools of autoethnographic research and writing as well as community literacy theory.
Prerequisite: CO 150.
Registration Information: Sophomore standing. Offered as Mixed Face-to-Face.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 384A Supervised College Teaching: Classroom Credits: Var[1-3] (0-0-0)
Course Description: Supervised assistance in instruction.
Prerequisite: None.
Registration Information: Written consent of department chair. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 384B Supervised College Teaching: Writing Center Credits: Var[1-3] (0-0-0)
Course Description: Supervised assistance in instruction.
Prerequisite: None.
Registration Information: Written consent of department chair. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 401 Teaching Reading Credits: 3 (3-0-0)
Course Description: Theory and pedagogy for understanding, interpreting, and evaluating print and visual texts.
Prerequisite: CO 301D.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 402 Teaching Composition Credits: 3 (3-0-0)
Course Description: Theory and practice of the analysis and the teaching of writing.
Prerequisite: CO 301A to 301D - at least 1 course.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 403 Writing the Environment Credits: 3 (3-0-0)
Course Description: Creative writing in conjunction with study of recent American literature on nature and landscape.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356 or CO 301A to 301D - at least 1 course or E 311A to 311C - at least 1 course.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 405 Young Adult Literature Credits: 3 (3-0-0)
Course Description: Survey of literature for young adults emphasizing development of critical ability, appreciation, and taste.
Prerequisite: None.
Registration Information: 3 credits of CO or E.
Grade Mode: Traditional.
Special Course Fee: No.

E 406 Topics in Literacy Credits: 3 (3-0-0)
Course Description: Exploring literacy through writing theory; specific issues of cultural difference, gender, technology, acquisition, school, and workplace.
Prerequisite: None.
Registration Information: Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 412A Creative Writing Workshop: Fiction Credits: 3 (2-0-1)
Course Description: Individual projects with group discussion and analysis.
Prerequisite: E 311A with a minimum grade of B-.
Registration Information: Must register for lecture and recitation. Maximum of 6 credits allowed in course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 412B Creative Writing Workshop: Poetry Credits: 3 (2-0-1)
Course Description: Individual projects with group discussion and analysis.
Prerequisite: E 311B with a minimum grade of B-.
Registration Information: Must register for lecture and recitation. Maximum of 6 credits allowed in course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 412C Creative Writing Workshop: Nonfiction Credits: 3 (2-0-1)
Course Description: Individual projects with group discussion and analysis.
Prerequisite: E 311A with a minimum grade of B- or E 311C with a minimum grade of B-.
Registration Information: Must register for lecture and recitation. Maximum of 6 credits allowed in course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 420 Beat Generation Writing Credits: 3 (3-0-0)
Course Description: Shared experiences and historical pressures that made Beat Generation writers, including Kerouac, Ginsberg, Burroughs, and Waldman, a countercultural movement.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 421 Asian-American Literature Credits: 3 (3-0-0)
Course Description: Asian American writing on immigration, exile, exclusion, detainment, neocolonialism, resistance, hybridity, and transnationalism.
Prerequisite: CO 150 and E 270.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 422 African-American Literature Credits: 3 (3-0-0)
Also Offered As: ETST 422.
Course Description: African-American literature as a distinct tradition of writing and protest.
Prerequisite: None.
Registration Information: Credit not allowed for both E 422 and ETST 422.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 423 Latino/a Literature Credits: 3 (3-0-0)
Course Description: Latino/a writing on themes of settlement, expropriation, resistance, conquest, immigration, exile, hybridity and transnationalism.
Prerequisite: CO 150 and E 270.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 424 English Renaissance Credits: 3 (3-0-0)
Course Description: English Renaissance literature (1500-1670) covering a range of poetry, drama, and prose.
Prerequisite: E 276 or E 342 or E 343.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 425 Restoration and 18th Century Literature Credits: 3 (3-0-0)
Course Description: Poetry, drama, and prose, 1600-1789.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

E 426 British Romanticism Credits: 3 (3-0-0)
Course Description: British Romantic era literature (1780-1830) with emphasis on the social and cultural context.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 427 Victorian Age Credits: 3 (3-0-0)
Course Description: Victorian era literature (1830-1900) in social and cultural context with attention to multiple genres (poetry , fiction, drama, and essay).
Prerequisite: E 276 or E 277 or E 341.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 428 Postcolonial Literature Credits: 3 (3-0-0)
Course Description: Selected readings in postcolonial literatures and theory.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 430 18th-Century English Fiction Credits: 3 (3-0-0)
Course Description: English fiction from Defoe to Austen stressing Richardson, Fielding, Smollett, and Sterne.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 431 19th-Century English Fiction Credits: 3 (3-0-0)
Course Description: English fiction in Victorian and Edwardian eras emphasizing Dickens, the Brontes, Thackeray, George Eliot, and Hardy.
Prerequisite: E 276 or E 277 or E 341.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 432 20th-Century British Fiction Credits: 3 (3-0-0)
Course Description: British fiction from Conrad to the present emphasizing Joyce, Lawrence, Forster, Woolf, and Beckett.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 433 Literatures of the American West Credits: 3 (3-0-0)
Course Description: Relationships between places, environments, cultures, and literature in the American West.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356 or HIST 351 or HIST 352 or HIST 353.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 436 American Fiction, 1945-Present Credits: 3 (3-0-0)
Course Description: Form, content, and context of American fiction from 1945 to present. Kesey, Updike, Heller, Pynchon, Barthelme, Vonnegut, and others.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Registration Information: Offered as an online course only.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 438 Native American Literature Credits: 3 (3-0-0)
Also Offered As: ETST 438.
Course Description: Literature of Native Americans emphasized as distinctive tradition in American literature and cultural expression of indigenous peoples.
Prerequisite: None.
Registration Information: Credit not allowed for both E 438 and ETST 438.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 440 American Prose Before 1900 Credits: 3 (3-0-0)
Course Description: Novels, stories, and/or literary non-fiction prose written in the U.S. before 1900.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 441 American Prose Since 1900 Credits: 3 (3-0-0)
Course Description: Novels, stories, and/or literary non-fiction prose written in the U.S. from 1900 to the present.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 443 English Renaissance Drama Credits: 3 (3-0-0)
Course Description: Interplay between dramatic form and cultural context in the plays of Marlowe, Jonson, Cary, Middleton, Heywood, Dekker, Webster.
Prerequisite: E 276 or E 342 or E 343.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 444 Restoration and 18th-Century Drama Credits: 3 (3-0-0)
Course Description: Major plays and dramatic issues from 1660 to 1780 including Dryden, Etherege, Congreve, Sheridan, and others.
Prerequisite: None.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 445 Modern British and European Drama Credits: 3 (3-0-0)
Course Description: Realism and anti-realism in modern British and European drama.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 451 Medieval Literature Credits: 3 (3-0-0)
Course Description: Genres, themes, and authors of the Middle Ages.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 452 Masterpieces of European Literature Credits: 3 (3-0-0)
Course Description: Selected works of European literature through the 19th century.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 455 European Literature after 1900 Credits: 3 (3-0-0)
Course Description: Continental European texts in translation since 1900.
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 456 Topics in Critical Theory Credits: 3 (3-0-0)
Course Description: Advanced study of literary and cultural theory.
Prerequisite: E 341.
Registration Information: May be repeated once for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 460 Chaucer Credits: 3 (3-0-0)
Course Description: Chaucer's works in medieval context.
Prerequisite: E 341.
Registration Information: One other upper-division E prefix course.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 463 Milton Credits: 3 (3-0-0)
Course Description: Milton's poetry and prose emphasizing Paradise Lost.
Prerequisite: E 341 and E 276.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 465 Topics in Literature and Language Credits: 3 (3-0-0)
Course Description: Selected issues in literature and language.
Prerequisite: E 341.
Registration Information: One other upper-division E prefix course. Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 470 Individual Author Credits: 3 (3-0-0)
Course Description: Intensive study of works of a single major author.
Prerequisite: E 341.
Registration Information: One other upper-division E prefix course. Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 475 American Poetry Before 1900 Credits: 3 (3-0-0)
Course Description: Major American poets through the nineteenth century including Whitman, Dickinson, and Frost.
Prerequisite: E 240.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 478 Modern Poetry Credits: 3 (3-0-0)
Course Description: Major British and American poets from late 19th century to World War II.
Prerequisite: E 240.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 479 Recent Poetry of the United States Credits: 3 (3-0-0)
Course Description: US poetry since World War II, emphasis on the 1980s through the present.
Prerequisite: E 240.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 482A Study Abroad: Energy Transitions in Europe Credits: 3 (0-0-3)
Also Offered As: LB 482A.
Course Description: A multi-disciplinary and multi-national study of energy transitions.
Prerequisite: CO 150.
Registration Information: Sophomore standing. Registration is through the Office of International Programs. Credit not allowed for both E 482A and LB 482A.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 487A Internship: Supervised Work Experience Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: 2.5 GPA. Written consent of department chair. Maximum of 4 credits allowed in E 487A and E 487B.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 487B Internship: Literary Editing Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Registration Information: 2.5 GPA. Written consent of department chair. Maximum of 4 credits allowed in E 487A and E 487B.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 487C Internship: Community Literacy Center Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: CO 150.
Registration Information: 2.500 GPA. Written consent of CLC director.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 487D Internship: CSU Writing Center Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: CO 300 or CO 301.
Registration Information: 2.500 GPA. Written consent of Writing Center director.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description: Individually guided studies in literature, writing, English language, and linguistics.
Prerequisite: None.
Registration Information: Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 501 Theories of Composition Credits: 3 (0-0-3)
Course Description: Overview of composition/writing studies including various pedagogical approaches to teaching composition and the contexts that shape effective writing.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 502 The Politics of Literacy Credits: 3 (0-0-3)
Course Description: Socio-cultural theories and practical perspectives on language and literacy practices in academic and non-academic contexts.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

E 503 Investigating Classroom Literacies Credits: 3 (3-0-0)
Course Description: Research methods and ethical issues in classroom-based inquiry into oral and written literacy practices.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 504 Professional Issues in Composition & Writing Credits: 3 (0-0-3)
Course Description: Examines contemporary professional concerns, debates, and approaches in composition and writing studies.
Prerequisite: E 501.
Grade Mode: Traditional.
Special Course Fee: No.

E 505A Major Authors: English Credits: 3 (3-0-0)
Course Description: Intensive study of the works of one or two major authors.
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 505B Major Authors: American Credits: 3 (3-0-0)
Course Description: Intensive study of the works of one or two major authors.
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 505C Major Authors: World Credits: 3 (3-0-0)
Course Description: Intensive study of the works of one or two major authors.
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 506A Literature Survey: English Credits: 3 (3-0-0)
Course Description: Synthesis of literary attitudes, modes, genres of an age.
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 506B Literature Survey: American Credits: 3 (3-0-0)
Course Description: Synthesis of literary attitudes, modes, genres of an age.
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 506C Literature Survey: Comparative Credits: 3 (3-0-0)
Course Description: Synthesis of literary attitudes, modes, genres of an age.
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 345 or E 343 or E 160.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 507 Special Topics in Linguistics Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 513A Form and Technique in Modern Literature: Fiction Credits: 3 (3-0-0)
Course Description: Selected readings in and discussion of modern literature and criticism from the writer's point of view with emphasis on form and technique.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 513B Form and Technique in Modern Literature: Poetry Credits: 3 (3-0-0)
Course Description: Selected readings in and discussions of modern literature and criticism from the writer's point of view with emphasis on form and technique.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 513C Form and Technique in Modern Literature: Essay Credits: 3 (3-0-0)
Course Description: Selected readings in and discussions of modern literature and criticism from the writer's point of view with emphasis on form and technique.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 514 Phonology/Morphology-ESL/EFL Credits: 3 (3-0-0)
Course Description: English sound system and word formation in relation to second language acquisition and teaching.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 515 Syntax for ESL/EFL Credits: 3 (3-0-0)
Course Description: Major grammatical structures of English in relation to second language acquisition and teaching.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 520 English Phonetics and Phonology Credits: 3 (3-0-0)
Course Description: Articulatory phonetics, phonological theory and analysis with principal applications to American English and to pedagogy.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 522 Semantics, Pragmatics, and Discourse Credits: 3 (3-0-0)
Course Description: Linguistic study of literal and nonliteral meaning, including role of textual and situational context.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 526 Teaching English as a Foreign/Second Language Credits: 3 (3-0-0)
Course Description: Principles of teaching English as a foreign/second language. Development of a coherent method, including activities, materials, and course design.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 527 Theories of Foreign/Second Language Learning Credits: 3 (3-0-0)
Course Description: Theories of second language learning/acquisition; emphasis on psycholinguistic processes of language learning.
Prerequisite: E 526.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 528 Professional ESL Teaching: Theory to Practice Credits: 3 (3-0-0)
Course Description: Theory and practice in the planning and teaching of English as a second/foreign language.
Prerequisite: E 514 and E 515 and E 527.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 590 Workshop in TESOL Credits: Var[1-3] (0-0-0)
Course Description: Methodology/linguistic theory designed to solve practical problems in teaching, testing, and materials development.
Prerequisite: E 526.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 600A Research Methods/Theory: Literary Scholarship Credits: 3 (3-0-0)
Course Description: Research methods in English studies: literary scholarship.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 600B Research Methods/Theory: Writing Studies Credits: 3 (0-0-3)
Course Description: Research design principles emphasizing qualitative methods in writing studies; an introduction to quantitative concepts.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 601 Research in Teaching English as Second Language Credits: Var[2-3] (0-0-0)
Course Description: Evaluation and design of research in language acquisition.
Prerequisite: E 526.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 603 Critical Digital Rhetoric Credits: 3 (0-0-3)
Course Description: Critical theories and applications of digital rhetoric, emphasis on how issues of accessibility, intellectual property, infrastructure, and multimodality impact circulation of knowledge within digital environments.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

E 605 Critical Studies in Reading and Writing Credits: 3 (0-0-3)
Course Description: Examination of the social and political contexts of reading and writing policy and instruction.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

E 607A Teaching Writing: Composition and Rhetoric Credits: 3 (3-0-0)
Course Description: Addresses theoretical and applied understandings of reading and writing processes in the first-year college writing classroom; considers practical implications for professional practice in the teaching of writing; critically examines theory, disciplinary conventions, and policies in regard to writing pedagogy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 607B Teaching Writing: Creative Writing Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 608 Integrating Writing in the Academic Core Credit: 1 (0-0-1)
Course Description: Theories and best practices associated with writing integration in the academic core.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 610 Literature Program Colloquium Credit: 1 (1-0-0)
Course Description: Organizational strategies for researching and writing a final project/thesis. Opportunities to address specific challenges in order to ensure high-quality work and a timely defense. Career opportunities and professionalization issues are addressed.
Prerequisite: E 600A.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 615 Reading Literature-Recent Theories Credits: 3 (3-0-0)
Course Description: Recent developments in critical and cultural theories of discourse.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 630A Special Topics in Literature: Area Studies Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 630B Special Topics in Literature: Genre Studies Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 630C Special Topics in Literature: Theory and Technique Studies Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 630D Special Topics in Literature: Gender Studies Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 631 Crossing Boundaries Credits: 3 (3-0-0)
Course Description: Cross-topical studies of literature.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 632 Professional Concerns in English Credits: Var[1-3] (0-0-0)
Course Description: Professional concerns of secondary school teachers of English.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 633 Special Topics in Writing and Rhetoric Credits: 3 (0-0-3)
Course Description: Varied topics covering social, political, cultural or historical areas, or literacy and rhetorical theory and practice, or professional and pedagogical issues.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

E 634 Special Topics in TEFL/TESL Credits: 3 (3-0-0)
Course Description: Theory, practice, and professional conduct of teaching English as a foreign or second language.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 635 Critical Studies in Literature and Culture Credits: 3 (3-0-0)
Course Description: Advanced interpretation in contemporary literary and critical studies.
Prerequisite: E 615.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 636 Environmental Literature and Criticism Credits: 3 (3-0-0)
Course Description: Literary, critical, and theoretical representations of nature, animals, human-environment relations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 637 Histories of Writing and Rhetoric Credits: 3 (0-0-3)
Course Description: Historiographic examination of literate systems, practices and technologies of writing across time, cultures, and contexts.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

E 638 Assessment of English Language Learners Credits: 3 (3-0-0)
Course Description: Theory, practice, and professional conduct in the assessment of English language learners.
Prerequisite: E 514 and E 527.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 640A Graduate Writing Workshop: Fiction Credits: Var[1-5] (0-0-0)
Course Description: Individual projects with group discussion and analysis.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 11 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 640B Graduate Writing Workshop: Poetry Credits: Var[1-5] (0-0-0)
Course Description: Individual projects with group discussion and analysis.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 11 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 640C Graduate Writing Workshop: Essay Credits: Var[1-5] (0-0-0)
Course Description: Individual projects with group discussion and analysis.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 11 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 641 Nonfiction Workshop Credits: Var[1-5] (0-0-0)
Course Description: Writing workshop exploring various areas within literary nonfiction.
Prerequisite: E 640C.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 642 Writing Hypertexts Credits: Var[1-5] (0-0-0)
Course Description: Writing workshop exploring development of texts in electronic formats.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 643 Special Topics in Literary Craft Credits: 3 (0-0-3)
Course Description: A seminar-based class combining creative and craft-based experiments with traditional literary critical approaches to various topics utilizing poetry, fiction, creative non-fiction, and other alternate hybrid genres.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission into MA English or MFA Creative Writing Programs.
Grade Mode: Traditional.
Special Course Fee: No.

E 679 Community Service Learning in TESOL Credit: 1 (1-0-0)
Course Description: Opportunities to learn, practice, and develop skills by serving the community.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 684A Supervised College Teaching: Composition Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 684B Supervised College Teaching: ESL Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 684C Supervised College Teaching: Creative Writing Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 684D Supervised College Teaching: Literature Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 684E Supervised College Teaching: Computer-Assisted Instruction Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 687A Internship: Teaching College English Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 687B Internship: Composition Supervision/Administration Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: E 501 and E 684A.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 687C Internship: Literary Editing Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 687E Internship: Teaching ESL, K-12 Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 687H Internship: ESL-Adult Learning Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 687I Internship: ESL-Supervision/Administration Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 687J Internship: Arts Administration in Literature Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 687K Internship: Public Education Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 687L Internship: Computers and Writing Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 687M Internship: Writing/Editing for Specific Purposes Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 692 Seminar in Writing, Rhetoric, & Social Change Credit: 1 (0-0-1)
Course Description: Seminar featuring faculty and student research and projects and disciplinary and professional concerns related to writing, rhetoric, pedagogy, and social change.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 694 Independent Study: Portfolio Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 698 Research Project Credits: Var[1-3] (0-0-0)
Course Description: Research, composition, and revision of final project in accordance with disciplinary requirements.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Advisor approval.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 700 Introduction to Doctoral Studies in English Credits: 3 (0-0-3)
Course Description: Disciplinary approaches to the study of written discourse.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the doctoral program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 710 Writing for Publication Credits: 3 (3-0-0)
Course Description: Shaping research questions, determining publication venues, writing and revising for publication.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 792A Seminar: New Literacies Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 792B Seminar: Writing About Science and Environment Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 792C Seminar: Writing and Cultural Contexts Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: Individually guided study in doctoral topic.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

English for Academic Purposes (EAP)

EAP 150 English for International Students I Credits: 6 (6-0-0)
Course Description: Academic English for international students, emphasizing analysis and integration of text and lecture-based information and its application.
Prerequisite: None.
Registration Information: Admission to Pathways program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EAP 151 English for International Students II Credits: 3 (3-0-0)
Course Description: Academic English for international students, emphasizing research and writing papers in various academic genres using appropriate academic language.
Prerequisite: EAP 150.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EAP 152 English for International Graduate Students Credits: 6 (6-0-0)
Course Description: Academic English for international graduate students with emphasis on both academic reading and research.
Prerequisite: EAP 150.
Registration Information: Admission to graduate INTO CSU Pathway Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EAP 153 Writing for International Graduate Students Credits: 3 (3-0-0)
Course Description: Development of academic English for international graduate students with an emphasis on academic research writing.
Prerequisite: None.
Registration Information: Admission to an accelerated graduate INTO CSU Pathway Program.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Major in English

The English department at CSU is a vibrant and diverse community. We are home to poets and linguists, literacy researchers and teacher educators, novelists and literary scholars, composition specialists and writers of creative nonfiction. We share a passion for exploring the multiple and dynamic ways that the English language is used to meet the demands of life in the twenty-first century. Students, staff, and faculty are committed to inclusive excellence, intellectual growth, and the creation of a more just and sustainable world.

English majors develop an understanding of diverse cultures, literary traditions, and great works of English, American, and world literature. Students expand their ability to analyze a variety of texts and view them through the lenses of diverse critical perspectives. Majors develop the ability to write for both specialized and general audiences. There are five concentrations from which students can choose:

- Creative Writing,
- English Education,
- Language,
- Literature, or
- Writing, Rhetoric and Literacy.

Learning Outcomes

Upon completion of the B.A. in English, the accomplished graduate shall be able to:

- work with, explain, or analyze English-language writings of the broadest textual range with an eye practiced in close-reading, historical context, and rigorous critical judgment;
- write with flexibility, effectiveness, and originality for diverse rhetorical purposes and audiences;
- read and write with technical awareness of language foundations, contexts of literacy, multi-modal environments, and theories of discourse and meaning; and
- integrate English literacy (disciplinary methods of reading and analysis) with interdisciplinary knowledge and action.

Potential Occupations

A major in English prepares students for business, government, or education careers that require broadly educated people who can think critically, communicate effectively, analyze texts, and write well. Many employers appreciate liberal arts majors for their multiple skills and their ability to adapt to a variety of tasks and work environments.

The department encourages experiential education by offering a variety of internship opportunities.

Students are also invited to generate their own positions in fields of interests, as well as pursue established local, regional, or national internships. Graduates who go on for advanced studies can attain more responsible positions with the possibility of rising to top professional levels.

Depending on a student's interests, the electives taken, or the concentration selected, available career choices include, but are not limited to: copy editor; project editor; manuscript reader or story analyst; sales representative; publicity and promotion specialist; advertising coordinator; production specialist; assistant book publicist; contracts and permission specialist; agency or arts administrator; human resource manager; human services program developer; public relations; English teacher; teacher of English as a second language; curriculum developer; education administrator; grant writer; technical writer for business, industry, or science; magazine, newspaper, television, education, or government writer; biographer or writer of prose, fiction, or nonfiction; lyricist.

Concentrations

- Creative Writing Concentration
- English Education Concentration
- Language Concentration
- Literature Concentration
- Writing, Rhetoric and Literacy Concentration

Major in English, Creative Writing Concentration

The Creative Writing concentration gives students the opportunity to strengthen their creative writing skills, and infuses their analytic reading skills with imagination. Students take beginning, intermediate, and advanced courses in one or more of the following genres: fiction, poetry, and creative nonfiction. Intermediate and advanced courses are primarily workshop classes in which students read and critique one another's work. At the center of all creative writing courses is the study of craft. Students in the Creative Writing concentration also take a wide variety of English and literature courses which prepare them to be writers by schooling them in literary traditions and styles. An internship program for all English majors offers Creative Writing students positions that may lead to employment. In addition, the Creative Writing program runs a vibrant reading series that gives students the chance to meet visiting writers.

Requirements
Effective Fall 2015

For graduation, an English major must attain a minimum grade point average of 2.000 in upper-division composition and English courses.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
E 240	Introduction to Poetry		3
SPCM 200	Public Speaking		3
Arts and Humanities[1]		3B	6
Biological and Physical Sciences		3A	7
Mathematics		1B	3
Electives			5
	Total Credits		30

Sophomore

E 210	Beginning Creative Writing		3
E 270	Introduction to American Literature (GT-AH2)	3B	3
Select one from the following:			3
E 276	Survey of British Literature I (GT-AH2)	3B	
E 277	Survey of British Literature II (GT-AH2)	3B	
English Elective			3
Philosophy[2]			3
Liberal Arts/History Elective[3]			3
Global and Cultural Awareness		3E	3
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3

Elective			3
	Total Credits		30

Junior

Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)	2	
Select one course from the following:			3
E 311A	Intermediate Creative Writing: Fiction		
E 311B	Intermediate Creative Writing: Poetry		
E 311C	Intermediate Creative Writing: Nonfiction		
E 341	Literary Criticism and Theory	4A,4B	3
Second field[4]			3
Upper-Division English/Composition[5]			6
Electives			12
	Total Credits		30

Senior

Select one course from the following:[6]			3
E 412A	Creative Writing Workshop: Fiction		
E 412B	Creative Writing Workshop: Poetry		
E 412C	Creative Writing Workshop: Nonfiction		
Select one course from the following:			3
E 460	Chaucer	4C	
E 465	Topics in Literature and Language	4C	
E 470	Individual Author	4C	
Second field[4]			9
Upper-Division English/Composition[5]			12
Elective			3
	Total Credits		30
	Program Total Credits:		120

1. Excludes E subject code courses.
2. Select from the list of PHIL courses on English Department checksheet.
3. Select either one other course from the list of courses in AUCC 3D or one from the list of courses in the English Department checksheet.
4. The department requires majors to complete a second field. This may be met by completing the second semester of the second year of a foreign language or by completing 12 credits of upper division courses in a coherent field of study outside English.
5. The department requires creative writing concentrators to take 18 credits of upper-division E and/or CO courses: 3 credits must be in literatures of the British Isles before 1830 or in American or European literatures before 1900; 3 credits must be in literatures of the British Isles after 1830 or in American or European literatures after 1900; 3 credits must be in breakthroughs (ideological, racial, cultural, gendered), and 3 credits must be in a genre course. See the department for the courses that fulfill these 4 categories.
6. Selection must match subtopic of E 311A, E 311B, or E 311C.

Major Completion Map

Distinctive Requirements for Degree Program:

English majors must attain a minimum grade point average of 2.000 in upper-division composition and English courses.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
Mathematics			X	1B	3
Elective					3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
E 240	Introduction to Poetry		X		3
SPCM 200	Public Speaking				3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	4
Elective					2
AUCC 1B (MATH) and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
E 210	Beginning Creative Writing		X		3
E 270	Introduction to American Literature (GT-AH2)		X	3B	3
Global and Cultural Awareness				3E	3
Social and Behavioral Sciences				3C	3
Liberal Arts/History Elective (Select from AUCC 3D or Department Checksheet)					3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
E 276	Survey of British Literature I (GT-AH2)	X		3B	
E 277	Survey of British Literature II (GT-AH2)	X		3B	
Historical Perspectives				3D	3
Philosophy Course (Select from Department Checksheet)					3
English Elective					3
Elective					3
AUCC 3A (Biological and Physical Sciences), AUCC 3B (Arts and Humanities), AUCC 3C (Social and Behavioral Sciences), E 210, E 240, E 270 must be completed by the end of Semester 4.		X			
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
E 311A	Intermediate Creative Writing: Fiction		X		
E 311B	Intermediate Creative Writing: Poetry		X		
E 311C	Intermediate Creative Writing: Nonfiction		X		
E 341	Literary Criticism and Theory		X	4A,4B	3
Upper-Division English/Composition Course (See footnote on Concentration Requirements Tab)					3
Electives					6
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)	X		2	

CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)	X	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	X	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	X	2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)	X	2	
Second Field Course				3
Upper-Division English/Composition Course (See footnote on Concentration Requirements Tab)				3
Electives				6
	Total Credits			15

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
E 460	Chaucer		X	4C	
E 465	Topics in Literature and Language		X	4C	
E 470	Individual Author		X	4C	
Second Field Courses					6
Upper-Division English/Composition Courses (See footnote on Concentration Requirements Tab)					6
	Total Credits				15

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following: (Must match subtopic of E 311A-C)					3
E 412A	Creative Writing Workshop: Fiction	X			
E 412B	Creative Writing Workshop: Poetry	X			
E 412C	Creative Writing Workshop: Nonfiction	X			
Second Field Course		X			3
Upper-Division English/Composition Courses (See footnote on Concentration Requirements Tab)		X			6
Elective		X			3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in English, English Education Concentration

The English Education concentration provides students with preparation for teaching in secondary schools. It is designed for students who wish to pursue a career in teaching language arts, and offers a range of courses in language, literature, and writing. Students may receive an endorsement from the state of Colorado in English/Language Arts. In addition to the common requirements for the English major, students take several extra courses in English, as well as education classes through the School of Education.

Students interested in pursuing a teaching license through CSU may refer to the Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu).

Requirements Effective Fall 2015

For graduation, an English major must attain a minimum grade point average of 2.000 in upper-division composition and English courses.

Freshman

		AUCC	**Credits**
CO 150	College Composition (GT-CO2)	1A	3
E 240	Introduction to Poetry		3
Select one course from the following:			3
E 142	Reading Without Borders (GT-AH2)	3E	
E 245	World Drama (GT-AH2)	3E	
LB 170	World Literatures to 1500 (GT-AH2)	3E	

LB 171	World Literatures-The Modern Period (GT-AH2)	3E	
SPCM 200	Public Speaking		3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	4
Historical Perspectives		3D	3
Mathematics		1B	3
Electives			6
	Total Credits		31

Sophomore

CO 301D	Writing in the Disciplines: Education (GT-CO3)	2	3
E 270	Introduction to American Literature (GT-AH2)	3B	3
Select one from the following:			3
E 276	Survey of British Literature I (GT-AH2)	3B	
E 277	Survey of British Literature II (GT-AH2)	3B	
Select one from the following:			3
E 342	Shakespeare I		
E 343	Shakespeare II		
EDUC 275	Schooling in the United States (GT-SS3)	3C	3
EDUC 331	Educational Technology and Assessment		2
EDUC 340	Literacy and the Learner		3
Biological and Physical Sciences		3A	3
Social and Behavioral Sciences		3C	3
Elective			2
	Total Credits		28

Junior

E 322	English Language for Teachers I		3
E 341	Literary Criticism and Theory	4A,4B	3
E 401	Teaching Reading		3
E 405	Young Adult Literature		3
EDUC 350	Instruction I-Individualization/Management		3
EDUC 386	Practicum-Instruction I		1
EDUC 463	Methods in Teaching Language Arts		4
Upper-Division English requirement[1]			9
Elective			3
	Total Credits		32

Senior

E 402	Teaching Composition		3
EDUC 450	Instruction II-Standards and Assessment		4
EDUC 485B	Student Teaching: Secondary		11
EDUC 486E	Practicum: Instruction II		1
EDUC 493A	Seminar: Professional Relations		1
Select one capstone course from the following:[1]			3
E 460	Chaucer	4C	
E 465	Topics in Literature and Language	4C	
E 470	Individual Author	4C	
English Elective[2]			3

Elective		3
	Total Credits	29
	Program Total Credits:	120

1 The department requires Licensure majors to take a minimum of 12 credits of upper-division E or CO subject code courses to include the categories listed below. One course may count for two categories if necessary, but students must take a minimum of 12 credits to fulfill this requirement:

- 3 credits must be in literatures of the British Isles before 1830, or in American or European literatures before 1900;
- 3 credits must be in literatures of the British Isles after 1830, or in American or European literatures after 1900;
- 3 credits must be in either breakthroughs (ideological, racial, cultural, gendered) or genre courses;
- One course must be a world literature course;
- One course must be a capstone course (see list in senior year, above).

See the department list for the courses that fulfill these categories.

2 Any lower or upper-division E subject code course.

Major Completion Map

Distinctive Requirements for Degree Program:

For admission to Teacher Licensure program, students must have a 2.750 cum. GPA on all work attempted at accredited institutions. For licensure, students must complete all coursework in the teaching concentration and professional education with a grade of C or above and must have a cumulative GPA of 2.750.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
Select one course from the following:					3
E 142	Reading Without Borders (GT-AH2)			3E	
E 245	World Drama (GT-AH2)			3E	
LB 170	World Literatures to 1500 (GT-AH2)			3E	
LB 171	World Literatures-The Modern Period (GT-AH2)			3E	
Arts and Humanities				3B	3
Mathematics			X	1B	3
Elective					3
	Total Credits				15

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
E 240	Introduction to Poetry		X		3
SPCM 200	Public Speaking				3
Biological and Physical Sciences				3A	4
Historical Perspectives				3D	3
Elective					3
AUCC 1B (MATH) and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
E 276	Survey of British Literature I (GT-AH2)		X	3B	
E 277	Survey of British Literature II (GT-AH2)		X	3B	
EDUC 275	Schooling in the United States (GT-SS3)	X		3C	3
EDUC 340	Literacy and the Learner	X			3
Biological and Physical Sciences				3A	3
Social and Behavioral Sciences				3C	3
	Total Credits				15

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 301D	Writing in the Disciplines: Education (GT-CO3)		X	2	3
E 270	Introduction to American Literature (GT-AH2)		X	3B	3

Select one course from the following:					3
E 342	Shakespeare I				
E 343	Shakespeare II				
EDUC 331	Educational Technology and Assessment	X			2
Elective					2
AUCC 3A (Biological and Physical Sciences), AUCC 3B (Arts and Humanities), AUCC 3C (Social and Behavioral Sciences), AUCC 3E (Global and Cultural Awareness), E 240, and E 276 or E 277 must be completed by the end of Semester 4.		X			
Must be admitted to Teacher Licensure Program by the end of Semester 4.		X			
	Total Credits				13

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
E 322	English Language for Teachers I				3
E 341	Literary Criticism and Theory		X	4A,4B	3
EDUC 350	Instruction I-Individualization/Management	X			3
EDUC 386	Practicum-Instruction I	X			1
Upper-Division English/Composition Course (See footnote on Concentration Requirements Tab)					3
Elective					3
CO 301D must be completed by the end of Semester 5.		X			
	Total Credits				16

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
E 401	Teaching Reading		X		3
E 405	Young Adult Literature		X		3
EDUC 463	Methods in Teaching Language Arts				4
Upper-Division English/Composition Course (See footnote on Concentration Requirements Tab)					6
E 341 must be completed by the end of Semester 6.		X			
	Total Credits				16

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
E 402	Teaching Composition	X			3
EDUC 450	Instruction II-Standards and Assessment	X			4
EDUC 486E	Practicum: Instruction II	X			1
Select one course from the following:					3
E 460	Chaucer		X	4C	
E 465	Topics in Literature and Language		X	4C	
E 470	Individual Author		X	4C	
English Elective					3
Elective					3
E 401, E 405 must be completed by the end of Semester 7.		X			
	Total Credits				17

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 485B	Student Teaching: Secondary	X			11
EDUC 493A	Seminar: Professional Relations	X			1
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12
	Program Total Credits:				120

Major in English, Language Concentration

The Language concentration is for students who wish to focus on linguistics and teaching English as a second or foreign language, as well as literature, writing, and education. It is designed for students interested in all aspects of language and linguistics. It offers students the ability to study key theories in linguistics and second-language learning, functional aspects of language production and reception, and the impact of social and cultural contexts on language production and reception.

Requirements Effective Fall 2015

For graduation, an English major must attain a minimum grade point average of 2.000 in upper-division composition and English courses.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
E 240	Introduction to Poetry		3
E 270	Introduction to American Literature (GT-AH2)	3B	3
SPCM 200	Public Speaking		3
Arts and Humanities[1]		3B	6
Biological and Physical Sciences		3A	7
Foreign Language[2]			3-5
Mathematics		1B	3
	Total Credits		31-33

Sophomore

Select one from the following:			3
E 276	Survey of British Literature I (GT-AH2)	3B	
E 277	Survey of British Literature II (GT-AH2)	3B	
PH *** Philosophy[3]			3
Liberal Arts/History Elective[4]			3
Foreign Language[2]			3-5
Global and Cultural Awareness		3E	3
Historical Perspectives		3D	3
Social and Behavioral Science		3C	3
Electives			6-8
	Total Credits		27-31

Junior

Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)	2	
E 326	Development of the English Language		3
Select one course from the following:			3
E 327	Syntax and Semantics		
E 328	Phonology, Morphology, and Lexis		
E 329	Pragmatics and Discourse Analysis		
E 341	Literary Criticism and Theory	4A,4B	3
Select one from the following:			3
E 342	Shakespeare I		
E 343	Shakespeare II		
Foreign Language[2]			5

Electives			7
	Total Credits		27

Senior

Select one course from the following not taken in the junior year:			3
E 327	Syntax and Semantics		
E 328	Phonology, Morphology, and Lexis		
E 329	Pragmatics and Discourse Analysis		
Select one from the following:			3
E 460	Chaucer	4C	
E 465	Topics in Literature and Language	4C	
Foreign Language[2]			5
Upper-Division English/Composition[5]			15
Electives[6]			3-9
	Total Credits		29-35
	Program Total Credits:		120

1 Excludes E subject code courses.

2 This requirement must be met by completing the second year of one foreign language and the first year of another foreign language.

3 Select from the list of PHIL courses on English Department green sheet.

4 Select either one other course from the list of courses in AUCC 3D or one from the list of courses on the English department check sheet.

5 Fifteen credits of upper-division courses (300- to 400-level) with E or CO prefixes, at least 9 credits of which must come from CO 401, E 311A, E 311B, E 311C, E 320, E 324, E 412A, E 412B, E 412C, and E 465.

6 Select enough elective credits to bring the program total to 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
English majors must attain a minimum grade point average of 2.000 in upper-division composition and English courses.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
E 270	Introduction to American Literature (GT-AH2)		X	3B	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
Mathematics			X	1B	3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
E 240	Introduction to Poetry		X		3
SPCM 200	Public Speaking		X		3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	4
L*** *** Foreign Language					3-5
AUCC 1B (MATH) and CO 150 must be completed at the end of Semester 2.		X			
	Total Credits				16-18

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
E 276	Survey of British Literature I (GT-AH2)		X	3B	
E 277	Survey of British Literature II (GT-AH2)		X	3B	
Global and Cultural Awareness				3E	3
Social and Behavioral Sciences				3C	3

Liberal Arts/History Elective (Select from AUCC 3D or Department Checksheet)					3
Elective					3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Historical Perspectives				3D	3
L*** *** Foreign Language					3-5
PHIL*** Philosophy					3
Electives					3-5
AUCC 3A (Biological and Physical Sciences), AUCC 3B (Arts and Humanities), AUCC 3C (Social and Behavioral Sciences), E 240, E 270, and E 276 or E 277, plus one course of L*** *** must be completed by the end of Semester 4.		X			
	Total Credits				12-16
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)		X	2	
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)		X	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)		X	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)		X	2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)		X	2	
E 341	Literary Criticism and Theory		X	4A,4B	3
Select one course from the following:					3
E 342	Shakespeare I				
E 343	Shakespeare II				
L*** *** Foreign Language					5
	Total Credits				14
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
E 326	Development of the English Language				3
Select one course from the following:					3
E 327	Syntax and Semantics		X		
E 328	Phonology, Morphology, and Lexis		X		
E 329	Pragmatics and Discourse Analysis		X		
Electives					7
	Total Credits				13
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
E 460	Chaucer		X	4C	
E 465	Topics in Literature and Language		X	4C	
L*** *** Foreign Langauge					5
Upper-Division English/Composition Courses (See footnote on Concentration Requirements Tab)					9
	Total Credits				17
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
E 327	Syntax and Semantics	X			
E 328	Phonology, Morphology, and Lexis	X			
E 329	Pragmatics and Discourse Analysis	X			
Upper-Division English/Composition Courses (See footnote on Concentration Requirements Tab)		X			6
Electives		X			3-9

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X	
Total Credits		12-18
Program Total Credits:		120

Major in English, Literature Concentration

The Literature concentration offers a curriculum featuring critical study of literature (from ancient to contemporary) in poetry, prose, and drama. Students will become familiar with major figures and forces, but also with non-traditional writers outside the established canon. Courses in literary theory will give students a sense of the wide variety of approaches that can be applied to the interpretation of texts. In all courses, students practice a number of different types of analytical and critical writing.

Requirements Effective Fall 2018

For graduation, an English major must attain a minimum grade point average of 2.000 in all Composition (CO) and English (E) courses and a minimum grade point average of 2.000 in all upper-division Composition (CO) and English (E) courses.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
E 240	Introduction to Poetry		3
E 270	Introduction to American Literature (GT-AH2)	3B	3
Arts and Humanities[1]		3B	6
Biological and Physical Sciences		3A	7
Quantitative Reasoning		1B	3
Electives			5
	Total Credits		30

Sophomore

E 276	Survey of British Literature I (GT-AH2)	3B	3
E 277	Survey of British Literature II (GT-AH2)	3B	3
E 310	Researching and Writing Literary Criticism		3
E XXX			3
PHIL XXX			3
Additional History Elective – Select one course from the following:			3
Historical Perspectives (Any AUCC 3D course not counting elsewhere in the program)		3D	
HIST XXX			
ETST 354	Black Cinema and Media		
POLS 420	History of Political Thought		
TH 242	Theatre History I		
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
Electives			3
	Total Credits		30

Junior

E 341	Literary Criticism and Theory	4A,4B	3
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)	2	

Select one from the following:			3
E 342	Shakespeare I		
E 343	Shakespeare II		
Second field[2]			6
Upper-Division English/Composition Electives (See Course Lists below)			3
Electives			12
	Total Credits		30

Senior

Select one course from the following:			3
E 460	Chaucer	4C	
E 465	Topics in Literature and Language	4C	
E 470	Individual Author	4C	
Second field[2]			6
Upper-Division English/Composition Electives (See Course Lists below)			12
Electives[3]			9
	Total Credits		30
	Program Total Credits:		120

Upper Division English/Composition Electives (15 credits total)

Select at least one course from each Category (1-4) below and at least one course from the Additional Upper-Division English/Composition Electives list below. Selected courses may only count toward one Category.

Category 1 – Historical Approaches: Literature of the British Isles before 1830, or American or European Literature before 1900

Code	Title	Credits
Select a minimum of 3 credits from the following:		
E 331	Early Women Writers	3
E 342	Shakespeare I	3
E 343	Shakespeare II	3
E 424	English Renaissance	3
E 425	Restoration and 18th Century Literature	3
E 426	British Romanticism	3
E 430	18th-Century English Fiction	3
E 440	American Prose Before 1900	3
E 443	English Renaissance Drama	3
E 444	Restoration and 18th-Century Drama	3
E 451	Medieval Literature	3
E 460	Chaucer	3
E 463	Milton	3
E 475	American Poetry Before 1900	3

Category 2 – Historical Approaches: Literatures of the British Isles after 1830, or American or European Literatures after 1900

Code	Title	Credits
Select a minimum of 3 credits from the following:		
E 332	Modern Women Writers	3
E 334	Gay and Lesbian Literature	3
E 345	American Drama	3
E 350	The Gothic in Literature and Film	3
E 420	Beat Generation Writing	3
E 421	Asian-American Literature	3
E 422/ETST 422	African-American Literature	3
E 423	Latino/a Literature	3
E 427	Victorian Age	3
E 431	19th-Century English Fiction	3
E 432	20th-Century British Fiction	3
E 433	Literatures of the American West	3
E 438/ETST 438	Native American Literature	3
E 441	American Prose Since 1900	3
E 445	Modern British and European Drama	3
E 455	European Literature after 1900	3
E 478	Modern Poetry	3
E 479	Recent Poetry of the United States	3

Category 3 – Breakthroughs: Ideological, Racial, Cultural, Gendered

Code	Title	Credits
Select a minimum of 3 credits from the following:		
E 330	Gender in World Literature	3
E 331	Early Women Writers	3
E 332	Modern Women Writers	3
E 333	Critical Studies of Popular Texts	3
E 334	Gay and Lesbian Literature	3
E 338	Ethnic Literature in the United States	3
E 339	Literature of the Earth	3
E 421	Asian-American Literature	3
E 422/ETST 422	African-American Literature	3
E 423	Latino/a Literature	3
E 428	Postcolonial Literature	3
E 438/ETST 438	Native American Literature	3
E 456	Topics in Critical Theory	3

Category 4 – Genre Approaches

Code	Title	Credits
Select a minimum of 3 credits from the following:		
E 334	Gay and Lesbian Literature	3
E 337	Western Mythology	3
E 342	Shakespeare I	3
E 343	Shakespeare II	3
E 345	American Drama	3
E 350	The Gothic in Literature and Film	3
E 403	Writing the Environment	3
E 430	18th-Century English Fiction	3
E 431	19th-Century English Fiction	3
E 432	20th-Century British Fiction	3
E 443	English Renaissance Drama	3
E 444	Restoration and 18th-Century Drama	3
E 445	Modern British and European Drama	3
E 460	Chaucer	3
E 463	Milton	3
E 475	American Poetry Before 1900	3
E 478	Modern Poetry	3
E 479	Recent Poetry of the United States	3

Additional Upper-Division English/Composition Electives

Code	Title	Credits
Select a minimum of 3 credits from the following:		
Any course not taken previously from Categories 1-4 above		3
CO 302	Writing in Digital Environments (GT-CO3)	3
CO 401	Writing and Style	3
E 300/AMST 300	American Lives-Methods in American Studies	3
E 302	Reading and the Web	3
E 305	Principles of Writing and Rhetoric	3
E 311A	Intermediate Creative Writing: Fiction	3
E 311B	Intermediate Creative Writing: Poetry	3
E 311C	Intermediate Creative Writing: Nonfiction	3
E 320	Introduction to the Study of Language	3
E 322	English Language for Teachers I	3
E 323	English Language for Teachers II	3
E 324	Teaching English as a Second Language	3
E 326	Development of the English Language	3
E 327	Syntax and Semantics	3
E 328	Phonology, Morphology, and Lexis	3
E 329	Pragmatics and Discourse Analysis	3
E 370	American Literature in Cultural Contexts	3
E 401	Teaching Reading	3
E 402	Teaching Composition	3
E 405	Young Adult Literature	3
E 406	Topics in Literacy	3
E 412A	Creative Writing Workshop: Fiction	3
E 412B	Creative Writing Workshop: Poetry	3
E 412C	Creative Writing Workshop: Nonfiction	3
E 465	Topics in Literature and Language	3
E 470	Individual Author	3
E 501	Theories of Composition	3
E 502	The Politics of Literacy	3
E 503	Investigating Classroom Literacies	3
E 505A	Major Authors: English	3
E 505B	Major Authors: American	3
E 505C	Major Authors: World	3
E 506A	Literature Survey: English	3
E 506B	Literature Survey: American	3
E 506C	Literature Survey: Comparative	3
E 507	Special Topics in Linguistics	3
E 513A	Form and Technique in Modern Literature: Fiction	3
E 513B	Form and Technique in Modern Literature: Poetry	3
E 513C	Form and Technique in Modern Literature: Essay	3

1 Excludes E subject code courses.

2 The department requires majors to complete a second field. This may be met by completing the equivalent of the second semester of the second year course in a foreign language or by completing 12 hours of upper-division credit in a coherent field of study outside English.

3 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

An English major must attain a minimum grade point average of 2.000 in all Composition (CO) and English (E) courses and a minimum grade point average of 2.000 in all upper-division Composition (CO) and English (E) courses.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
CO 150	College Composition (GT-CO2)		X	1A	3
E 270	Introduction to American Literature (GT-AH2)			3B	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
Quantitative Reasoning			X	1B	3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
E 240	Introduction to Poetry		X		3

Arts and Humanities				3B	3
Biological and Physical Sciences				3A	4
Electives					5
AUCC 1B (Quantitative Reasoning) and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
E 276	Survey of British Literature I (GT-AH2)		X	3B	3
E 310	Researching and Writing Literary Criticism				3
Diversity and Global Awareness				3E	3
Historical Perspectives				3D	3
Social and Behavioral Sciences				3C	3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
E 277	Survey of British Literature II (GT-AH2)	X		3B	3
E XXX					3
PHIL XXX					3
Additional History Elective – Select one course from the following:					3
Historical Perspectives (Any AUCC 3D course not counting elsewhere in the program)				3D	
HIST XXX					
ETST 354	Black Cinema and Media				
POLS 420	History of Political Thought				
TH 242	Theatre History I				
AUCC 3A (Biological and Physical Sciences), AUCC 3B (Arts and Humanities), AUCC 3C (Social and Behavioral Sciences), E 240, E 270, E 276 must be completed by the end of Semester 4.		X			
Elective					3
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
E 341	Literary Criticism and Theory		X	4A,4B	3
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)		X	2	
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)		X	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)		X	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)		X	2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)		X	2	
Second Field Course (See footnote on Concentration Requirements Tab)					3
Elective					6
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
E 342	Shakespeare I		X		
E 343	Shakespeare II		X		
Second Field Course (See footnote on Concentration Requirements Tab)					3
Upper-Division English/Composition Course (see Course Lists on Concentration Requirements tab)					3
Electives					6
E 341 must be completed by the end of Semester 6.		X			
	Total Credits				15

Senior

Semester 7		Critical	Recommended	AUCC	Credits
Select one course from the following:					3
E 460	Chaucer		X	4C	
E 465	Topics in Literature and Language		X	4C	
E 470	Individual Author		X	4C	
Second Field Course (See footnote on Concentration Requirements Tab)					3
Upper-Division Electives					6
Elective					3
	Total Credits				15

Semester 8	Critical	Recommended	AUCC	Credits
Second Field Course (See footnote on Concentration Requirements Tab)	X			3
Upper-Division English/Composition Electives (See Course Lists on Concentration Requirements Tab)	X			6
Electives	X			6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X			
Total Credits				15
Program Total Credits:				120

Major in English, Writing, Rhetoric and Literacy Concentration

The Writing, Rhetoric and Literacy concentration builds on departmental strengths in writing theory and design, rhetoric, composition, public writing and rhetoric and writing instruction. It is designed for students who wish to pursue the study of theories and practices of writing and rhetoric. The Writing, Rhetoric and Literacy concentration offers students the ability to:

- Study writing in a department that takes a humanistic approach to learning
- Engage writing and rhetoric with a focus on genre, audience, invention, and style
- Explore and practice writing and rhetorical approaches in social, cultural, and historical contexts

Requirements Effective Fall 2016

For graduation, an English major must attain a minimum grade point average of 2.000 in upper-division CO and E courses.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
E 240	Introduction to Poetry		3
SPCM 200	Public Speaking		3
Arts and Humanities[1]		3B	6
Biological and Physical Sciences		3A	7
Mathematics		1B	3
Electives			6
	Total Credits		31

Sophomore

Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)	2	
CO 302	Writing in Digital Environments (GT-CO3)	2	
E 270	Introduction to American Literature (GT-AH2)	3B	3

Select one course from the following:			3
E 276	Survey of British Literature I (GT-AH2)	3B	
E 277	Survey of British Literature II (GT-AH2)	3B	
Philosophy[2]			3
Global and Cultural Awareness		3E	3
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
Liberal Arts/History Elective[3]			3
Electives			5
	Total Credits		29
Junior			
CO 402	Principles of Digital Rhetoric and Design		3
E 341	Literary Criticism and Theory	4A,4B	3
Second field[4]			6
Upper-Division English/Composition Electives (See list below)[5]			6
Electives			12
	Total Credits		30
Senior			
CO 401	Writing and Style		3
E 406	Topics in Literacy		3
Select one course from the following:			3
E 460	Chaucer	4C	
E 465	Topics in Literature and Language	4C	
E 470	Individual Author	4C	
Second field[4]			6
Upper-Division English/Composition Electives (See list below)[5]			9
Electives[6]			6
	Total Credits		30
	Program Total Credits:		120

Upper-Division English/Composition Electives

Select a total of 15 credits of upper-division electives in E and CO subject code courses.

Code	Title	Credits
Designated Writing		
Select at least one course from the following:		3
CO 300	Writing Arguments (GT-CO3)	
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	
CO 301D	Writing in the Disciplines: Education (GT-CO3)	
E 311C	Intermediate Creative Writing: Nonfiction	
E 403	Writing the Environment	
E 412C	Creative Writing Workshop: Nonfiction	
Writing Theory and Pedagogy		
Select at least one course from the following:		3
E 402	Teaching Composition	
E 406	Topics in Literacy	
E 501	Theories of Composition	
E 502	The Politics of Literacy	
E 526	Teaching English as a Foreign/Second Language	
Literature		
Select 3 credits in literature courses		3
Select 6 credits from any upper-division writing, literature, theory, and/or language courses		6

1 Excludes E subject code courses.

2 Select from the list of PHIL courses on English Department checksheet.

3 Select either one other course from the list of courses in All-University Core Curriculum (AUCC) 3D or one from the list of courses on the English Department checksheet.

4 The department requires majors to complete a second field. This may be met by completing the second semester of the second year of a foreign language or by completing 12 credits of upper-division courses in a coherent field of study outside of English.

[5] Select courses not taken elsewhere in the program from the Upper-Division English/Composition List, for a program minimum total of 15 credits.

[6] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
English majors must attain a minimum grade point average of 2.000 in upper-division CO and E courses.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
CO 150	College Composition (GT-CO2)		X	1A	3
E 240	Introduction to Poetry				3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
Mathematics			X	1B	3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
SPCM 200	Public Speaking				3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	4
Electives					6
CO 150 and AUCC 1B requirement must be completed by the end of Semester 2.		X			
	Total Credits				16

Sophomore

Semester 3		Critical	Recommended	AUCC	Credits
Select one course from the following:					3
E 276	Survey of British Literature I (GT-AH2)		X	3B	
E 277	Survey of British Literature II (GT-AH2)		X	3B	
Global and Cultural Awareness				3E	3
Social and Behavioral Sciences				3C	3
Liberal Arts/History Elective (See department)					3
Elective					2
	Total Credits				14
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)		X	2	
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)		X	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)		X	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)		X	2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)		X	2	
CO 302	Writing in Digital Environments (GT-CO3)		X	2	
E 270	Introduction to American Literature (GT-AH2)	X		3B	3
Historical Perspectives				3D	3
PHL ***					3
Elective					3
E 240, E 276 or E 277, SPCM 200 and AUCC 3A, 3B, and 3C requirements must be completed by the end of Semester 4.		X			
	Total Credits				15

Junior

Semester 5		Critical	Recommended	AUCC	Credits
CO 402	Principles of Digital Rhetoric and Design				3
Second Field Course					3

Upper-Division English/Composition Elective (See list on program requirements tab)					3
Electives					6
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
E 341	Literary Criticism and Theory		X	4A,4B	3
Second Field Course					3
Upper-Division English/Composition Elective (See list on program requirements tab)					3
Electives					6
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
E 460	Chaucer	X		4C	
E 465	Topics in Literature and Language	X		4C	
E 470	Individual Author	X		4C	
CO 401	Writing and Style				3
E 406	Topics in Literacy		X		3
Upper-Division Elective					3
Elective					3
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Second Field Courses		X			6
Upper-Division Electives		X			6
Elective		X			3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Minor in Creative Writing

The study of creative writing emphasizes creativity, self-motivation, persistence, and openness to criticism – skills many employers look for when hiring. It gives students the opportunity to explore their artistic talents and devote time to producing creative work that complements achievements in their majors.

This seven-course sequence combines small, discussion-based writing workshops with classes in composition or literature. The minor is open to majors in all disciplines except English, and offers a unique opportunity to balance work in the sciences, business, engineering, or the humanities with the imaginative freedom and cultural engagement of an education in the arts. Students will gain experience in two genres (poetry, fiction, and/or creative nonfiction) as they study with published authors, interact with visiting writers, and gain familiarity with today's literary landscape.

TO DECLARE: Visit the English Office, Eddy 359. For more information: www.english.colostate.edu, or email Sasha Steensen, Director of Creative Writing: sasha.steensen@colostate.edu.

Requirements Effective Fall 2018

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
E 210	Beginning Creative Writing	3
Select one group from the following:		6
Fiction		
E 311A	Intermediate Creative Writing: Fiction	
E 412A	Creative Writing Workshop: Fiction	
Poetry		
E 311B	Intermediate Creative Writing: Poetry	
E 412B	Creative Writing Workshop: Poetry	
Nonfiction		
E 311C	Intermediate Creative Writing: Nonfiction	
E 412C	Creative Writing Workshop: Nonfiction	
Select one course from the following not taken above:		3
E 311A	Intermediate Creative Writing: Fiction	

E 311B	Intermediate Creative Writing: Poetry	
E 311C	Intermediate Creative Writing: Nonfiction	
Select one course from the following:		3
E 238	20th-Century Fiction (GT-AH2)	
E 240	Introduction to Poetry	
E 270	Introduction to American Literature (GT-AH2)	
E 276	Survey of British Literature I (GT-AH2)	
E 277	Survey of British Literature II (GT-AH2)	
Upper-Division Electives – Select a minimum of 6 credits from a minimum of 2 courses:		6
CO 3XX or CO 4XX		
E 3XX or E 4XX		
Program Total Credits:		21

Minor in English

Minors allow students to focus on an area that complements their major, enhance their knowledge and skills, or pursue a particular interest. The Department of English offers three minors: English, Creative Writing, and an Interdisciplinary Minor in Linguistics and Culture. When visiting the department's office to officially declare an English or English-related minor (http://english.colostate.edu/undergraduate/english-related-minors), students will be provided with a course guide for that minor. To speak with an advisor regarding a minor, contact Professor Dan Beachy-Quick by email at dan.beachy-quick@colostate.edu, in-person during office hours, or by appointment in Eddy Hall, Room 343.

For information about English and Composition course offerings and registration procedures for the upcoming semester or summer session, please contact Sheila Dargon at Sheila.Dargon@colostate.edu.

Minor in English

The minor in English offers opportunities for students to create a unique path through English and Composition classes. Requirements are open: 21 credits total of E and/or upper-division CO courses, 12 credits of which must be at the 300-level or higher. This freedom allows students to pursue what they love most in language, literature, composition, and writing. Students will gain a set of skills, critical and creative both, that will complement both their major and future career.

The English department also offers the Linguistics and Culture Interdisciplinary Minor and the Creative Writing Minor (https://english.colostate.edu/wp-content/uploads/sites/56/2018/04/CreativeWritingMinorChecksheet.pdf).

Requirements

Effective Spring 1996

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

CO 150, E 487A, and E 487B may not count toward the minor. CO 300, CO 301A, CO 301B, CO 301C, CO 301D, CO 302, and CO 401 may count toward the minor. A minimum of 6 credits must be taken at CSU.

Graduate Certificate in TESOL Education

The Graduate Certificate in TESOL Education provides graduates with practical, theoretical, and critical knowledge of the English language and of methods for teaching it in various social and academic settings. The courses required for the certificate promote reflective inquiry, provide students with the necessary tools for ongoing professional growth, serve as models of effective pedagogy, and introduce students to the various ways in which instruction can be enhanced by contemporary technologies.

Effective Spring 2018

Additional coursework may be required due to prerequisites.

Code	Title	Credits
E 514	Phonology/Morphology-ESL/EFL	3
E 515	Syntax for ESL/EFL	3
E 526	Teaching English as a Foreign/Second Language	3
E 527	Theories of Foreign/Second Language Learning	3
E 528	Professional ESL Teaching: Theory to Practice	3
Program Total Credits:		15

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Master of Fine Arts in Creative Writing

The Master of Fine Arts in Creative Writing is for students with advanced abilities in the writing of fiction, poetry, creative nonfiction, and hybrid forms. The nationally-ranked program offers a balance of intimate and intensive writing workshops with courses in literature, form and technique, and related electives. Course work culminates in a book-length collection of short stories / poems / essays or a novel or memoir, as well as the completion of a comprehensive portfolio.

Requirements
Effective Spring 2018

Code	Title	Credits
Select one course from the following:		3
E 513A	Form and Technique in Modern Literature: Fiction	
E 513B	Form and Technique in Modern Literature: Poetry	
E 513C	Form and Technique in Modern Literature: Essay	
Select 12 credits (4 courses) in any one genre from the following:		12
E 640A	Graduate Writing Workshop: Fiction	
E 640B	Graduate Writing Workshop: Poetry	
E 640C	Graduate Writing Workshop: Essay	
E 699	Thesis	12

Additional credits in E 500- or E 600-level courses [1]	18-20
One course outside English Department, 300-level or above [2]	1-3
Program Total Credits:	48

A minimum of 48 credits are required to complete this program.

Additional Program Requirements:

- Students are required to submit a portfolio with writing, sample papers, and annotated bibliography at the end of their program.
- A minimum of 32 credits applied to an MFA degree must be earned at CSU. Of these, at least 21 must be earned after admission to the program.
- Graduate courses taken at CSU prior to admission to the Graduate School can be applied to an MFA degree if the grade earned is B or higher.
- At least 16 credits earned at CSU and applied to an MFA degree must be English courses at the 500 level or higher; of these credits, at least 12 must be in "regular" courses. English courses considered to be other than "regular" include E 607B, E 684, E 687, E 695, E 699, and any courses graded pass/fail.
- Courses transferred from an MFA program must have a grade of B or higher and must have a CSU equivalent at the 500-level or higher. Credits used to fulfill requirements for previously earned degrees are not accepted.
- Up to three credits of coursework for an MFA degree can come from CSU programs outside the English department at the 300 level or higher. Students can take two additional courses outside the department, but these courses must be 500-level or higher.
- Graduate students may register for any number of internship credits, but a total of only six credits of E 607B, E 684, and E 687 (combined) will count toward graduation.
- A maximum of two credits of E 695 can count toward an MFA degree.
- With the exception of specified courses, all courses taken in the English department and applied to an MFA degree must be taken at the 500-level or above.

1 This must include one course (3 credits) of a Pre-Twentieth-Century Literature class with approval of advisor.

2 This requirement may be waived for students whose undergraduate degree is in another major.

Master of Arts in English, Creative Nonfiction Specialization

No new students are being accepted into this specialization. Students interested in this area of study should see the Master of Fine Arts in Creative Writing.

Requirements Effective Fall 2012

- Completion of the program of study listed below
- Oral defense of your thesis.

First Year		Credits
E 640C[1]	Graduate Writing Workshop: Essay	2-3
Select one from the following:		2-3
E 640C[1]	Graduate Writing Workshop: Essay	
E 641	Nonfiction Workshop	
E 642	Writing Hypertexts	
Select one from the following:		3
E 607A[2]	Teaching Writing: Composition and Rhetoric	
English elective[3]		
E 513C	Form and Technique in Modern Literature: Essay	3
Out-of-department course[4]		3
Select two courses from the following:[5]		6
E 505A	Major Authors: English	
E 505B	Major Authors: American	
E 505C	Major Authors: World	
E 506A	Literature Survey: English	
E 506B	Literature Survey: American	
E 506C	Literature Survey: Comparative	
E 615	Reading Literature-Recent Theories	
E 630A	Special Topics in Literature: Area Studies	
E 630B	Special Topics in Literature: Genre Studies	
E 630C	Special Topics in Literature: Theory and Technique Studies	
E 630D	Special Topics in Literature: Gender Studies	
E 631	Crossing Boundaries	
E 632	Professional Concerns in English	
E 633	Special Topics in Writing and Rhetoric	
E 635	Critical Studies in Literature and Culture	
E 636	Environmental Literature and Criticism	

E 637	Histories of Writing and Rhetoric	
	Total Credits	19-20
Second Year		
E 640C[1]	Graduate Writing Workshop: Essay	2-3
Select one from the following:[1]		2-3
E 640C[1]	Graduate Writing Workshop: Essay	
E 641	Nonfiction Workshop	
E 642	Writing Hypertexts	
Select one of the following:		2-3
Out-of-department course[4]		
English elective[6]		
E 687A	Internship: Teaching College English	
E 687B	Internship: Composition Supervision/ Administration	
E 687C	Internship: Literary Editing	
E 687E	Internship: Teaching ESL, K-12	
E 687H	Internship: ESL-Adult Learning	
E 687I	Internship: ESL-Supervision/ Administration	
E 687J	Internship: Arts Administration in Literature	
E 687K	Internship: Public Education	
E 687L	Internship: Computers and Writing	
E 687M	Internship: Writing/ Editing for Specific Purposes	
E 699[7]	Thesis	6
	Total Credits	12-15
	Program Total Credits:	31-35

A minimum of 31 credits are required to complete this program.

1. Course may be repeated for a maximum of 11 credits.
2. Required for all GTAs.
3. Choose a 500-600-level English course.
4. Choose a relevant course outside department 300-level or above.
5. Selection must be approved by advisor.
6. Course based on final thesis topic with advisor approval.
7. No more than six credits may count toward the degree.

Master of Arts in English, English Education Specialization

The English Education Specialization provides students with preparation for and/or enhanced knowledge of teaching English in secondary schools. It is designed for students who are:

* seeking initial licensure; and/or

* currently employed, full- or part-time, as an English language arts teacher in a Colorado public school; and/or

* looking to revitalize their work with students and their own knowledge; and/or

* deepening their understanding of contemporary literacy scholarship and broadening their background to explore new or contemporary ideas; and/or

* deeply considering their practice and considering how they can do better and be better.

Students interested in pursuing an initial teaching license through CSU may refer to the Center for Educator Preparation (CEP). (https://www.chhs.colostate.edu/soe/center-for-educator-preparation)

Plan A
Effective Fall 2019

First Year		**Credits**
E 402	Teaching Composition	3
E 503	Investigating Classroom Literacies	3
Electives[1,2,3]		12
	Total Credits	18
Second Year		
E 632	Professional Concerns in English	3
E 699[4]	Thesis	6
Electives[1,2,3]		5
	Total Credits	14
	Program Total Credits:	32

A minimum of 32 credits are required to complete this program.

1. Up to nine credits of coursework for an M.A. degree can come from CSU programs outside the English department. These credits must be at the 300-level or higher. (English Education students in Plan B may count up to 12 credits.)
2. A maximum of six credits of E 684 and E 687 (combined) can count toward an M.A. degree.
3. A maximum of two credits of E 695 can count toward an M.A. degree.
4. A maximum of six credits of E 699 can count toward a Plan A M.A. degree. No E 699 credits can count toward a Plan B M.A. degree.

In addition to required coursework, the following is required:

- Pass an oral defense of the thesis.
- Courses used to complete another degree cannot be counted towards the master's degree.
- A minimum of 24 credits applied to an M.A. degree must be earned at CSU. Of these, at least 21 must be earned after admission to the program.
- Graduate courses taken at CSU prior to admission to the Graduate School can be applied to an M.A. degree if the grade earned is B or higher.
- At least 16 credits earned at CSU and applied to an M.A. degree must be at the 500-level or higher; of these credits, at least 12 must be in "regular" courses. English courses considered to be other than "regular" include E 684, E 687, E 694, E 695,E 698, E 699, and any courses graded pass/fail.
- Courses transferred to an M.A. program must have a grade of B or higher and must have a CSU equivalent at the 500-level or higher. Credits applied toward previously earned degrees are not accepted.
- With the exception of specified courses in the English Education Specialization, all courses taken in the English department and applied to the M.A. degree must be taken at the 500-level or above.

Plan B
Effective Fall 2019

First Year		Credits
E 402	Teaching Composition	3
E 503	Investigating Classroom Literacies	3
Electives[1,2,3]		12
	Total Credits	18
Second Year		
E 632	Professional Concerns in English	3
E 698[4]	Research Project	2
Electives[1,2,3]		12
	Total Credits	17
	Program Total Credits:	35

A minimum of 35 credits are required to complete this program.

1. Up to nine credits of coursework for an M.A. degree can come from CSU programs outside the English department. These credits must be at the 300-level or higher. (English Education students in Plan B may count up to 12 credits.)
2. A maximum of six credits of E 684 and E 687 (combined) can count toward an M.A. degree.
3. A maximum of two credits of E 695 can count toward an M.A. degree.
4. A maximum of two credits of E 698 can count toward an M.A. degree.

In addition to required coursework, the following is required:

- Pass an oral defense of the final project.
- Courses used to complete another degree cannot be counted toward the master's degree.
- A minimum of 24 credits applied to an M.A. degree must be earned at CSU. Of these, at least 21 must be earned after admission to the program.
- Graduate courses taken at CSU prior to admission to the Graduate School can be applied to an M.A. degree if the grade earned is B or higher.
- At least 16 credits earned at CSU and applied to an M.A. degree must be at the 500-level or higher; of these credits, at least 12 must be in "regular" courses. English courses considered to be other than "regular" include E 684, E 687, E 694, E 695, E 698, E 699, and any courses graded pass/fail.
- Courses transferred to an M.A. program must have a grade of B or higher and must have a CSU equivalent at the 500-level or higher. Credits applied toward previously earned degrees are not accepted.
- With the exception of specified courses in the English Education Specialization, all courses taken in the English department and applied to the M.A. degree must be taken at the 500-level or above.

Master of Arts in English, Plan A, Literature Specialization

The Literature specialization is designed to facilitate the intellectual growth of passionate teachers, insightful scholars, and engaged public citizens. Graduates have gone on to highly-ranked Ph.D. programs, publishing houses, and careers in the non-profit sector; whatever your aspirations, the training you receive at CSU will prepare you for a more vibrant future.

Requirements
Effective Fall 2019

First Year		Credits
E 600A	Research Methods/ Theory: Literary Scholarship	3
E 615	Reading Literature-Recent Theories	3
E 635	Critical Studies in Literature and Culture	3
One course from outside the English department[1,2]		3
Electives[2]		6
	Total Credits	18
Second Year		
Pre-20th century literature course[3]		3
Electives[2]		5
E 699	Thesis	6
	Total Credits	14
	Program Total Credits:	32

A minimum of 32 credits are required to complete this program.

1. Students with an undergraduate major other than English may waive this requirement and select an additional 3 credits of elective courses instead.
2. Up to 9 credit hours outside the department allowed at the 300-level or above only.
3. One course in pre-20th century literature is required at the 500-level or above. Select course in consultation with graduate advisor.

In addition to required coursework, the following is required:

- Pass an oral defense of the thesis.
- Courses used to complete another degree cannot be counted toward the Masters degree.
- A minimum of 24 credits applied to a M.A. degree must be earned at CSU. Of these, at least 21 must be earned after admission to the program.
- Graduate courses taken at CSU prior to admission to the Graduate School can be applied to a M.A. degree if the grade earned is B or higher.
- At least 16 credits earned at CSU and applied to a M.A. degree must be at the 500-level or above; of these credits, at least 12 must be in "regular" courses. English courses considered to be other than "regular" include E 684A, E 684B, E 684C, E 684D, E 684E, E 687A, E 687B, E 687C, E 687E, E 687H, E 687I, E 687J, E 687K, E 687L, E 687M, E 694, E 695, E 698, E 699, and any courses graded pass/fail; see the Graduate and Professional Bulletin (http://graduateschool.colostate.edu/current-students/bulletin.aspx) for more detailed information.
- Courses transferred to a M.A. program must have a grade of B or higher and must have a CSU equivalent at the 500-level or higher. Credits used to fulfill requirements for previously earned degrees are not accepted.
- Up to nine credits of coursework for a M.A. degree can come from CSU programs outside the English department. These credits must be at the 300-level or higher.
- A maximum of six credits of E 607A, E 684A, E 684B, E 684C, E 684D, E 684E and E 687A, E 687B, E 687C, E 687E, E 687H, E 687I, E 687J, E 687K, E 687L, E 687M (combined) can count toward an M.A. degree. (PCMI students may take up to seven credits.)
- A maximum of two credits of E 694 or E 698 can count toward an M.A. degree.
- A maximum of two credits of E 695 can count toward an M.A. degree.
- A maximum of six credits of E 699 can count toward a Plan A, M.A. degree.
- With the exception of specified courses in the English Education M.A., all courses taken in the English department and applied to a M.A. degree must be taken at the 500-level or above.

Master of Arts in English, Plan B, Literature Specialization

The Literature specialization is designed to facilitate the intellectual growth of passionate teachers, insightful scholars, and engaged public citizens. Graduates have gone on to highly-ranked Ph.D. programs, publishing houses, and careers in the non-profit sector; whatever your aspirations, the training you receive at CSU will prepare you for a more vibrant future.

Requirements Effective Fall 2019

First Year		Credits
E 600A	Research Methods/ Theory: Literary Scholarship	3
E 615	Reading Literature- Recent Theories	3
E 635	Critical Studies in Literature and Culture	3
One course from outside the English department[1]		3
Electives		6
	Total Credits	18
Second Year		
E 610	Literature Program Colloquium	1
E 698	Research Project	3
Pre-20th century literature course[2]		3
Electives		9
	Total Credits	16
	Program Total Credits:	34

A minimum of 34 credits are required to complete this program.

1 The out-of-department course should be 300-level or above. Students with an undergraduate major other than English may waive this requirement and select an additional 3 credits of elective courses instead.

2 One course in pre-20th century literature is required at the 500-level or above. Select course in consultation with advisor.

In addition to required coursework, the following is required:

- Pass an oral defense of the final project.
- Courses used to complete another degree cannot be counted toward the master's degree.
- A minimum of 24 credits applied to an M.A. degree must be earned at CSU. Of these, at least 21 must be earned after admission to the program.
- Graduate courses taken at CSU prior to admission to the Graduate School can be applied to an M.A. degree if the grade earned is B or higher.
- At least 16 credits earned at CSU and applied to an M.A. degree must be at the 500-level or above; of these credits, at least 12 must be in "regular" courses. English courses considered to be other than "regular" include E 684A, E 684B, E 684C, E 684D, E 684E, E 687A, E 687B, E 687C, E 687E, E 687H, E 687I, E 687J, E 687K, E 687L, E 687M, E 694, E 695, E 698, E 699, and any courses graded pass/fail; see the Graduate Bulletin (http://graduateschool.colostate.edu/current-students/bulletin.aspx) for more detailed information.
- Courses transferred to an M.A. program must have a grade of B or higher and must have a CSU equivalent at the 500-level or higher. Credits used to fulfill requirements for previously earned degrees are not accepted.
- Up to nine credits of coursework for an M.A. degree can come from CSU programs outside the English department. These credits must be at the 300-level or higher. (English Education students in Plan B may count up to 12 credits.)
- A maximum of six credits of E 684A, E 684B, E 684C, E 684D, E 684E and E 687A, E 687B, E 687C, E 687E, E 687H, E 687I, E 687J, E 687K, E 687L, E 687M (combined) can count toward an M.A. degree.
- A maximum of two credits of E 695 can count toward an M.A. degree.
- No E 699 credits can count toward a Plan B M.A. degree.

- With the exception of specified courses in the English Education M.A., all courses taken in the English department and applied to an M.A. degree must be taken at the 500-level or above.
- Both international students and students holding a GTA need to maintain 9 credit hours per semester.

Master of Arts in English, Plan A, TESL/TEFL Specialization

The TESL/TEFL specialization provides graduates with practical, theoretical, and critical knowledge of methods for teaching the English language in various social and academic settings. The program features an integrated core in which a comprehensive understanding of the form and communicative functions of the English language is combined with both general and skill-specific (reading, writing, listening, speaking) pedagogical theories and applications. These courses are designed to promote reflective inquiry, to provide students with the necessary tools for ongoing professional growth, to serve as models of effective pedagogy, and to introduce students to the various ways in which instruction can be enhanced by contemporary technologies. The connection of theory and practice is enhanced through a variety of supervised teaching experiences, and the completion of a portfolio, project, or thesis.

Requirements Effective Spring 2014

Code	Title	Credits
E 514	Phonology/Morphology-ESL/EFL	3
E 515	Syntax for ESL/EFL	3
E 526	Teaching English as a Foreign/Second Language	3
E 527	Theories of Foreign/Second Language Learning	3
E 638	Assessment of English Language Learners	3
E 684B	Supervised College Teaching: ESL	2
Additional graduate credits [1]		11
E 699	Thesis	3
Program Total Credits:		31

A minimum of 31 credits are required to complete this program.

[1] A course in research methods in English is highly recommended. Select courses with approval of advisor and graduate committee.

Master of Arts in English, Plan B, TESL/TEFL Specialization

The TESL/TEFL specialization provides graduates with practical, theoretical, and critical knowledge of methods for teaching the English language in various social and academic settings. The program features an integrated core in which a comprehensive understanding of the form and communicative functions of the English language is combined with both general and skill-specific (reading, writing, listening, speaking) pedagogical theories and applications. These courses are designed to promote reflective inquiry, to provide students with the necessary tools for ongoing professional growth, to serve as models of effective pedagogy, and to introduce students to the various ways in which instruction can be enhanced by contemporary technologies. The connection of theory and practice is enhanced through a variety of supervised teaching experiences, and the completion of a portfolio, project, or thesis.

Requirements Effective Spring 2014

Code	Title	Credits
E 514	Phonology/Morphology-ESL/EFL	3
E 515	Syntax for ESL/EFL	3
E 526	Teaching English as a Foreign/Second Language	3
E 527	Theories of Foreign/Second Language Learning	3
E 638	Assessment of English Language Learners	3
E 684B	Supervised College Teaching: ESL	2
Additional graduate credits [1]		13
E 694	Independent Study: Portfolio	3
or E 698	Research Project	
Program Total Credits:		33

A minimum of 33 credits are required to complete this program.

[1] A course in research methods in English is highly recommended. Select courses with approval of advisor and graduate committee.

Master of Arts in English, Writing, Rhetoric, and Social Change Specialization

Students in this specialization join a vibrant community of scholars who research the transformative potential of writing and rhetoric and analyze the social, cultural, economic and historical forces shaping writing and rhetoric in theory and practice. Through analysis of and engagement with diverse contexts for writing, students create and apply methods for addressing shared social problems in classrooms and communities. Our graduates study in top tier rhetoric and composition Ph.D. programs, teach composition and rhetoric at secondary and post-secondary levels, and work for social change through careers in government, publishing, industry, and non-profit organizations.

Plan A Effective Fall 2018

Code	Title	Credits
Required Courses		
E 501	Theories of Composition	3
E 600B	Research Methods/Theory: Writing Studies	3
E 603	Critical Digital Rhetoric	3
E 633	Special Topics in Writing and Rhetoric	3
E 637	Histories of Writing and Rhetoric	3
E 692	Seminar in Writing, Rhetoric, & Social Change [1]	2
E 699	Thesis	6
Elective Courses [2]		9

Select at least nine credits in Rhetoric/Composition/English or closely related fields developed in consultation with your advisor.	
Program Total Credits:	32

A minimum of 32 credits are required to complete this program.

1 E 692 must be taken twice, for a total of 2 credits.

2 Courses may not include those used to satisfy other requirements for this program. Up to 9 credits may be taken in outside departments in consultation with your advisor. Courses outside the department must be taken at the 300, 400, 500, or 600 level. A maximum of 2 credits of E 695 (Independent Study) may count toward graduation. Graduate students may register for any number of internship credits, but a total of only six credits of E 684A-E 684E and E 687A-E 687M (combined) will count toward graduation requirements.

Plan B
Effective Fall 2018

Code	Title	Credits
Required Courses		
E 501	Theories of Composition	3
E 600B	Research Methods/Theory: Writing Studies	3
E 603	Critical Digital Rhetoric	3
E 633	Special Topics in Writing and Rhetoric	3
E 637	Histories of Writing and Rhetoric	3
E 692	Seminar in Writing, Rhetoric, & Social Change [1]	2
E 698	Research Project	2
Elective Courses [2]		15
Select at least fifteen credits in Rhetoric/Composition/English or closely related fields developed in consultation with your advisor.		
Program Total Credits:		34

A minimum of 34 credits are required to complete this program.

1 E 692 must be taken twice, for a total of 2 credits.

2 Courses may not include those used to satisfy other requirements for this program. Up to 9 credits may be taken in outside departments in consultation with your advisor. Courses outside the department must be taken at the 300, 400, 500, or 600 level. A maximum of 2 credits of E 695 (Independent Study) may count toward graduation. Graduate students may register for any number of internship credits, but a total of only six credits of E 684A-E 684E and E 687A-E 687M (combined) will count toward graduation requirements.

Department of Ethnic Studies

Office in Eddy Hall, Room 202

(970) 491-2418
ethnicstudies.colostate.edu (http://ethnicstudies.colostate.edu)
Professor Michelle Glantz, Interim Chair

Undergraduate Majors

- Major in Ethnic Studies
  - Social Studies Teaching Concentration
- Major in Women's and Gender Studies

Minor

- Minor in Ethnic Studies

Interdisciplinary Minor

- Women's Study Interdisciplinary Minor

Graduate
Graduate Program in Ethnic Studies

The Department of Ethnic Studies seeks to teach students to understand the unique and interlocking experiences of racially marginalized groups and to analyze how race intersects with other forces of social differentiation, such as gender, sexuality, and class, in national and international contexts. The program recognizes the importance not only of the history of racial exclusion and marginalization but also the creative ways in which various racial groups sustain their humanity through cultural preservation, transference, and renewal. Ethnic Studies is committed to nurturing students to become culturally aware, astute, civic-minded individuals who strive to strengthen the communities in which they reside. Because the study of ethnic groups intrinsically reveals how race structures life chances and opportunities, the scholarly orientation of the department reflects a commitment to meaningful changes in public policy and social life. The department offers graduate-level education to prepare students as leaders in the field of ethnic studies.

Students interested in earning a Master of Arts degree in Ethnic Studies should refer to the Graduate and Professional Bulletin and the Department of Ethnic Studies (http://ethnicstudies.colostate.edu).

Certificate

- Gender, Power and Difference

Master's Programs

- Master of Arts in Ethnic Studies, Plan A
- Master of Arts in Ethnic Studies, Plan B

Courses

Subjects in this department include: **Ethnic Studies (ETST)** and **Women's Studies (WS)**

Ethnic Studies (ETST)

ETST 100 Introduction to Ethnic Studies (GT-SS3) Credits: 3 (3-0-0)
Course Description: Key concepts, theories, and historical experiences that form the basis of scholarly work in comparative ethnic studies, domestically and internationally.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

ETST 110 Blacks in Higher Education Credit: 1 (0-0-1)
Course Description: Contemporary issues of Blacks in higher education.
Prerequisite: None.
Registration Information: Must be enrolled in the Black Issues Forum.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ETST 120 Native Americans in Higher Education Credit: 1 (0-0-1)
Course Description: Contemporary issues of Native Americans in higher education.
Prerequisite: None.
Registration Information: Must be enrolled in the Native American Issues Forum.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ETST 130 West Africa in Global and Local Perspective Credit: 1 (1-0-0)
Course Description: Sociopolitical and historical perspective of social and cultural issues in contemporary Ghana, West Africa, and connections to the African diaspora.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ETST 182A Study Abroad: Cuba Credit: 1 (0-0-1)
Course Description: Spring break travel to Cuba. Lectures and guided tours by Cuban experts. Variable topics dealing with Cuban society, race, and gender issues.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 182A and ETST 182.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 182B Study Abroad: Ghana Credit: 1 (0-0-1)
Also Offered As: WS 182B.
Course Description: Winter intersession travel to Ghana, West Africa. Lectures and guided tours by Ghanaian experts. Variable topics dealing with intersectionalities between gender, race, economic development, history, and youth in Ghanaian society.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 182B and WS 182B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 201 Introduction to Queer Studies Credits: 3 (3-0-0)
Course Description: Intersectional framework for understanding historical and contemporary applications of queer theory and queer studies.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 205 Ethnicity and the Media (GT-SS3) Credits: 3 (3-0-0)
Course Description: Ethnic representation across time as represented in auto/biography, fiction, poetry, and popular media.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

ETST 234 Introduction to Native American Literature Credits: 3 (3-0-0)
Also Offered As: E 234.
Course Description: Native American writings and their significance in American culture.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 234 and E 234.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 239 Introduction to Chicano Literature Credits: 3 (3-0-0)
Also Offered As: E 239.
Course Description: Chicano fiction and poetry with consideration of historical roots and influences.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 239 and E 239.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 240 Native American Cultural Experience (GT-AH2) Credits: 3 (3-0-0)
Course Description: Exploration of Native lives and expressions through examination of Native architecture, art, music, film, activism, and literature.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

ETST 250 African American History (GT-HI1) Credits: 3 (3-0-0)
Also Offered As: HIST 250.
Course Description: Slavery, emancipation, labor, political, socioeconomic, and cultural history of African Americans since colonial times.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 250 and HIST 250.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

ETST 252 Asian American History (GT-HI1) Credits: 3 (3-0-0)
Also Offered As: HIST 252.
Course Description: Asian American historical experience in the United States from 1850s to the present time.
Prerequisite: None.
Registration Information: Sections may be offered: Online. Credit not allowed for both ETST 252 and HIST 252.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

ETST 253 Chicanx History and Culture (GT-HI1) Credits: 3 (3-0-0)
Course Description: Historical study of Chicanx and Mexican people and culture from Spanish colonization to beginning of 20th century.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, History (GT-HI1).

ETST 254 La Chicana in Society Credits: 3 (3-0-0)
Course Description: Historical contributions of Chicana women and current gender issues in Chicano communities in the US.
Prerequisite: None.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ETST 255 Native American History (GT-HI1) Credits: 3 (3-0-0)
Also Offered As: HIST 255.
Course Description: History of Native American peoples in the United States to the present, including origin stories.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 255 and HIST 255.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

ETST 256 Border Crossings: People/Politics/Culture (GT-SS3) Credits: 3 (3-0-0)
Course Description: Colonial and post-colonial discourse, politics of representation and epistemology of "location" it has produced: first and third world.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

ETST 260 Contemporary Indigenous Issues Credits: 3 (3-0-0)
Course Description: International, national, regional, and local perspectives on current issues in Native America. Key issues include identity, gender, tribal governance and sovereignty, settler colonialism, law and policy, education, language, culture, health disparities, cultural resources, religious freedom, the environment, and activism.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C.

ETST 261 Latinx Populations in the U.S. Credits: 3 (3-0-0)
Course Description: Historical processes and sociocultural phenomena that define Latinx populations in the U.S.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 277 Racial Representations of Black Athletes Credits: 3 (3-0-0)
Course Description: Racial representations in the U.S. of Black/African American athletes at the intersections of sport and the sociocultural spaces of society—both historically and in contemporary contexts. Explore how racial representations have been shaped by forces of political significance, social and cultural movements, people, images, and ideologies.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 277 and ETST 280A2.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C.

ETST 300 Queer Studies and Women of Color Credits: 3 (3-0-0)
Course Description: Historical/contemporary analysis of the contributions of women of color to queer studies; racialized sexual/gender identities; written and cultural works.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 310 African-American Studies Credits: 3 (3-0-0)
Course Description: Meaning of African American studies in context of American higher education; historical development of such studies; perceptions and misperceptions.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 314 Inclusive Sports Organizations Credits: 3 (3-0-0)
Course Description: Issues of diversity and inclusion across U.S. and international sport organizations to advance sport industries.
Prerequisite: None.
Registration Information: Freshman not allowed.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 320 Ethnicity and Film: Asian-American Experience Credits: 3 (3-0-0)
Course Description: Asian American film image and film representation through both mainstream and independent movies.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 324 Asian-Pacific Americans and the Law Credits: 3 (3-0-0)
Course Description: Legal history of Asian Pacific Americans examined through case studies.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 330 African American Resistance and Self-Creation Credits: 3 (3-0-0)
Course Description: African American resistance to dehumanization and the creation of a positive image.
Prerequisite: ETST 000 to 99999 - at least 1 course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 332 Contemporary Chicanx Issues Credits: 3 (3-0-0)
Course Description: Current Chicanx issues including conquest, immigration, urbanization, health in context of societal trends.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 352 Indigenous Women, Children, and Tribes Credits: 3 (3-0-0)
Also Offered As: SOWK 352.
Course Description: Historical and contemporary lives of women, children, and tribal communities.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 352 and SOWK 352.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 354 Black Cinema and Media Credits: 3 (3-0-0)
Course Description: African American efforts to depict themselves in films and other media to counter often problematic mainstream depictions.
Prerequisite: None.
Registration Information: Sophomore standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 364 Asian American Social Movements, 1945-Present Credits: 3 (3-0-0)
Also Offered As: HIST 364.
Course Description: Historical relationships between Asian American and social movements for social, economic, and political equity in the U.S. since 1945.
Prerequisite: HIST 151 or HIST 252 or ETST 252.
Registration Information: Completion of 45 credits. Credit not allowed for both ETST 364 and HIST 364.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 365 Global Environmental Justice Movements Credits: 3 (3-0-0)
Course Description: How the world's poor and minorities self-empower to challenge institutional racism and government apathy in order to secure basic environmental goods.
Prerequisite: None.
Registration Information: Sophomore standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 370 Caribbean Identities Credits: 3 (3-0-0)
Course Description: Development of Caribbean identities from the arrival of Amerindian groups to the abolition of slavery in the nineteenth century.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 371 The Modern Caribbean Credits: 3 (3-0-0)
Course Description: Modern political and socio-economic developments in the Caribbean with emphasis on race, ethnicity, and gender.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 377 African Americans in Sports Credits: 3 (3-0-0)
Course Description: Sociocultural and historical dimensions of African Americans in sports.
Prerequisite: None.
Registration Information: Completion of AUCC Category 2 required.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 382 Italian Ethnic Identity, Culture, and Gender Credits: 3 (2-0-1)
Also Offered As: LGEN 382.
Course Description: Different ethnic identities in southern and northern Italy. Historical and contemporary culture and feminism. Enhancement of linguistic skills.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Credit not allowed for both ETST 382 and LGEN 382.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 382A Study Abroad: Race and Ethnicity in the Dominican Republic Credits: 3 (0-0-3)
Course Description: Winter break travel to the Dominican Republic. Lectures and guided tours by local experts. Variable topics dealing with Dominican society, race, and gender issues.
Prerequisite: None.
Registration Information: Sophomore standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 382B Study Abroad: Latinx Creative Expression in Mexico Credits: 3 (0-0-3)
Course Description: Explores Latinx (specifically Chicanx and Mexican) culture, identity and creative expression in Baja California Sur, Mexico. Utilizes theories and concepts of Ethnic Studies and Chicanx Studies.
Prerequisite: CO 150.
Registration Information: Sophomore standing. Offered as Mixed Face-to-Face.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 404 Race Formation in the United States Credits: 3 (3-0-0)
Course Description: Concept of race as a social construct in the shaping of U.S. character, values, and institutions.
Prerequisite: None.
Registration Information: Junior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 405 Ethnicity, Class, and Gender in the U.S. Credits: 3 (3-0-0)
Course Description: Roles of and interconnections among ethnicity, class, and gender for various groups in the United States.
Prerequisite: None.
Registration Information: Junior standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 410 African American Periods and Personalities Credits: 3 (3-0-0)
Course Description: Historical moments, movements, and men and women who have helped shape the African American heritage.
Prerequisite: None.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ETST 411 Black Feminism(s) Credits: 3 (3-0-0)
Course Description: History and trajectory of Black feminist thought from the nineteenth century to the present.
Prerequisite: None.
Registration Information: Junior standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 412 Africa and African Diaspora Credits: 3 (3-0-0)
Course Description: Interdisciplinary investigation of retention, transformation, and creation of culture in plantation economies of Americas.
Prerequisite: None.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ETST 413 Queer Creative Expressions Credits: 3 (3-0-0)
Course Description: Analysis of queer creative expressions within socio-political discourse and cultural works, with an emphasis on critical, queer feminist theory.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 414 Development in Indian Country Credits: 3 (3-0-0)
Also Offered As: ANTH 414.
Course Description: Critical examination of history, public policy, and tribal strategies for economic development and natural resource management in Indian country.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 414 and ANTH 414.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ETST 422 African-American Literature Credits: 3 (3-0-0)
Also Offered As: E 422.
Course Description: African-American literature as a distinct tradition of writing and protest.
Prerequisite: None.
Registration Information: Credit not allowed for both E 422 and ETST 422.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 425 Indigenous Film and Video Credits: 3 (3-0-0)
Course Description: Historical and contemporary analysis of film featuring indigenous peoples.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 430 Latina/o Creative Expression Credits: 3 (3-0-0)
Course Description: Creative expression in literature, art, theatre, music: approach to understanding experiences of various Chicana/o/Latina/o groups in the U.S.
Prerequisite: None.
Registration Information: Junior or senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 432 Latinx Routes to Empowerment Credits: 3 (3-0-0)
Course Description: Critical examination of political and economic strategies used to incorporate Chicanx/Latinx groups into U.S. society.
Prerequisite: ETST 100 or ETST 101 to 499 - at least 6 credits.
Registration Information: Sophomore standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ETST 438 Native American Literature Credits: 3 (3-0-0)
Also Offered As: E 438.
Course Description: Literature of Native Americans emphasized as distinctive tradition in American literature and cultural expression of indigenous peoples.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 438 and E 438.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 441 Indigenous Knowledges Credits: 3 (3-0-0)
Course Description: Develop an understanding of Indigenous world views, by exploring Indigenous knowledge production, knowledge systems, core values, and ways of living. Builds on the foundation that Indigenous peoples have always had their own philosophies, teachings, and consciousness. Explores the rigorous and deep-rooted, Indigenous intellectual traditions and the sharing of information both formalized and localized.
Prerequisite: ETST 234 or ETST 240 or ETST 255.
Registration Information: Sophomore standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 444 Federal Indian Law and Policy Credits: 3 (3-0-0)
Also Offered As: SOC 444.
Course Description: Indian policy processes and their impact on Native lives and culture, particularly Native sovereignty.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 444 and SOC 444.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ETST 454 Chicanx Film and Video Credits: 3 (2-2-0)
Also Offered As: SPCM 454.
Course Description: Emergence of Chicanx cinema from a place of displacement, resistance, and affirmation found in contemporary Chicanx film, video.
Prerequisite: ETST 100 to 499 - at least 3 credits or SPCM 100 to 499 - at least 3 credits.
Registration Information: Sophomore standing. Must register for lecture and laboratory. Credit not allowed for both ETST 454 and SPCM 454.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. May be taken only once. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ETST 487 Internship–Ethnic Studies Credits: 3 (0-0-9)
Course Description: Supervised work experience for Ethnic Studies Majors and Minors.
Prerequisite: ETST 100 with a minimum grade of C and ETST 200 to 495 with a minimum grade of C - at least 15 credits.
Registration Information: Written consent of instructor. Junior standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ETST 492 Seminar Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ETST 493 Ethnic Studies Research Methods and Writing Credits: 3 (3-0-0)
Course Description: Research ethics, methodology, theory, and writing in ethnic studies.
Prerequisite: ETST 100 and ETST 101 to 481 - at least 18 credits.
Registration Information: Senior standing.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ETST 496 Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ETST 501 Ethnic Studies History and Theory Credits: 3 (3-0-0)
Course Description: History and theory of study of racial and ethnic formation, identity, and politics.
Prerequisite: None.
Registration Information: Graduate or senior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 502 Research Methods Credits: 3 (3-0-0)
Course Description: Interdisciplinary ethnic studies research methods.
Prerequisite: None.
Registration Information: Graduate or senior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 503 Contemporary Ethnic Studies Issues Credits: 3 (3-0-0)
Course Description: Contemporary ethnic studies issues in the United States and abroad.
Prerequisite: None.
Registration Information: Graduate or senior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 510 Ethnicity, Race, and Health Disparities in U.S. Credits: 3 (3-0-0)
Course Description: Health status of ethnic/racial populations; cultural dimensions that underlie health and health disparities.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 520 Race and U.S. Social Movements Credits: 3 (3-0-0)
Course Description: Intersections of race, class, gender, and sexuality which structure life chances and mobilize movements for rights, recognition, and resources.
Prerequisite: None.
Registration Information: Graduate or senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 531 Latinx Politics in the U.S. Credits: 3 (3-0-0)
Course Description: Impact of Latinx politics on the U.S. political system by examining Latinx political mobilization patterns and behaviors.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 535 Chicana Feminism: Theory and Form Credits: 3 (3-0-0)
Course Description: Different forms of Chicana feminism as produced by Chicana scholars, poets, artists, and activists, from historical and contemporary accounts.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 540 Race in Latin America Credits: 3 (0-0-3)
Course Description: Examination of race in Latin America and its intersection with ethnicity, class, gender, and sexuality.
Prerequisite: None.
Registration Information: Admission to Ethnic Studies graduate program.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 541 Gender, Violence and Indigenous Peoples Credits: 3 (3-0-0)
Course Description: Multiple forms of violence against indigenous women and children in the Americas, Australia, and New Zealand.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 544 National Identities and Nation Building Credits: 3 (3-0-0)
Also Offered As: POLS 544.
Course Description: How statist conceptions of race and ethnicity have been mobilized in nation-building projects.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 544 and POLS 544.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 545 Immigration and Citizenship in U.S. History Credits: 3 (3-0-0)
Course Description: Comparative survey of immigration and citizenship debates in the U.S. since the 19th century, with a focus on the politics of racial formations.
Prerequisite: None.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 550 Indigenous Law, Policy, and Peoples Credits: 3 (3-0-0)
Course Description: Laws and policies impacting indigenous women, children, families, and communities in North America, New Zealand, and Australia.
Prerequisite: None.
Registration Information: Graduate or senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 555 African American Intellectual Thought Credits: 3 (3-0-0)
Course Description: Historical efforts of Black/African American intellectuals to describe the conditions and circumstances of African descendants in the U.S.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 560 Race, Ethnicity, and Higher Education Credits: 3 (3-0-0)
Course Description: Historical and contemporary experiences of people of color as students, faculty, and staff in higher education in the United States.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 573 Critical Disability Studies Credits: 3 (3-0-0)
Course Description: Critical disability studies focusing on the social and cultural constructions of disability within intersectional frameworks.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 687 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ETST 696 Group Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Ethnic Studies graduate student or written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ETST 698 Research in Ethnicity Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ETST 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Women's Studies (WS)

WS 182B Study Abroad: Ghana Credit: 1 (0-0-1)
Also Offered As: ETST 182B.
Course Description: Winter intersession travel to Ghana, West Africa. Lectures and guided tours by Ghanaian experts. Variable topics dealing with intersectionalities between gender, race, economic development, history, and youth in Ghanaian society.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 182B and WS 182B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WS 200 Introduction to Women's Studies Credits: 3 (3-0-0)
Course Description: Examination of gender roles in work, education, spirituality, relationships, health, institutions and organizations.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C.

WS 269 Women of Color in the United States Credits: 3 (3-0-0)
Course Description: Surveying the contemporary experiences of women of various racialized ethnicities in the United States.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WS 270 Feminist Theory Credits: 3 (3-0-0)
Course Description: Contemporary feminist theories from multiple perspectives, including topics such as gender, race, sexuality, and oppression.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

WS 370 Feminist Friendship Credits: 3 (3-0-0)
Course Description:
Prerequisite: WS 100 to 499.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WS 382A Study Abroad: LGBTQ Advocacy and Policy in Spain Credits: 3 (0-0-3)
Course Description: Summer travel to Barcelona, Spain. Lectures and guided tours by Spanish experts on topics dealing with policy and advocacy among LGBTQ communities.
Prerequisite: None.
Registration Information: Sophomore standing.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

WS 382B Study Abroad--Ghana: Youth Development, Transnational Perspectives Credits: 3 (0-0-3)
Course Description: Exploration of connections and disconnections of youth globally, and how gender and culture intersect in a transnational context.
Prerequisite: None.
Registration Information: Sophomore standing. ETST or WS – at least 6 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WS 397 Group Study Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

WS 472 Seminar in Multiracial & Decolonial Feminisms Credits: 3 (0-0-3)
Course Description: Through an interdisciplinary and comparative approach, this course explores multiracial and decolonial feminist social theory and scholarly practices.
Prerequisite: ETST 405 and WS 200.
Registration Information: Junior standing. Enrolled in Women's and Gender Studies major or Women's Interdisciplinary Studies minor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WS 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Assist the instructor in women's and gender studies courses.
Prerequisite: None.
Registration Information: Enrolled in Ethnic Studies major, Women's Studies concentration or Women's Studies minor; junior standing; written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

WS 487 Internship Credits: Var[1-12] (0-0-0)
Course Description: Internship placement in women's/gender organization, institution, or program.
Prerequisite: None.
Registration Information: Enrolled in Ethnic Studies major, Women's Studies concentration or Women's Studies minor; junior standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

WS 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Approval of Women's Studies Director and relevant department chair (s).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

WS 510 Women and Sustainability Credits: 3 (3-0-0)
Course Description: Examination of sustainability issues with a focus on development policies and impacts on communities from an international feminist perspective.
Prerequisite: None.
Registration Information: Senior or graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WS 601 Foundations of Feminist Research Credits: 3 (3-0-0)
Course Description: Feminist perspectives on epistemology and methodologies for conducting and interpreting research.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WS 692 Seminar in Women's Studies Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have completed one semester of enrollment in Women's Interdisciplinary Graduate Studies Program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WS 695 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Approval of Women's Studies Director and relevant department chair (s).
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

WS 699 Thesis Credits: Var[3-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Approval of Women's Studies Program Board.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Major in Ethnic Studies

The Ethnic Studies major involves critically examining the interlocking forces of race, gender, class, sexuality, and other forms of social differentiation that shape the histories and experiences of racially marginalized groups. The programs of study interrogate how these socially constructed ideas impact distribution of social goods, affect life chances, shape identities and worldviews, and reproduce social inequalities. Drawing from interdisciplinary and comparative theoretical frameworks, we bring to bear issues of power, privilege, and social justice pertinent to the experiences of diverse populations in the U.S. and abroad. We are especially committed to nurturing civic-minded and culturally informed students who strive to strengthen the communities in which they reside. In support of the land-grant mission of CSU, students and faculty in the Ethnic Studies program engage with communities on and off campus in order to effect meaningful change in public policy and social life.

Learning Outcomes

Upon completion of the program of study, students will demonstrate:

- An understanding of the key concepts shaping the experiences of various racial and ethnic groups in the United States and abroad.
- Familiarity with social histories and experiences of racial and ethnic groups.
- Effective oral communication, writing, and research skills.
- An increase in critical thinking, intellectual, and personal growth.
- An understanding of the value of social consciousness and personal responsibility.

Potential Occupations

Both theoretical understandings of and practical experience in cross-cultural and inter-ethnic relations are invaluable in today's world. Ethnic Studies graduates work in the following fields and occupations: K-12 and adult education (e.g. refugee/immigrant education, diversity training in the private sector); human social services including counseling, health care, and civil service; federal, state, tribal, and local government, and community service; natural resources development and technology transfer: practices, economics, and law in ethnic contexts; communications media such as newspaper, radio, video, and television; archival and museum studies; non-profit agencies; and advanced studies

including graduate programs in the social sciences and professional programs (e.g. law, social work).

Concentrations

- Social Studies Teaching Concentration

Requirements Effective Fall 2017

Students in the Ethnic Studies major must earn a minimum grade of C (2.000) for all Ethnic Studies courses required for the major.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
ETST 100	Introduction to Ethnic Studies (GT-SS3)	3E	3
Arts and Humanities		3B	6
Biological and Physical Sciences		3A	3
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Quantitative Reasoning		1B	3
Electives			3
	Total Credits		27

Sophomore

Select one course from the following:			3
ETST 234/E 234	Introduction to Native American Literature		
ETST 240	Native American Cultural Experience (GT-AH2)	3B	
ETST 255/HIST 255	Native American History (GT-HI1)	3D	
ETST 352/SOWK 352	Indigenous Women, Children, and Tribes		
ETST 414/ANTH 414	Development in Indian Country		
ETST 425	Indigenous Film and Video		
ETST 438/E 438	Native American Literature		
ETST 444/SOC 444	Federal Indian Law and Policy		
Select one course from the following:			3
ETST 250/HIST 250	African American History (GT-HI1)	3D	
ETST 310	African-American Studies		
ETST 354	Black Cinema and Media		
ETST 410	African American Periods and Personalities		
ETST 411	Black Feminism(s)		
ETST 412	Africa and African Diaspora		
Select one course from the following:			3
ETST 239/E 239	Introduction to Chicano Literature		
ETST 253	Chicanx History and Culture (GT-HI1)	3E	
ETST 254	La Chicana in Society		
ETST 261	Latinx Populations in the U.S.		
ETST 332	Contemporary Chicanx Issues		
ETST 430	Latina/o Creative Expression		
ETST 432	Latinx Routes to Empowerment		
ETST 454/SPCM 454	Chicanx Film and Video		
Select one course from the following:			3
ETST 252/HIST 252	Asian American History (GT-HI1)	3D	
ETST 320	Ethnicity and Film: Asian-American Experience		
ETST 324	Asian-Pacific Americans and the Law		
ETST 364/HIST 364	Asian American Social Movements, 1945-Present		
Select one course from the following:			3
ETST 205	Ethnicity and the Media (GT-SS3)	3E	
ETST 256	Border Crossings: People/Politics/Culture (GT-SS3)	3E	

ETST 300	Queer Studies and Women of Color		
ETST 365	Global Environmental Justice Movements		
ETST 370	Caribbean Identities		
ETST 371	The Modern Caribbean		
ETST 382/LGEN 382	Italian Ethnic Identity, Culture, and Gender		
ETST 413	Queer Creative Expressions		
Advanced Writing		2	3
Minor/Interdisciplinary Minor[1]			3
Biological and Physical Sciences		3A	4
Electives			6
	Total Credits		31

Junior

Select one from the following:			3
ETST 404	Race Formation in the United States	4A,4B	
ETST 405	Ethnicity, Class, and Gender in the U.S.	4A,4B	
Select 9 credits from the following in consultation with advisor:[2]			9
African American courses			
Asian/Pacific American courses			
Chicano(a)/Latino(a) courses			
Native American courses			
Global Ethnic Studies (select from the following)[3]			
ETST 205	Ethnicity and the Media (GT-SS3)	3E	
ETST 256	Border Crossings: People/Politics/Culture (GT-SS3)	3E	
ETST 300	Queer Studies and Women of Color		
ETST 365	Global Environmental Justice Movements		
ETST 370	Caribbean Identities		
ETST 371	The Modern Caribbean		
Minor/Interdisciplinary Minor[1]			8
Social and Behavioral Sciences		3C	3
Electives			7
	Total Credits		30

Senior

ETST 487	Internship–Ethnic Studies		3
ETST 493	Ethnic Studies Research Methods and Writing	4A,4B,4C	3
Minor/Interdisciplinary Minor[1]			10
Electives[4]			16
	Total Credits		32
	Program Total Credits:		120

1. Students must complete a minor/interdisciplinary minor consistent with the student's program of study. A minimum total of 21 credits, 12 of which are upper division, is required.
2. Seniors may select with advisor approval ETST 541, ETST 550, ETST 531, ETST 535.
3. Seniors may select with advisor approval from ETST 500-level courses.
4. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program: Students in the Ethnic Studies major must earn a minimum grade of C (2.000) for all Ethnic Studies courses required for the major.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
ETST 100	Introduction to Ethnic Studies (GT-SS3)	X		3E	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
Historical Perspectives				3D	3
	Total Credits				12
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)	X		1A	3
Arts and Humanities				3B	3
Diversity and Global Awareness				3E	3
Quantitative Reasoning		X		1B	3
Elective					3
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
Ethnic Studies Courses (See Major Requirements Tab for list of acceptable courses)					9
Minor/Interdisciplinary Minor					3
Elective					3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Ethnic Studies Courses (See Major Requirements Tab for list of acceptable courses)					6
Advanced Writing				2	3
Biological and Physical Sciences				3A	4
Elective					3
	Total Credits				16

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
ETST 404	Race Formation in the United States			4A,4B	
ETST 405	Ethnicity, Class, and Gender in the U.S.			4A,4B	
Ethnic Studies Courses (See list on Major requirements tab and choose courses in consultation with advisor)					3
Minor/Interdisciplinary Minor					4
Electives					4
	Total Credits				14
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Ethnic Studies Courses (See list on Major requirements tab and choose courses in consultation with advisor)					6
Minor/Interdisciplinary Minor					4
Social and Behavioral Sciences				3C	3
Elective					3
	Total Credits				16

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
ETST 487	Internship—Ethnic Studies				3
Minor/Interdisciplinary Minor					5
Electives					10
	Total Credits				18

Semester 8		Critical	Recommended	AUCC	Credits
ETST 493	Ethnic Studies Research Methods and Writing	X		4A,4B,4C	3
Minor/Interdisciplinary Minor		X			5
Electives		X			6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				14
	Program Total Credits:				120

Major in Ethnic Studies, Social Studies Teaching Concentration

The Major in Ethnic Studies, Social Studies Teaching concentration prepares students to become social studies teachers in middle schools or high schools. Specific requirements for the teacher licensure can be found at the Center for Educator Preparation (http://www.cep.chhs.colostate.edu) in the School of Education.

Students may also contact the Department of Ethnic Studies (https://ethnicstudies.colostate.edu) for information about the Social Studies Teaching concentration.

Requirements Effective Fall 2018

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
ETST 100	Introduction to Ethnic Studies (GT-SS3)	3E	3
GR 100	Introduction to Geography (GT-SS2)	3C	3
Select one course from the following:			3
ANTH 100	Introductory Cultural Anthropology (GT-SS3)	3C	
PSY 100	General Psychology (GT-SS3)	3C	
SOC 100	General Sociology (GT-SS3)	3C	
SOC 105	Social Problems (GT-SS3)	3C	
Select one course from the following:			3
HIST 100	Western Civilization, Pre-Modern (GT-HI1)	3D	
HIST 115	The Islamic World: Late Antiquity to 1500	3D	
HIST 120	Asian Civilizations I (GT-HI1)	3D	
HIST 170	World History, Ancient-1500 (GT-HI1)	3D	
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	7
Quantitative Reasoning		1B	3
Elective			2
	Total Credits		30

Sophomore

EDUC 275	Schooling in the United States (GT-SS3)	3C	3
ETST 240	Native American Cultural Experience (GT-AH2)	3B	3
Select one course from the following:			3
ECON 211	Gender in the Economy (GT-SS1)	3E	
ECON 212	Racial Inequality and Discrimination (GT-SS1)	3C	
Select two courses from the following:			6
ETST 250/ HIST 250	African American History (GT-HI1)	3D	
ETST 252/ HIST 252	Asian American History (GT-HI1)	3D	
ETST 253	Chicanx History and Culture (GT-HI1)	3E	
ETST 255/ HIST 255	Native American History (GT-HI1)	3D	
Select one course from the following not taken elsewhere in the program:			3
ETST 300	Queer Studies and Women of Color		
WS 200	Introduction to Women's Studies	3C	
WS 269	Women of Color in the United States		
WS 270	Feminist Theory		
Select one course from the following:			3
HIST 101	Western Civilization, Modern (GT-HI1)	3D	
HIST 121	Asian Civilizations II (GT-HI1)	3D	
HIST 171	World History, 1500-Present (GT-HI1)	3D	
Select one course from the following:			3
HIST 150	U.S. History to 1876 (GT-HI1)	3D	
HIST 151	U.S. History Since 1876 (GT-HI1)	3D	
Select one course from the following:			3
POLS 101	American Government and Politics (GT-SS1)	3C	
POLS 241	Comparative Government and Politics (GT-SS1)	3E	
Advanced Writing		2	3
	Total Credits		30

Junior

EDUC 331	Educational Technology and Assessment		2
EDUC 340	Literacy and the Learner		3
EDUC 350	Instruction I-Individualization/ Management		3
EDUC 386	Practicum-Instruction I		1

EDUC 465	Methods and Materials in Social Studies	4
GR 320	Cultural Geography	3
Select two courses from the following:		6
ETST 352/ SOWK 352	Indigenous Women, Children, and Tribes	
ETST 365	Global Environmental Justice Movements	
ETST 370	Caribbean Identities	
ETST 412	Africa and African Diaspora	
Select one course from the following not taken elsewhere in the program:		3
ETST 300	Queer Studies and Women of Color	
WS 200	Introduction to Women's Studies 3C	
WS 269	Women of Color in the United States	
WS 270	Feminist Theory	
ETST 3XX or ETST 4XX		3
Elective		3
	Total Credits	31

Senior

EDUC 450	Instruction II-Standards and Assessment	4
EDUC 485B	Student Teaching: Secondary	11
EDUC 486E	Practicum: Instruction II	1
EDUC 493A	Seminar: Professional Relations	1
ETST 493	Ethnic Studies Research Methods and Writing 4C	3
Select one course from the following:		3
ETST 404	Race Formation in the United States 4A,4B	
ETST 405	Ethnicity, Class, and Gender in the U.S. 4A,4B	
Electives[1]		6
	Total Credits	29
	Program Total Credits:	120

[1] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
During their sophomore year, students must apply for admission to the licensure program. This requires completion of at least 30 credits, a minimum 3.000 GPA, and passing a criminal background check. To continue in the major, students must maintain a 3.000 GPA. Grades in all History, Social Studies and Education courses must be C or above.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
ETST 100	Introduction to Ethnic Studies (GT-SS3)			3E	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
Quantitative Reasoning				1B	3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
GR 100	Introduction to Geography (GT-SS2)			3C	3
Select one course from the following:					3
ANTH 100	Introductory Cultural Anthropology (GT-SS3)			3C	
PSY 100	General Psychology (GT-SS3)			3C	
SOC 100	General Sociology (GT-SS3)			3C	
SOC 105	Social Problems (GT-SS3)			3C	
Select one course from the following:					3
HIST 100	Western Civilization, Pre-Modern (GT-HI1)			3D	
HIST 115	The Islamic World: Late Antiquity to 1500			3D	
HIST 120	Asian Civilizations I (GT-HI1)			3D	
HIST 170	World History, Ancient-1500 (GT-HI1)			3D	
Biological and Physical Sciences				3A	4
Elective					2
AUCC 1B (Quantitative Reasoning) and CO 150 must be completed by the end of semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 275	Schooling in the United States (GT-SS3)			3C	3

ETST 240	Native American Cultural Experience (GT-AH2)			3B	3
Select one course from the following:					3
ECON 211	Gender in the Economy (GT-SS1)			3E	
ECON 212	Racial Inequality and Discrimination (GT-SS1)			3C	
Select two courses from the following:					6
ETST 250/ HIST 250	African American History (GT-HI1)			3D	
ETST 252/ HIST 252	Asian American History (GT-HI1)			3D	
ETST 253	Chicanx History and Culture (GT-HI1)			3E	
ETST 255/ HIST 255	Native American History (GT-HI1)			3D	
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following not taken elsewhere in the program:					3
ETST 300	Queer Studies and Women of Color				
WS 200	Introduction to Women's Studies			3C	
WS 269	Women of Color in the United States				
WS 270	Feminist Theory				
Select one course from the following:					3
HIST 101	Western Civilization, Modern (GT-HI1)			3D	
HIST 121	Asian Civilizations II (GT-HI1)			3D	
HIST 171	World History, 1500-Present (GT-HI1)			3D	
Select one course from the following:					3
HIST 150	U.S. History to 1876 (GT-HI1)			3D	
HIST 151	U.S. History Since 1876 (GT-HI1)			3D	
Select one course from the following:					3
POLS 101	American Government and Politics (GT-SS1)			3C	
POLS 241	Comparative Government and Politics (GT-SS1)			3E	
Advanced Writing				2	3
EDUC 275 must be completed by the end of semester 4.		X			
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 340	Literacy and the Learner				3
EDUC 465	Methods and Materials in Social Studies				4
Select one course from the following not taken elsewhere in the program:					3
ETST 300	Queer Studies and Women of Color				
WS 200	Introduction to Women's Studies			3C	
WS 269	Women of Color in the United States				
WS 270	Feminist Theory				
Select two courses from the following:					6
ETST 352/ SOWK 352	Indigenous Women, Children, and Tribes				
ETST 365	Global Environmental Justice Movements				
ETST 370	Caribbean Identities				
ETST 412	Africa and African Diaspora				
Admission to Teacher Licensure program and EDUC 340 must be completed by the end of semester 5.		X			
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 331	Educational Technology and Assessment				2
EDUC 350	Instruction I-Individualization/Management				3

EDUC 386	Practicum-Instruction I				1
GR 320	Cultural Geography				3
ETST 3XX or ETST 4XX					3
Elective					3
	Total Credits				15

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 450	Instruction II-Standards and Assessment				4
EDUC 486E	Practicum: Instruction II				1
ETST 493	Ethnic Studies Research Methods and Writing	X		4C	3
Select one course from the following:		X			3
ETST 404	Race Formation in the United States			4A,4B	
ETST 405	Ethnicity, Class, and Gender in the U.S.			4A,4B	
Elective					3
EDUC 450, EDUC 465, EDUC 486E must be completed by the end of semester 7.		X			
	Total Credits				14

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 485B	Student Teaching: Secondary	X			11
EDUC 493A	Seminar: Professional Relations	X			1
Elective		X			3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Minor in Ethnic Studies

The minor in Ethnic Studies provides an opportunity for students to take a group of courses that address the impact of race, culture, class, gender, and sexuality in shaping institutions, social relations, and identities. Regardless of the main area of students' academic focus and career aspirations, a minor in Ethnic Studies will be advantageous as employers and organizations increasingly look for individuals capable of communicating across differences of identities.

Requirements Effective Fall 2015

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Students in the Ethnic Studies minor must earn a minimum grade of C (2.000) for all Ethnic Studies courses required for the minor.

Code	**Title**	**Credits**
ETST 100	Introduction to Ethnic Studies (GT-SS3)	3
ETST 404	Race Formation in the United States	3
or ETST 405	Ethnicity, Class, and Gender in the U.S.	
Select one African American course from the following:		3
ETST 250/ HIST 250	African American History (GT-HI1)	
ETST 310	African-American Studies	
ETST 330	African American Resistance and Self-Creation	
ETST 354	Black Cinema and Media	
ETST 410	African American Periods and Personalities	
ETST 411	Black Feminism(s)	
ETST 412	Africa and African Diaspora	
Select one Asian Pacific American course from the following:		3
ETST 252/ HIST 252	Asian American History (GT-HI1)	
ETST 320	Ethnicity and Film: Asian-American Experience	
ETST 324	Asian-Pacific Americans and the Law	
ETST 364/ HIST 364	Asian American Social Movements, 1945-Present	
Select one Chicano(a) course from the following: [1]		3
ANTH 319	Latin American Peasantries	
ETST 239/E 239	Introduction to Chicano Literature	
ETST 253	Chicanx History and Culture (GT-HI1)	
ETST 254	La Chicana in Society	
ETST 261	Latinx Populations in the U.S.	
ETST 332	Contemporary Chicanx Issues	
ETST 430	Latina/o Creative Expression	
ETST 432	Latinx Routes to Empowerment	
ETST 454/ SPCM 454	Chicanx Film and Video	
Select one Native American course from the following: [2]		3
E 234/ETST 234	Introduction to Native American Literature	

E 438/ETST 438	Native American Literature
ETST 240	Native American Cultural Experience (GT-AH2)
ETST 255/ HIST 255	Native American History (GT-HI1)
ETST 352/ SOWK 352	Indigenous Women, Children, and Tribes
ETST 414/ ANTH 414	Development in Indian Country
ETST 425	Indigenous Film and Video
ETST 444/ SOC 444	Federal Indian Law and Policy
Select one Global Ethnic Studies course from the following: [3]	3
ANTH 319	Latin American Peasantries
ETST 201	Introduction to Queer Studies
ETST 205	Ethnicity and the Media (GT-SS3)
ETST 256	Border Crossings: People/Politics/Culture (GT-SS3)
ETST 300	Queer Studies and Women of Color
ETST 365	Global Environmental Justice Movements
ETST 370	Caribbean Identities
ETST 371	The Modern Caribbean
ETST 413	Queer Creative Expressions
Program Total Credits:	21

1 Seniors may select with minor advisor approval: ETST 531, ETST 535.

2 Seniors may select with minor advisor approval: ETST 541, ETST 550.

3 Seniors may select with minor advisor approval from ETST 500-level course(s) with a global ethnic studies content.

Graduate Certificate in Gender, Power and Difference

The Graduate Certificate in Gender, Power and Difference provides students with a solid foundation in feminist frameworks that address gender, power, and privilege. The graduate certificate should benefit students interested in feminist epistemologies, research, and pedagogy.

Upon completion, students will demonstrate: 1) knowledge of academic disciplines from feminist and intersectional perspectives; and 2) effective understanding of feminist epistemology, methodology, and research.

Effective Fall 2018

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Required Courses		3
WS 601	Foundations of Feminist Research	
Select at least 6 credits from the following list that focuses on how gender intersects with race, disability, sexuality, sovereignty, sustainability, or other categories of difference:		6-9
ETST 520	Race and U.S. Social Movements	
ETST 535	Chicana Feminism: Theory and Form	
ETST 541	Gender, Violence and Indigenous Peoples	
ETST 573	Critical Disability Studies	
PSY 677	Psychology of Women, Men, and Gender	
SPCM 623	Feminist Theories of Discourse	
WS 510	Women and Sustainability	
WS 692	Seminar in Women's Studies	
One graduate-level course within major department or program approved by Ethnic Studies advisor		0-3
Program Total Credits:		12

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Master of Arts in Ethnic Studies, Plan A

The M.A. in Ethnic Studies provides students with a comprehensive understanding of the enduring and transformative nature of race and ethnicity in the United States and around the globe. The program develops professional competencies in working with diverse communities in order to bring about meaningful social change. Through the development of strong research, writing, and oral skills, a master's degree in ethnic studies prepares students to become informed citizens and competitive job seekers. Our students are uniquely positioned to enter a workplace that is more diverse than ever, and where issues of race, ethnicity, gender, and sexuality, among others, are more relevant than at any time in the recent past.

Requirements Effective Fall 2016

Code	Title	Credits
Core Courses		
ETST 501	Ethnic Studies History and Theory	3
ETST 502	Research Methods	3
ETST 503	Contemporary Ethnic Studies Issues	3
Electives		
Select 12 credits from the following:		12
ETST 510	Ethnicity, Race, and Health Disparities in U.S.	
ETST 520	Race and U.S. Social Movements	
ETST 531	Latinx Politics in the U.S.	
ETST 535	Chicana Feminism: Theory and Form	
ETST 540	Race in Latin America	
ETST 541	Gender, Violence and Indigenous Peoples	
ETST 544/ POLS 544	National Identities and Nation Building	
ETST 545	Immigration and Citizenship in U.S. History	
ETST 550	Indigenous Law, Policy, and Peoples	
ETST 555	African American Intellectual Thought	
ETST 560	Race, Ethnicity, and Higher Education	
ETST 573	Critical Disability Studies	
WS 510	Women and Sustainability	
ETST 699	Thesis	3-6
Additional Credits [1]		3-6
ETST 684	Supervised College Teaching	
ETST 687	Internship	
ETST 695	Independent Study	

ETST 696	Group Study	
ETST 698	Research in Ethnicity	
WS 692	Seminar in Women's Studies	
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

[1] Select enough additional credits to bring the program total to a minimum of 30 credits.

The following are specific requirements for the Ethnic Studies Master of Arts, Plan A:

- Minimum of 24 semester credits earned in residence at CSU, 21 credits must be earned after admission to the Graduate School.
- At least 21 credits must be 500-level courses or higher and at least 12 credits must be in regular courses.
- Additional elective courses include any ETST or other subject code graduate level course.

Master of Arts in Ethnic Studies, Plan B

The M.A. in Ethnic Studies provides students with a comprehensive understanding of the enduring and transformative nature of race and ethnicity in the United States and around the globe. The program develops professional competencies in working with diverse communities in order to bring about meaningful social change. Through the development of strong research, writing, and oral skills, a master's degree in ethnic studies prepares students to become informed citizens and competitive job seekers. Our students are uniquely positioned to enter a workplace that is more diverse than ever, and where issues of race, ethnicity, gender, and sexuality, among others, are more relevant than at any time in the recent past.

Requirements Effective Fall 2016

Code	Title	Credits
Core Courses		
ETST 501	Ethnic Studies History and Theory	3
ETST 502	Research Methods	3
ETST 503	Contemporary Ethnic Studies Issues	3
Electives		
Select 12 credits from the following:		12
ETST 510	Ethnicity, Race, and Health Disparities in U.S.	
ETST 520	Race and U.S. Social Movements	
ETST 531	Latinx Politics in the U.S.	
ETST 535	Chicana Feminism: Theory and Form	
ETST 540	Race in Latin America	
ETST 541	Gender, Violence and Indigenous Peoples	
ETST 544/ POLS 544	National Identities and Nation Building	
ETST 545	Immigration and Citizenship in U.S. History	
ETST 550	Indigenous Law, Policy, and Peoples	
ETST 555	African American Intellectual Thought	
ETST 560	Race, Ethnicity, and Higher Education	
ETST 573	Critical Disability Studies	
WS 510	Women and Sustainability	
ETST 687	Internship	3-6
or ETST 695	Independent Study	
Additional Credits [1]		5-8
ETST 684	Supervised College Teaching	
ETST 696	Group Study	
ETST 698	Research in Ethnicity	
WS 692	Seminar in Women's Studies	
Program Total Credits:		32

A minimum of 32 credits are required to complete this program.

[1] Select enough additional credits to bring the program total to a minimum of 32 credits.

The following are specific requirements for the Ethnic Studies Master of Arts, Plan B:

- Minimum of 24 semester credits earned in residence at CSU, 21 credits must be earned after admission to the Graduate School.
- At least 21 credits must be 500-level or higher courses and at least 12 credits must be in regular courses.
- Additional elective courses include any ETST or other subject code graduate level course.
- Successful completion of a specialized research/professional paper.
- Community presentation of professional paper/project.

Department of Languages, Literatures and Cultures

Office in Clark Building, Room C104
(970) 491-6141
languages.colostate.edu (http://languages.colostate.edu)

Associate Professor Mary Vogl, Chair
Associate Professor Frederique Grim, Undergraduate Coordinator
Associate Professor Antonio Pedros-Gascon, Graduate Coordinator

Languages, Literatures and Cultures has a diverse faculty from around 20 different countries.
The department offers the following:

- **Master of Arts in Languages, Literatures, and Cultures with specializations in French, German and Spanish**
- **Undergraduate Majors with concentrations in French, German and Spanish and/or a Teaching Endorsement**
- **Minors in Chinese, French, German, Japanese, and Spanish**
- **Interdisciplinary Minors in Arabic, Italian and Russian**
- **Courses in American Sign Language (ASL) and Latin**

Where will your multilingualism take you?

image: CSU faculty-led study abroad program at the Camino de Santiago, Spain. Photo credit: Professor Jonathan Carlyon.

Undergraduate

Majors

- Major in Languages, Literatures, and Cultures
  - French Concentration
  - German Concentration
  - Spanish Concentration

Teaching Endorsement

The Teacher Preparation Program is a non-degree program; bachelor degrees in education are not awarded. Students interested in pursuing a teaching license through CSU may refer to the Center for Educator Preparation (CEP) (https://www.chhs.colostate.edu/soe/center-for-educator-preparation) and the School of Education section for general information.

- Teaching Endorsement

Minor Programs

A minor in a foreign language offers opportunities for studying the language and culture of another country and complements many major fields. A student with a broadly based education, including a foreign language, will be better prepared to deal with changing technological, economic, and social conditions on an international scale. A student who minors in a foreign language may expect to develop sufficient competency to speak and write with reasonable accuracy and fluency while pursuing interest in language, literature, and culture. See the department for specific information on upper-division transfer work in the language of the minor.

All majors and minors in the department must earn a minimum grade of C (a grade of C- is not acceptable) in each upper-division course that carries the LARA, LCHI, LFRE, LGEN, LGER, LITA, LJPN, LLAT, LRUS, LSGN, or LSPA subject code.

Minors

- Minor in Chinese
- Minor in French
- Minor in German
- Minor in Japanese
- Minor in Spanish

Interdisciplinary Minors

- Arabic Studies
- Italian Studies
- Russian Studies

Undergraduate Certificate

- Spanish for Animal Health and Care

Graduate

Graduate Programs in Languages, Literatures, and Cultures

Students wishing to pursue advanced studies can earn a Master of Arts degree in Languages, Literatures, and Cultures (with specializations in French, German, or Spanish), or follow a program that combines the specializations in French, German, or Spanish with study in another field. Students can also pursue a double degree (Joint Program) in which students earn an M.A. in Languages, Literatures, and Cultures (specialization in French, German, or Spanish) and an M.A. in English (specialization of teaching English as a second language or teaching English as a foreign language, TEFL/TESL). Please consult the Graduate and Professional Bulletin.

Certificates

- French Linguistics and Literary Studies
- Spanish Linguistics and Literary Studies

Master's Programs

- Master of Arts in Languages, Literatures, and Cultures, Plan A, French Specialization, Interdisciplinary Option
- Master of Arts in Languages, Literatures, and Cultures, Plan B, French Specialization, Interdisciplinary Option
- Master of Arts in Languages, Literatures, and Cultures, Plan A, French Specialization, Foreign Languages, Literatures, and Cultures Option
- Master of Arts in Languages, Literatures, and Cultures, Plan B, French Specialization, Foreign Languages, Literatures, and Cultures Option
- Master of Arts in Languages, Literatures, and Cultures, Plan A, German Specialization, Interdisciplinary Option
- Master of Arts in Languages, Literatures, and Cultures, Plan B, German Specialization, Interdisciplinary Option
- Master of Arts in Languages, Literatures, and Cultures, Plan A, German Specialization, Foreign Languages, Literatures, and Cultures Option
- Master of Arts in Languages, Literatures, and Cultures, Plan B, German Specialization, Foreign Languages, Literatures, and Cultures Option
- Master of Arts in Languages, Literatures, and Cultures, Plan A, Spanish Specialization, Interdisciplinary Option
- Master of Arts in Languages, Literatures, and Cultures, Plan B, Spanish Specialization, Interdisciplinary Option
- Master of Arts in Languages, Literatures, and Cultures, Plan A, Spanish Specialization, Foreign Languages, Literatures, and Cultures Option
- Master of Arts in Languages, Literatures, and Cultures, Plan B, Spanish Specialization, Foreign Languages, Literatures, and Cultures Option

Courses

Subjects in this department include: Arabic (LARA), Chinese (LCHI), French (LFRE), Foreign Languages and Literatures (LGEN), German (LGER), Greek (LGRK), Italian (LITA), Japanese (LJPN), Korean (LKOR), Latin (LLAT), Russian (LRUS), American Sign Language (LSGN), and Spanish (LSPA)

Arabic (LARA)

LARA 100 First-Year Arabic I Credits: 5 (5-0-0)
Course Description: Essentials of Arabic for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: No previous study in Arabic. Credit not allowed for both LARA 100 and LARA 105.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LARA 101 First-Year Arabic II Credits: 5 (5-0-0)
Course Description: Essentials of Arabic for the continuing student: aural comprehension, speaking, reading, writing.
Prerequisite: LARA 100 or LARA 105.
Registration Information: Credit not allowed for both LARA 101 and LARA 107.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LARA 200 Second-Year Arabic I (GT-AH4) Credits: 4 (4-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LARA 101 or LARA 107.
Registration Information: Placement exam can substitute for LARA 101.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LARA 201 Second-Year Arabic II (GT-AH4) Credits: 4 (4-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LARA 200.
Registration Information: Placement exam can substitute for LARA 200.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LARA 250 Arabic Language, Literature, Culture in Translation (GT-AH2) Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of the Arabic language, literature, and culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

LARA 296 Group Study-Arabic Credits: Var[1-5] (0-0-0)
Course Description: Group study in Arabic language/literature/culture.
Prerequisite: None.
Term Offered: Fall. Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

LARA 300 Third Year Arabic Credits: 3 (3-0-0)
Course Description: Develop reading and writing skills.
Prerequisite: LARA 201.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LARA 301 Oral Communication - Arabic Credits: 3 (3-0-0)
Course Description: In-depth study of Arabic to improve proficiency, emphasizing oral communication.
Prerequisite: LARA 201.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LARA 495 Independent Study-Arabic Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Three years of college-level Arabic.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

Chinese (LCHI)

LCHI 100 First-Year Chinese I Credits: 5 (5-0-0)
Course Description: Essentials of Chinese for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: No previous study in Chinese. Credit not allowed for both LCHI 100 and LCHI 105.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LCHI 101 First-Year Chinese II Credits: 5 (5-0-0)
Course Description: Essentials of the Chinese language for the continuing student; aural comprehension, speaking, reading, writing.
Prerequisite: LCHI 100 or LCHI 105.
Registration Information: Credit not allowed for both LCHI 101 and LCHI 107.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LCHI 200 Second-Year Chinese I (GT-AH4) Credits: 5 (5-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LCHI 101 or LCHI 107.
Registration Information: Placement exam can substitute for LCHI 101.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LCHI 201 Second-Year Chinese II (GT-AH4) Credits: 5 (5-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LCHI 200.
Registration Information: Placement exam can substitute for LCHI 200.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LCHI 205 Intermediate Written Chinese Credits: 3 (3-0-0)
Course Description: Development of fundamental language skills emphasizing writing and reading.
Prerequisite: LCHI 200.
Registration Information: Placement exam can substitute for LCHI 200.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LCHI 250 Chinese Language, Literature, Culture in Translation (GT-AH2) Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of Chinese literature and culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

LCHI 296 Group Study-Chinese Credits: Var[1-5] (0-0-0)
Course Description: Group study in Chinese language/literature/culture.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LCHI 304 Third-Year Chinese I Credits: 3 (3-0-0)
Course Description: Development of reading comprehension, communicative competence, and cultural understanding.
Prerequisite: LCHI 201.
Registration Information: Placement exam can substitute for LCHI 201.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LCHI 305 Third-Year Chinese II Credits: 3 (3-0-0)
Course Description: Development of reading comprehension, communicative competence, and cultural understanding.
Prerequisite: LCHI 304.
Registration Information: Placement exam can substitute for LCHI 304.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LCHI 309 Contemporary Chinese Literature and the Arts Credits: 3 (3-0-0)
Course Description: Trends resulting from traditional Chinese and contemporary foreign influences in Chinese literature and the arts.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LCHI 365 Introduction to Chinese Cinema Studies Credits: 3 (3-0-0)
Course Description: Terminology, techniques, and approaches specific to Chinese cinema. Taught in Chinese.
Prerequisite: LCHI 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LCHI 408 Chinese Calligraphy Credit: 1 (1-0-0)
Course Description: History of Chinese calligraphy and basic Chinese calligraphy skills.
Prerequisite: LCHI 304.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LCHI 495 Independent Study-Chinese Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Required: Three years of college-level Chinese.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LCHI 496 Group Study-Chinese Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: LCHI 304 or LCHI 305.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

French (LFRE)

LFRE 100 First-Year French I Credits: 5 (3-0-2)
Course Description: Essentials of French for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. No previous study in French. Credit allowed for only one of the following: LFRE 100, LFRE 105, or LFRE 106. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 101 First-Year French II Credits: 5 (3-0-2)
Course Description: Essentials of French for the continuing student: aural comprehension, speaking, reading, writing.
Prerequisite: LFRE 100 or LFRE 105 or LFRE 106.
Registration Information: Must register for lecture and recitation. Placement exam or instructor placement can substitute for course prerequisites. Credit allowed for only one of the following: LFRE 101, LFRE 107, or LFRE 108. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face only.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 106 First-Year French Review Credits: 3 (3-0-0)
Course Description: For students with minimal proficiency in French. Basic review of essential skills: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: Placement exam or instructor placement required. Credit allowed for only one of the following: LFRE 100, LFRE 105, or LFRE 106.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 108 Intensive French I Credits: 5 (3-0-2)
Course Description: First-year French through an accelerated practice (first and second semester combined) of the three modes of communication (interpersonal, interpretive and presentational) and the standards of cultures, connections, comparisons and communities. Designed for students with some prior French language knowledge.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online. Credit not allowed for both LFRE 101 and LFRE 108.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 120 Reading for Proficiency-French Credits: 3 (3-0-0)
Course Description: Essentials of the French language for developing reading proficiency.
Prerequisite: None.
Registration Information: Credit for LFRE 120 not allowed if LFRE 101, LFRE 107, or LFRE 108 has been completed.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 200 Second-Year French I (GT-AH4) Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in French conversation, reading, and writing.
Prerequisite: LFRE 101 or LFRE 107 or LFRE 108.
Registration Information: Placement exam can substitute for course prerequisites. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LFRE 201 Second-Year French II (GT-AH4) Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in French conversation, reading, and writing.
Prerequisite: LFRE 200.
Registration Information: Placement exam can substitute for LFRE 200. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LFRE 208 Intensive French II Credits: 5 (5-0-0)
Course Description: Accelerated practice in speaking, reading, writing, and aural comprehension.
Prerequisite: LFRE 108.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 250 French Language, Literature, Culture in Translation (GT-AH2) Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of the French language, literature, and culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

LFRE 296 Group Study-French Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

LFRE 300 Reading and Writing for Communication-French Credits: 3 (3-0-0)
Course Description: Development of reading and writing proficiency through an in-depth examination of contemporary French writing.
Prerequisite: LFRE 201 or LFRE 208.
Registration Information: Placement exam can substitute for course prerequisites. Credit not allowed for both LFRE 300 and LFRE 301.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 301 Oral Communication-French Credits: 3 (3-0-0)
Course Description: In-depth French language study to improve proficiency in all language skills emphasizing oral.
Prerequisite: LFRE 201.
Registration Information: Placement exam can substitute for LFRE 201. Credit not allowed for both LFRE 301 and LFRE 300.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 310 Approaches to French Literature Credits: 3 (3-0-0)
Course Description: Appreciation and critical readings of representative works in French prose, drama, and poetry.
Prerequisite: LFRE 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 312 Introduction to French Linguistics Credits: 3 (3-0-0)
Course Description: French linguistics, phonetics, phonology, morphology, syntax, semantics, and pragmatics.
Prerequisite: LFRE 300, may be taken concurrently.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 313 Introduction to French Translation and Interpreting Credits: 3 (3-0-0)
Course Description: Translation and interpreting of written and oral texts into and from French.
Prerequisite: LFRE 300.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 326 French Phonetics Credits: 3 (3-0-0)
Course Description: Phonetic principles and their application to language sound system; intensive practice in pronunciation, intonation.
Prerequisite: LFRE 300, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 335 Issues in French/Francophone Culture Credits: 3 (3-0-0)
Course Description: Historical context of contemporary issues in the culture of French-speaking countries.
Prerequisite: LFRE 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 345 Business French Credits: 3 (3-0-0)
Course Description: Business and commercial aspects of the French language and culture.
Prerequisite: LFRE 300.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 355 20th Century French Literature Credits: 3 (3-0-0)
Course Description: Representative literary works from the 20th century.
Prerequisite: LFRE 310.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 365 Introduction to French Cinema Studies Credits: 3 (3-0-0)
Course Description: Terminology, techniques, and approaches specific to French and Francophone cinema. Taught in French.
Prerequisite: LFRE 310 or LFRE 335.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 400 Advanced French Communication Skills Credits: 3 (3-0-0)
Course Description: Development of speaking, reading, and writing proficiency through an in-depth examination of representative writings and media communications.
Prerequisite: LFRE 300.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 413 Advanced French Translation and Interpreting Credits: 3 (3-0-0)
Course Description: Advanced practice in translation and interpreting of written and oral texts into and from French.
Prerequisite: LFRE 313.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 433A Advanced French/Francophone Culture: Representations Credits: 3 (3-0-0)
Course Description: French and Francophone cultural identities and their history.
Prerequisite: LFRE 300 and LFRE 301 to 399.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 433B Advanced French/Francophone Culture: Center and Margins Credits: 3 (3-0-0)
Course Description: French and Francophone cultural identities and their history.
Prerequisite: LFRE 300 and LFRE 301 to 399.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 441 Advanced Business French Credits: 3 (3-0-0)
Course Description: Advanced business and commercial aspects of the French language and culture.
Prerequisite: LFRE 345.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 450 Selected French Literary Movements and Periods Credits: 3 (3-0-0)
Course Description: Studies in selected literary movements and periods of France such as classicism, realism, naturalism, existentialism.
Prerequisite: (LFRE 300) and (LFRE 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 452 Genre Studies in French Credits: 3 (3-0-0)
Course Description: Development of critical approaches to major works in literature through selected literary genres and subgenres.
Prerequisite: (LFRE 300) and (LFRE 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 453 Author Studies in French Credits: 3 (3-0-0)
Course Description: Development of critical approaches to authors through the appreciation and analysis of selected works.
Prerequisite: (LFRE 300) and (LFRE 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 454 Topic Studies in French Credits: 3 (3-0-0)
Course Description: Selected topic studies such as themes, topoi, and interdisciplinary subjects in literature.
Prerequisite: (LFRE 300) and (LFRE 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 460 French/Francophone Women Writers Credits: 3 (3-0-0)
Course Description: Selected French and Francophone women writers in a variety of genres emphasizing relationships among gender, culture, and writing.
Prerequisite: (LFRE 300) and (LFRE 310).
Registration Information: May be taken up to 3 times for credit.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 470 French Grammatical Constructions Credits: 3 (3-0-0)
Course Description: Linguistic analysis of selected French grammatical constructions (word order, word formation and sentence structure), their relationship to meaning.
Prerequisite: LFRE 312.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 492 Seminar-French Language, Literature, and Society Credits: 3 (0-0-3)
Course Description: Integrative study of language, literature, and society emphasizing relationships between texts and the society of their origin.
Prerequisite: (LFRE 310) and (LFRE 400 to 479 - at least 2 courses).
Registration Information: Senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 495 Independent Study-French Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Three years of college-level French.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LFRE 500 Language Analysis/Stylistics-French Credits: 3 (3-0-0)
Course Description: Analysis of language structure through the examination of style in literary and non-literary texts.
Prerequisite: LFRE 400.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 508 Intensive French-Graduate Review Credits: 4 (3-3-0)
Course Description: Immersion review of French for the teacher, developing intermediate-level proficiency in culture and the four skills.
Prerequisite: None.
Registration Information: Admission to Summer Institute for Foreign Language Teaching. Must register for lecture and laboratory.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 514 Issues in Teaching French Credit: 1 (1-0-0)
Course Description: Current theory and practice in second-language instruction; technological applications.
Prerequisite: None.
Registration Information: Concurrent graduate teaching assistantship required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 525 History of the French Language Credits: 3 (3-0-0)
Course Description: Investigation of both internal (strictly linguistic) and external (sociolinguistic) factors in development of the language.
Prerequisite: LFRE 400.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 536 Topics in French Linguistics Credits: 3 (3-0-0)
Course Description: Acquisition, discourse analysis, and language change and variation over time and space.
Prerequisite: LFRE 500.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 551 Selected French Literary Movements/Periods Credits: 3 (3-0-0)
Course Description: Advanced studies in and critical approaches to selected literary movements or periods.
Prerequisite: None.
Registration Information: Undergraduate degree in French.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 552 Advanced Studies in French Literary Genres Credits: 3 (3-0-0)
Course Description: Advanced studies in and critical approaches to literary genres through study of major works in foreign literatures.
Prerequisite: None.
Registration Information: Undergraduate degree in French.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 553 Advanced French Author Studies Credits: 3 (3-0-0)
Course Description: Critical approaches to the study of selected authors through appreciation and analysis of their major works.
Prerequisite: None.
Registration Information: Undergraduate degree in French.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 554 Advanced Topic Studies-French Credits: 3 (3-0-0)
Course Description: Selected topics (theme, topoi, and interdisciplinary subjects) in foreign literatures.
Prerequisite: None.
Registration Information: Undergraduate degree in French.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 692 Seminar-French Credits: 3 (0-0-3)
Course Description: Treatment of selected topics in seminar.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Undergraduate degree in French.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

LFRE 695 Independent Study-French Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Foreign Languages and Literatures (LGEN)

LGEN 114 First-Year Language I Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 115 First-Year Language II Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 192 Modern Languages/Cultures: Italian and Japanese Credits: 3 (0-0-3)
Course Description: Language, cultural issues, and historical heritage of modern Italian and Japanese societies.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 214 Second-Year Language I Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 215 Second-Year Language II Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 290 Theatre Workshop in a Foreign Language Credits: Var[1-3] (0-0-0)
Course Description: Application of communication skills in a foreign language through informal staging of dramatic scripts.
Prerequisite: LARA 100 or LARA 105 or LCHI 100 or LCHI 105 or LFRE 100 or LFRE 105 or LGER 100 or LGER 105 or LITA 100 or LITA 105 or LJPN 100 or LJPN 105 or LKOR 105 or LRUS 100 or LRUS 105 or LSPA 100 or LSPA 105.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 296 Group Study-General Credits: Var[1-5] (0-0-0)
Course Description: Group study in language/literature/culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

LGEN 314 Third-Year Language I Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 315 Third-Year Language II Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 365 Introduction to Cinema Studies Credits: 3 (3-0-0)
Course Description: Terminology, techniques, and approaches specific to foreign cinema. Taught in English.
Prerequisite: LCHI 305 or LFRE 310 or LFRE 335 or LGER 310 or LGER 335 or LJPN 305 or LRUS 305 or LSPA 310 or LSPA 335.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 382 Italian Ethnic Identity, Culture, and Gender Credits: 3 (2-0-1)
Also Offered As: ETST 382.
Course Description: Different ethnic identities in southern and northern Italy. Historical and contemporary culture and feminism. Enhancement of linguistic skills.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Credit not allowed for both ETST 382 and LGEN 382.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 414 Fourth-Year Language I Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 415 Fourth-Year Language II Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 465A Studies in Foreign Film: The Americas Credits: 3 (3-0-0)
Course Description: Representation of foreign societies through film, taught in English.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGEN 465B Studies in Foreign Film: Asia Credits: 3 (3-0-0)
Course Description: Representation of foreign societies through film, taught in English.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGEN 465C Studies in Foreign Film: Europe Credits: 3 (3-0-0)
Course Description: Representation of foreign societies through film, taught in English.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGEN 465D Studies in Foreign Film: Africa Credits: 3 (3-0-0)
Course Description: Representation of foreign societies through film, taught in English.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 487 Internship Credits: Var[1-12] (0-0-0)
Course Description: Advisor-approved position at a professional off-campus training program with international connections.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 492 Language, Literature, and Society-General Credits: 3 (0-0-3)
Course Description: Integrative study of language, literature and society.
Prerequisite: (LFRE 310 or LGER 310 or LSPA 310) and (LFRE 400 to 481 - at least 2 courses or LGER 400 to 481 - at least 2 courses or LSPA 400 to 481 - at least 2 courses).
Registration Information: Senior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 505 Methods/Technologies in Language Instruction Credits: 2 (2-1-0)
Course Description: Theory and methodology of teaching foreign languages and cultures, including video and computer-assisted technology.
Prerequisite: None.
Registration Information: Admission to Summer Institute for Foreign Language Teaching. Must register for lecture and laboratory.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGEN 510 Research Methods Credit: 1 (1-0-0)
Course Description: Resources and reference tools appropriate to research in foreign languages and literatures.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGEN 516 Theory/Methods-Foreign Language Instruction Credits: 3 (3-0-0)
Course Description: Foreign language teaching methodology.
Prerequisite: None.
Registration Information: Admission to graduate studies in foreign language.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 530 Literary and Cultural Theory Credits: 3 (3-0-0)
Course Description: Theoretical approaches to contemporary literary and cultural criticism.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 535 Graduate Studies in Civilization Credits: 3 (3-0-0)
Course Description: Critical and analytical approaches to a foreign civilization and culture. Research related to language of specialization.
Prerequisite: LFRE 433A or LFRE 433B or LGER 434 or LSPA 436 or LSPA 437.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 545 Translation–Theory and Practice Credits: 3 (0-0-3)
Course Description: Theory and practice of translation. Fundamental concepts of translation and the translation profession. Translation practice. A variety of texts are analyzed, and different translation problems and techniques are presented and put into practice to translate real texts.
Prerequisite: None.
Registration Information: Graduate standing. Reading knowledge of a foreign language required. May be repeated for up to 9 credits. Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGEN 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

LGEN 694 Independent Study: Portfolio Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 698 Research: Project Credits: 3 (0-0-3)
Course Description:
Prerequisite: LGEN 510.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 699 Thesis Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

German (LGER)

LGER 100 First-Year German I Credits: 5 (3-0-2)
Course Description: Essentials of German for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. No previous study in German. Credit not allowed for both LGER 100 and LGER 105. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 101 First-Year German II Credits: 5 (3-0-2)
Course Description: Essentials of German for the continuing student: aural comprehension, speaking, reading, writing.
Prerequisite: LGER 100 or LGER 105.
Registration Information: Must register for lecture and recitation. Placement exam can substitute for LGER 100. Credit allowed for only one of the following: LGER 101, LGER 107, or LGER 108. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face only.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 108 Intensive German I Credits: 5 (3-0-2)
Course Description: First-year German through an accelerated practice (first and second semester combined) of the three modes of communication (interpersonal, interpretive and presentational) and the standards of cultures, connections, comparisons and communities. Designed for students with some prior German language knowledge.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online. Credit not allowed for both LGER 101 and LGER 108.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 120 Reading for Proficiency-German Credits: 3 (3-0-0)
Course Description: Essentials of the German language for developing reading proficiency.
Prerequisite: None.
Registration Information: Credit for LGER 120 not allowed if LGER 101, LGER 107, or LGER 108 has been completed.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 200 Second-Year German I (GT-AH4) Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in German conversation, reading, and writing.
Prerequisite: LGER 101 or LGER 107 or LGER 108.
Registration Information: Placement exam can substitute for course prerequisites. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LGER 201 Second-Year German II (GT-AH4) Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LGER 200.
Registration Information: Placement exam can substitute for LGER 200. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LGER 208 Intensive German II Credits: 5 (5-0-0)
Course Description: Accelerated practice in speaking, reading, writing, and aural comprehension.
Prerequisite: LGER 108.
Registration Information: Placement exam can substitute for LGER 108.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 250 German Language, Literature, Culture in Translation (GT-AH2) Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of the German language, literature, and culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

LGER 251 The Holocaust in Literature and Film Credits: 3 (3-0-0)
Course Description: Literature and the arts through representations of the Holocaust, more appropriately known as the Shoah. What role have the arts played in working through (and memorializing) the past? And what risks are there in "aestheticizing" the Holocaust? Topics include trauma, collective guilt, violence, and the role of the arts in society. Readings and discussion will be in English.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B.

LGER 296 Group Study-German Credits: Var[1-5] (0-0-0)
Course Description: Group study in German language/literature/culture.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LGER 300 Reading and Writing for Communication-German Credits: 3 (3-0-0)
Course Description: Development of reading and writing proficiency through an in-depth examination of contemporary writing.
Prerequisite: LGER 201 or LGER 208.
Registration Information: Placement exam can substitute for course prerequisites.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 301 Oral Communication-German Credits: 3 (3-0-0)
Course Description: In-depth language study to improve proficiency in all language skills emphasizing oral.
Prerequisite: LGER 201.
Registration Information: Placement exam can substitute for LGER 201. Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 310 Approaches to German Literature Credits: 3 (3-0-0)
Course Description: Appreciation and critical readings of representative works in prose, drama, and poetry.
Prerequisite: LGER 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 313 Introduction to German Translation and Interpreting Credits: 3 (3-0-0)
Course Description: Translation and interpreting of written and oral texts into and from German.
Prerequisite: LGER 300.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 326 German Phonetics Credits: 3 (3-0-0)
Course Description: Phonetic principles and their application to language sound system; intensive practice in pronunciation, intonation.
Prerequisite: LGER 300, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 335 Issues in German Culture Credits: 3 (3-0-0)
Course Description: Historical context of contemporary issues in the culture of German-speaking countries.
Prerequisite: LGER 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 336 Issues in Swiss and Austrian Culture Credits: 3 (3-0-0)
Course Description: Swiss and Austrian culture focusing on the development of their respective cultures from the medieval to the modern periods. Taught in German.
Prerequisite: LGER 300.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 345 Business German Credits: 3 (3-0-0)
Course Description: Business and commercial aspects of the German language and culture.
Prerequisite: LGER 300.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 355 20th Century German Literature Credits: 3 (3-0-0)
Course Description: Representative literary works from the 20th century.
Prerequisite: LGER 310.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 365 Introduction to German Cinema Studies Credits: 3 (3-0-0)
Course Description: Terminology, techniques, and approaches specific to German cinema. Taught in German.
Prerequisite: LGER 310 or LGER 335.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 400 Advanced German Communication Skills Credits: 3 (3-0-0)
Course Description: Development of speaking, reading, and writing proficiency through an in-depth examination of representative writings and media communications.
Prerequisite: LGER 300.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 401 Advanced German Oral Communication Credits: 3 (3-0-0)
Course Description: Advanced language study to improve proficiency in German language skills, with an emphasis on oral communication.
Prerequisite: LGER 300.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

LGER 413 Advanced German Translation and Interpreting Credits: 3 (3-0-0)
Course Description: Advanced practice in translation and interpreting of written and oral texts into and from the German.
Prerequisite: LGER 313.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 434 Advanced German Culture Credits: 3 (3-0-0)
Course Description: Critical examination of selected topics in culture and cultural history of German-speaking countries.
Prerequisite: LGER 335 or LGER 336.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 441 Advanced Business German Credits: 3 (3-0-0)
Course Description: Advanced business and commercial aspects of the German language and culture.
Prerequisite: LGER 345.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 450 Selected German Literary Movements and Periods Credits: 3 (3-0-0)
Course Description: Studies in selected literary movements and periods of Germany, such as classicism, realism, naturalism, existentialism.
Prerequisite: LGER 300 and LGER 310.
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 452 Genre Studies in German Credits: 3 (3-0-0)
Course Description: Development of critical approaches to major works in literature through selected literary genres and subgenres.
Prerequisite: LGER 300 and LGER 310.
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 453 Author Studies in German Credits: 3 (3-0-0)
Course Description: Development of critical approaches to authors through the appreciation and analysis of selected works.
Prerequisite: LGER 300 and LGER 310.
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 454 Topic Studies in German Credits: 3 (3-0-0)
Course Description: Selected topic studies such as themes, topics, and interdisciplinary subjects in literature.
Prerequisite: LGER 300 and LGER 310.
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 465 Advanced Studies in German Film Credits: 3 (3-0-0)
Course Description: Representation of German society and culture through film. Taught in German.
Prerequisite: LGER 365.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 492 Seminar-German Language, Literature, and Society Credits: 3 (0-0-3)
Course Description: Integrative study of language, literature, and society emphasizing relationships between texts and the society of their origin.
Prerequisite: (LGER 310) and (LGER 400 to 481 - at least 2 courses).
Registration Information: Senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 495 Independent Study-German Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LGER 500 Language Analysis/Stylistics-German Credits: 3 (3-0-0)
Course Description: Analysis of German structure through the examination of style in literary and non-literary texts.
Prerequisite: LGER 400.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 508 Intensive German-Graduate Review Credits: 4 (3-3-0)
Course Description: Immersion review of German for the teacher, developing intermediate-level proficiency in culture and the four skills.
Prerequisite: None.
Registration Information: Admission to Summer Institute for Foreign Language Teaching. Must register for lecture and laboratory.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 514 Issues in Teaching German Credit: 1 (1-0-0)
Course Description: Current theory and practice in second-language instruction; technological applications.
Prerequisite: None.
Registration Information: Concurrent graduate teaching assistantship required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 525 History of the German Language Credits: 3 (3-0-0)
Course Description: Investigation of both internal (strictly linguistic) and external (sociolinguistic) factors in development of German.
Prerequisite: LGER 400.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 551 Selected German Literary Movements/Periods Credits: 3 (3-0-0)
Course Description: Advanced studies in and critical approaches to selected literary movements or periods.
Prerequisite: None.
Registration Information: Undergraduate degree in German.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 552 Advanced Studies in German Literary Genres Credits: 3 (3-0-0)
Course Description: Advanced studies and critical approaches to literary genres through study of major works in foreign literatures.
Prerequisite: None.
Registration Information: Undergraduate degree in German.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 553 Advanced German Author Studies Credits: 3 (3-0-0)
Course Description: Critical approaches to the study of selected authors through appreciation and analysis of their major works.
Prerequisite: None.
Registration Information: Undergraduate degree in German.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 554 Advanced German Topic Studies Credits: 3 (3-0-0)
Course Description: Selected topics (theme, topoi, and interdisciplinary subjects) in foreign literatures.
Prerequisite: None.
Registration Information: Undergraduate degree in German.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 692 Seminar-German Credits: 3 (0-0-3)
Course Description: Treatment of selected topics in seminar.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Undergraduate degree in German.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

LGER 695 Independent Study-German Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Greek (LGRK)

LGRK 152 Classical Greek I Credits: 3 (3-0-0)
Course Description: Essentials of the Greek language, reading, and translation.
Prerequisite: None.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGRK 153 Classical Greek II Credits: 3 (3-0-0)
Course Description: Essentials of the Greek language, reading, and translation.
Prerequisite: LGRK 152.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

Italian (LITA)

LITA 100 First-Year Italian I Credits: 5 (3-0-2)
Course Description: Essentials of Italian for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. No previous study in Italian. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face. Credit not allowed for both LITA 100 and LITA 105.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LITA 101 First-Year Italian II Credits: 5 (3-0-2)
Course Description: Essentials of Italian for the continuing student: aural comprehension, speaking, reading, writing.
Prerequisite: LITA 100 or LITA 105.
Registration Information: Open to all levels. Must register for lecture and recitation. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face only. Credit not allowed for both LITA 101 and LITA 107.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LITA 200 Second-Year Italian I (GT-AH4) Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in Italian conversation, reading, and writing.
Prerequisite: LITA 101 or LITA 107.
Registration Information: Placement exam can substitute for LITA 101.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LITA 201 Second-Year Italian II (GT-AH4) Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LITA 200.
Registration Information: Placement exam can substitute for LITA 200.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LITA 296 Group Study-Italian Credits: Var[1-5] (0-0-0)
Course Description: Group study in language/literature/culture.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LITA 337 Italian Cinema, Culture, and Society Credits: 3 (3-0-0)
Course Description: Examination of how historical, social, political, and economic forces have shaped Italian society and culture in the modern period, including contemporary Italy, through the prism of film. Taught in Italian.
Prerequisite: LITA 201.
Registration Information: Credit not allowed for both LITA 337 and LITA 365.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LITA 348 Italian for the Creative Professions Credits: 3 (3-0-0)
Course Description: Development of Italian communication skills applied to several professional field and academic areas of interest, including tourism, fashion, the visual arts, gastronomy, and music.
Prerequisite: LITA 201.
Grade Mode: Traditional.
Special Course Fee: No.

LITA 365 Studies in Foreign Film-Italian Credits: 3 (3-0-0)
Course Description: Representation of Italian society through film. Taught in Italian.
Prerequisite: None.
Registration Information: Credit not allowed for both LITA 337 and LITA 365.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LITA 495 Independent Study-Italian Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Must have completed three years of Italian at college level.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Japanese (LJPN)

LJPN 100 First-Year Japanese I Credits: 5 (5-0-0)
Course Description: Essentials of Japanese for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: No previous study in Japanese. Credit not allowed for both LJPN 100 and LJPN 105.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LJPN 101 First-Year Japanese II Credits: 5 (5-0-0)
Course Description: Essentials of Japanese for the continuing student: aural comprehension, speaking, reading, writing.
Prerequisite: LJPN 100 or LJPN 105.
Registration Information: Open to all levels. Credit not allowed for both LJPN 101 and LJPN 107.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LJPN 200 Second-Year Japanese I (GT-AH4) Credits: 5 (5-0-0)
Course Description: Grammar review and extensive practice in Japanese conversation, reading, and writing.
Prerequisite: LJPN 101 or LJPN 107.
Registration Information: Placement exam can substitute for LJPN 101 or LJPN 107. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LJPN 201 Second-Year Japanese II (GT-AH4) Credits: 5 (5-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LJPN 200.
Registration Information: Placement exam can substitute for LJPN 200. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LJPN 208 Kanji Study Credit: 1 (1-0-0)
Course Description: Kanji (Chinese characters) learning strategies, through examination and analysis of Kanji characters.
Prerequisite: LJPN 100 or LJPN 105.
Registration Information: May be taken up to 4 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LJPN 250 Japanese Language, Literature, Culture in Translation (GT-AH2) Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of Japanese language, literature, and culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

LJPN 282A Study Abroad--Japan: Cultural Studies Credits: 3 (0-0-3)
Course Description: Experiential learning of traditional and modern aspects of Japanese culture.
Prerequisite: None.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LJPN 296 Group Study-Japanese Credits: Var[1-5] (0-0-0)
Course Description: Group study in Japanese language/literature/culture.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LJPN 304 Third-Year Japanese I Credits: 3 (3-0-0)
Course Description: Development of reading comprehension, communicative competence, and cultural understanding.
Prerequisite: LJPN 201.
Registration Information: Placement exam can substitute for LJPN 201.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LJPN 305 Third-Year Japanese II Credits: 3 (3-0-0)
Course Description: Enhanced development of reading comprehension, communicative competence, and cultural sensitivity.
Prerequisite: LJPN 304.
Registration Information: Placement exam can substitute for LJPN 304.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LJPN 365 Introduction to Japanese Cinema Studies Credits: 3 (3-0-0)
Course Description: Terminology, techniques, and approaches specific to Japanese cinema. Taught in Japanese.
Prerequisite: LJPN 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LJPN 404 Historical Aspects of the Language and Society Credits: 3 (3-0-0)
Course Description: Advanced Japanese language course designed to further enhance proficiency through a variety of activities.
Prerequisite: LJPN 305.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

LJPN 405 Integrated Japanese: Beyond Words Credits: 3 (3-0-0)
Course Description: Advanced Japanese language course designed to further enhance proficiency through a variety of activities for the continuing student.
Prerequisite: LJPN 305.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

LJPN 408 Advanced Kanji Study Credit: 1 (1-0-0)
Course Description: Kanji learning strategies and acquisition of advanced Kanji characters.
Prerequisite: LJPN 201.
Registration Information: May be taken up to 4 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LJPN 495 Independent Study-Japanese Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Must have completed three years of college-level Japanese.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LJPN 496 Group Study-Japanese Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: LJPN 305.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Korean (LKOR)

LKOR 105 First-Year Korean I Credits: 5 (5-0-0)
Course Description: Essentials of Korean for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: No previous study in Korean.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LKOR 107 First-Year Korean II Credits: 5 (5-0-0)
Course Description: Essentials of Korean for the continuing student: aural comprehension, speaking, reading, writing.
Prerequisite: LKOR 105.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LKOR 202 Intermediate Korean and Culture I Credits: 3 (3-0-0)
Course Description:
Prerequisite: LKOR 107.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LKOR 203 Intermediate Korean and Culture II Credits: 3 (3-0-0)
Course Description:
Prerequisite: LKOR 202.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

Latin (LLAT)

LLAT 100 First Year Latin I Credits: 5 (5-0-0)
Course Description: Essentials of Latin grammar, vocabulary, and phonology.
Prerequisite: None.
Registration Information: Open to all levels. Credit not allowed for both LLAT 100 and LLAT 105.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LLAT 101 First-Year Latin II Credits: 5 (5-0-0)
Course Description: Six tenses of verbs, active and passive; use subjunctive review of the five declensions of nouns and adjectives; new vocabulary.
Prerequisite: LLAT 100 or LLAT 105.
Registration Information: Open to all levels. Credit not allowed for both LLAT 101 and LLAT 107.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LLAT 296 Group Study-Latin Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

Russian (LRUS)

LRUS 100 First-Year Russian I Credits: 5 (5-0-0)
Course Description: Essentials of the Russian for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: No previous study in Russian. Credit not allowed for both LRUS 100 and LRUS 105.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LRUS 101 First-Year Russian II Credits: 5 (5-0-0)
Course Description: Essentials of Russian for the continuing student: aural comprehension, speaking, reading, writing.
Prerequisite: LRUS 100 or LRUS 105.
Registration Information: Open to all levels. Credit not allowed for both LRUS 101 and LRUS 107.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LRUS 200 Second-Year Russian I (GT-AH4) Credits: 4 (4-0-0)
Course Description: Grammar review and extensive practice in Russian conversation, reading, and writing.
Prerequisite: LRUS 101 or LRUS 107.
Registration Information: Placement exam can substitute for LRUS 101.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LRUS 201 Second-Year Russian II (GT-AH4) Credits: 4 (4-0-0)
Course Description: Grammar review and extensive practice in Russian conversation, reading, and writing.
Prerequisite: LRUS 200.
Registration Information: Placement exam can substitute for LRUS 200.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LRUS 250 Russian Language, Literature, Culture in Translation (GT-AH2) Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of Russian language, literature, and culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

LRUS 296 Group Study--Russian Credits: Var[1-5] (0-0-0)
Course Description: Group study in Russian language/literature/culture.
Prerequisite: LRUS 100 to 499 between 3 and 5 credits - at least 3 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LRUS 304 Third-Year Russian I Credits: 3 (3-0-0)
Course Description: Development of reading comprehension, communicative competence, and cultural understanding.
Prerequisite: LRUS 201.
Registration Information: Placement exam can substitute for LRUS 201.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LRUS 305 Third-Year Russian II Credits: 3 (3-0-0)
Course Description: Enhanced development of reading comprehension, communicative competence, and cultural sensitivity.
Prerequisite: LRUS 304.
Registration Information: Placement exam can substitute for LRUS 304.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LRUS 350 Russian Culture Credits: 3 (3-0-0)
Course Description: Russian culture and its development through literature, as well as geography, history, and music.
Prerequisite: LRUS 201.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LRUS 365 Introduction to Russian Cinema Studies Credits: 3 (3-0-0)
Course Description: Terminology, techniques, and approaches specific to Russian cinema. Taught in Russian.
Prerequisite: LRUS 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LRUS 495 Independent Study-Russian Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Must have completed three years of college-level Russian.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LRUS 496 Group Study-Russian Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: LRUS 305.
Registration Information: Placement exam can substitute for LRUS 305.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

American Sign Language (LSGN)

LSGN 100 American Sign Language I Credits: 5 (5-0-0)
Course Description: Vocabulary, grammar and basic conversational skill in ASL, with information on deaf culture.
Prerequisite: None.
Registration Information: Open to all levels. Credit not allowed for both LSGN 100 and LSGN 109.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LSGN 101 American Sign Language II Credits: 5 (5-0-0)
Course Description: Development of communicative competence in ASL skill and expansion of knowledge of deaf culture.
Prerequisite: LSGN 100 or LSGN 109.
Registration Information: Open to all levels. Credit not allowed for both LSGN 101 and LSGN 110.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSGN 200 Second-Year American Sign Language I Credits: 3 (3-0-0)
Course Description: Building intermediate-low level speed/accuracy through complex vocabulary, syntax, depicting verbs and classifiers, and vital aspects of Deaf/ASL culture.
Prerequisite: LSGN 101 or LSGN 110.
Registration Information: Field trips required.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B.

LSGN 201 Second-Year American Sign Language II Credits: 3 (3-0-0)
Course Description: Building intermediate-mid level speed/accuracy through self-generated stories, analysis of ASL semantic structures and vital aspects of Deaf/ASL culture.
Prerequisite: LSGN 200.
Registration Information: Field trips required.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B.

LSGN 296 Group Study-American Sign Language Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

LSGN 304 Deafness and American Sign Language Credits: 3 (3-0-0)
Course Description: Exploration of Deaf culture in the United States, how it has evolved historically, compared to Deaf communities abroad and to the experiences of other marginalized communities in the US. Current public policy debates affecting the Deaf community. Taught in ASL.
Prerequisite: LSGN 201.
Registration Information: LSGN 201 OR conversational proficiency as assessed by course instructor and departmental faculty. Credit not allowed for both LSGN 304 and LSGN 380A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LSGN 347 American Sign Language for Professionals Credits: 3 (3-0-0)
Course Description: American Sign Language vocabulary and knowledge used in human services professions and language teaching. Especially useful for future medical and emergency professionals, educators, and business personnel. Taught in ASL.
Prerequisite: LSGN 201.
Registration Information: Credit not allowed for both LSGN 347 and LSGN 380A2.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Spanish (LSPA)

LSPA 100 First-Year Spanish I Credits: 5 (3-0-2)
Course Description: Essentials of Spanish for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. No previous study in Spanish. Credit allowed for only one of the following: LSPA 100, LSPA 105, or LSPA 106. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 101 First-Year Spanish II Credits: 5 (3-0-2)
Course Description: Essentials of Spanish for the continuing student: aural comprehension, speaking, reading, and writing.
Prerequisite: LSPA 100 or LSPA 105 or LSPA 106.
Registration Information: Must register for lecture and recitation. Placement exam or instructor placement can substitute for course prerequisites. Credit allowed for only one of the following: LSPA 101, LSPA 107, or LSPA 108. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face only.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 106 First-Year Spanish Review Credits: 3 (3-0-0)
Course Description: For students with minimal proficiency in Spanish. Basic review of essential skills: aural comprehension, speaking, reading, and writing.
Prerequisite: None.
Registration Information: Placement exam or instructor placement. Credit allowed for only one of the following: LSPA 100, LSPA 105, or LSPA 106. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 108 Intensive Spanish I Credits: 5 (3-0-2)
Course Description: First-year Spanish through an accelerated practice (first and second semester combined) of the three modes of communication (interpersonal, interpretive and presentational) and the standards of cultures, connections, comparisons and communities. Designed for students with some prior Spanish language knowledge.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online. Credit not allowed for both LSPA 101 and LSPA 108.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 120 Reading for Proficiency-Spanish Credits: 3 (3-0-0)
Course Description: Essentials of language for developing reading proficiency.
Prerequisite: None.
Registration Information: Credit for LSPA 120 not allowed if LSPA 101, LSPA 107, or LSPA 108 has been completed.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 200 Second-Year Spanish I (GT-AH4) Credits: 3 (3-0-0)
Course Description: Review and practice of Spanish language and culture in the three modes of communication: interpersonal, interpretative and presentational communication and in all four skills (speaking, writing, listening, and reading) with a focus on a proficiency level target of intermediate-low.
Prerequisite: LSPA 101 or LSPA 107 or LSPA 108.
Registration Information: Placement exam can substitute for course prerequisites.Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LSPA 201 Second-Year Spanish II (GT-AH4) Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LSPA 200.
Registration Information: Placement exam can substitute for LSPA 200. Credit not allowed for both LSPA 201 and LSPA 228B.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LSPA 208 Intensive Spanish II Credits: 5 (5-0-0)
Course Description: Accelerated practice in speaking, reading, writing, and aural comprehension.
Prerequisite: LSPA 108.
Registration Information: Placement exam can substitute for LSPA 108.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 230 Spanish for Heritage Speakers Credits: 3 (3-0-0)
Course Description: Expands vocabulary, oral communication, writing and reading skills, as well as the contents and contexts of communication in Spanish.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B.

LSPA 250 Spanish Language, Literature, Culture in Translation (GT-AH2) Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of Spanish literature and culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

LSPA 251 Spanish Language for Education Abroad Credits: 3 (3-0-0)
Course Description: Instruction in the language through selected works in Spanish literature and culture that prepares for education abroad experience.
Prerequisite: None.
Registration Information: This is a partial semester course. Offered as an online course only.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 282A Study Abroad: Spain and the Way of St. James Credits: 3 (0-0-3)
Course Description: Culture and history of Spain as encountered along the medieval pilgrimage route of St. James.
Prerequisite: None.
Registration Information: Credit not allowed for LSPA 282A and LSPA 382A.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 296 Group Study-Spanish Credits: Var[1-5] (0-0-0)
Course Description: Group study in language/literature/culture.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LSPA 300 Reading and Writing for Communication-Spanish Credits: 3 (3-0-0)
Course Description: Development of reading and writing proficiency through an in-depth examination of contemporary writing.
Prerequisite: LSPA 201 or LSPA 230.
Registration Information: Placement exam can substitute for LSPA 201. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 301 Oral Communication-Spanish Credits: 3 (3-0-0)
Course Description: In-depth language study to improve proficiency in all language skills emphasizing oral.
Prerequisite: LSPA 201.
Registration Information: Placement exam can substitute for LSPA 201.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 310 Approaches to Spanish Literature Credits: 3 (3-0-0)
Course Description: Appreciation and critical readings of representative works in prose, drama, and poetry.
Prerequisite: LSPA 300.
Registration Information: Placement exam can substitute for LSPA 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 312 Introduction to Spanish Linguistics Credits: 3 (3-0-0)
Course Description: Phonetics, phonology, morphology, syntax, semantics, and pragmatics.
Prerequisite: LSPA 300, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 313 Introduction to Spanish Translation and Interpreting Credits: 3 (3-0-0)
Course Description: Translation and interpreting of written and oral texts into and from the Spanish language.
Prerequisite: LSPA 300.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 326 Spanish Phonetics Credits: 3 (3-0-0)
Course Description: Phonetic principles and their application to Spanish sound system; intensive practice in pronunciation, intonation.
Prerequisite: LSPA 300, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 335 Issues in Hispanic Culture Credits: 3 (3-0-0)
Course Description: Historical context of contemporary issues in the culture of Spanish-speaking countries.
Prerequisite: LSPA 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 340 Spanish for Animal Health and Care Fields Credits: 3 (1-0-2)
Course Description: Develop intermediate-mid level communication skills in Spanish for students in animal care fields. Specific terminology and the basic linguistic skills necessary to communicate about veterinary care and proper handling of livestock. All targeted linguistic forms, communicative activities and assessments are task-based and practical in nature.
Prerequisite: LSPA 200.
Registration Information: Placement exam can substitute for course prerequisite. Sections may be offered as Mixed Face-to-Face or Online. Credit not allowed for both LSPA 280A2 and LSPA 340.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 342 Spanish for Animal Health and Care Fields II Credits: 3 (1-0-2)
Course Description: Continuing development of intermediate-level communication skills in Spanish for students in large and small animal care fields. Development of specific terminology and linguistic skills necessary to communicate about animal health and care. All targeted linguistic forms, communicative activities and assessments are task-based and practical in nature.
Prerequisite: LSPA 340.
Registration Information: Must register for lecture and recitation. Sections may be offered: Mixed Face-to-Face or Online. Credit not allowed for both LSPA 342 and LSPA 380A2.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 343 Spanish Terminology-Animal Health/Agriculture Credits: 3 (1-0-2)
Course Description: Spanish lexicon specific to animal health and plant-based agricultural practices and sciences. Focuses on enhancing vocabulary breadth and depth by developing awareness of both meaning relations among words and morphological composition applied to the production and interpretation of the complex word types found in this field. All course materials are in the target language.
Prerequisite: LSPA 342.
Registration Information: Must register for lecture and recitation. Sections may be offered: Mixed Face-to-Face or Online. Credit not allowed for both LSPA 343 and LSPA 381A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 345 Business Spanish Credits: 3 (3-0-0)
Course Description: Business and commercial aspects of the Spanish language and culture.
Prerequisite: LSPA 300.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 346 Spanish for Health Care Credits: 3 (3-0-0)
Course Description: Specific linguistic and cultural issues necessary to function in the Hispanic health care world.
Prerequisite: LSPA 300.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 347 Spanish for Working with Youth and Families Credits: 3 (3-0-0)
Course Description: Content-based language in the social sciences (Human Development Family Studies, Social Work, Early Childhood Education, etc.) with a multicultural focus. Grammar and vocabulary designed to develop competency in areas listed. Oral component includes working on interview techniques for each area to help students develop cultural and linguistic abilities to work with youth and families from the Spanish-speaking community.
Prerequisite: LSPA 300.
Registration Information: Sections may be offered: Online. Credit not allowed for both LSPA 347 and LSPA 381A2.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 348 Spanish Professional Terminology in Context Credits: 3 (1-0-2)
Course Description: Development of Spanish professional terminology through the study of etymology, meaning relations among words and word formation mechanisms, applied to professional and academic areas of interest. Focused practice on building lexical proficiency for a richer and more accurate spoken and written professional communication.
Prerequisite: LSPA 300 to 365 - at least 3 credits.
Registration Information: Must register for lecture and recitation. Sections may be offered: Mixed Face-to-Face or Online.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 365 Introduction to Spanish Cinema Credits: 3 (3-0-0)
Course Description: Representation of Spanish society through film. Taught in Spanish.
Prerequisite: LSPA 310.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 379 Service Learning-Spanish Credit: 1 (0-2-0)
Course Description: Language-related voluntary community work.
Prerequisite: None.
Registration Information: Concurrent registration with 300-level Spanish course. Written consent of instructor required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LSPA 382A Study Abroad: Camino de Santiago in Spain Credits: 3 (0-0-3)
Course Description: Culture and history of Spain as encountered along the medieval pilgrimage route of St. James. Taught in Spanish.
Prerequisite: LSPA 300.
Registration Information: Credit not allowed for both LSPA 282A and LSPA 382A.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 400 Advanced Spanish Communication Skills Credits: 3 (3-0-0)
Course Description: Development of speaking, reading, and writing proficiency through an in-depth examination of representative writings and media communications.
Prerequisite: LSPA 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 401 Advanced Spanish Oral Communication Credits: 3 (3-0-0)
Course Description: Advanced language study to improve proficiency in Spanish language skills, with an emphasis on oral communication.
Prerequisite: LSPA 300.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 413 Advanced Spanish Translation and Interpreting Credits: 3 (3-0-0)
Course Description: Advanced practice in translation and interpreting of written and oral texts into and from the Spanish language.
Prerequisite: LSPA 313.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 435 Caribbean Culture in Hispanic Literature Credits: 3 (3-0-0)
Course Description: Hispanic-Caribbean cultures with emphasis on African heritage and cultural identify.
Prerequisite: LSPA 335.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 436 Advanced Latin American Culture Credits: 3 (3-0-0)
Course Description: Latin American cultural identities and their history.
Prerequisite: LSPA 335.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 437 Advanced Spanish Culture Credits: 3 (3-0-0)
Course Description: Cultural characteristics of Spanish society through the ages.
Prerequisite: LSPA 335.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 441 Advanced Business Spanish Credits: 3 (3-0-0)
Course Description: Advanced business and commercial aspects of the Spanish language and culture.
Prerequisite: LSPA 345.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 442 Colonial Latin American Literature Credits: 3 (3-0-0)
Course Description: Literature and literary culture of colonial Latin America. Readings and essays are in Spanish.
Prerequisite: (LSPA 300) and (LSPA 310).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 443 Spanish Theatre Credits: 3 (3-0-0)
Course Description: Major authors and works of Spanish theatre.
Prerequisite: (LSPA 300) and (LSPA 310).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 444 The Intercultural Workplace-Animal Health/Ag Credits: 3 (1-0-2)
Course Description: Continued development of Spanish competency applied to cultural awareness in a diverse workplace. Analytical tools to uncover students' own culturally and socially constructed patterns of behavior and beliefs, as well as those of a different culture. Implications of cultural displacement in a diverse workplace and agricultural and animal care fields; personal distance and power relative to age/gender/ethnic relations, as manifested in verbal and non-verbal communication.
Prerequisite: LSPA 343.
Registration Information: Must register for lecture and recitation. Sections may be offered: Mixed Face-to-Face or Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 445 Women Writers in the Hispanic World Credits: 3 (3-0-0)
Course Description: Selected Hispanic women writers in a variety of genres emphasizing relationships among gender, culture, and writing.
Prerequisite: (LSPA 300) and (LSPA 310).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 449 Spanish-American Literary Movements and Periods Credits: 3 (3-0-0)
Course Description: Studies in selected literary movements and periods of Spanish America such as classicism, realism, naturalism, existentialism.
Prerequisite: (LSPA 300) and (LSPA 310).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 450 Selected Spanish Literary Movements and Periods Credits: 3 (3-0-0)
Course Description: Studies in selected literary movements and periods of Spain, such as classicism, realism, naturalism, existentialism.
Prerequisite: (LSPA 300) and (LSPA 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 452 Genre Studies in Spanish Credits: 3 (3-0-0)
Course Description: Development of critical approaches to major works in literature through selected literary genres and subgenres.
Prerequisite: (LSPA 300) and (LSPA 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 453 Author Studies in Spanish Credits: 3 (3-0-0)
Course Description: Development of critical approaches to authors through the appreciation and analysis of selected works.
Prerequisite: (LSPA 300) and (LSPA 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 454 Topic Studies in Spanish Credits: 3 (3-0-0)
Course Description: Selected topic studies such as themes, topoi, and interdisciplinary studies in literature.
Prerequisite: (LSPA 300) and (LSPA 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 465A Studies in Foreign Film: Spain Credits: 3 (3-0-0)
Course Description: Representation of Spanish society or specific topics through film. Taught in Spanish.
Prerequisite: LSPA 310 and LSPA 335.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 465B Studies in Foreign Film: Latin America Credits: 3 (3-0-0)
Course Description: Representation of Latin American societies or specific topics through film. Taught in Spanish.
Prerequisite: LSPA 310 and LSPA 335.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 470 Spanish Grammatical Constructions Credits: 3 (3-0-0)
Course Description: Linguistic analysis of selected Spanish grammatical constructions (word order, word formation, and sentence structure), their relationship to meaning.
Prerequisite: LSPA 400.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 479 Service Learning-Spanish Credit: 1 (0-2-0)
Course Description: Language-related voluntary community work.
Prerequisite: None.
Registration Information: Concurrent registration with 400-level Spanish course. Written consent of the instructor of the 400-level Spanish course required. May be taken up to 3 times for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LSPA 492 Seminar-Spanish Language, Literature, and Society Credits: 3 (0-0-3)
Course Description: Integrative study of language, literature, and society.
Prerequisite: (LSPA 310) and (LSPA 400 to 479 - at least 2 courses).
Registration Information: Senior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 495 Independent Study-Spanish Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Three years of college-level Spanish.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LSPA 500A Spanish Language Analysis: Syntax Credits: 3 (3-0-0)
Course Description: Analysis of Spanish structure through the examination of syntax.
Prerequisite: LSPA 400.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 500B Spanish Language Analysis: Phonetics and Phonology Credits: 3 (3-0-0)
Course Description: Theoretical and practical study of speech sounds (phonetics), and the systematic use of such sounds in language (phonology).
Prerequisite: LSPA 400.
Registration Information: Graduate standing.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 508 Intensive Spanish-Graduate Review Credits: 4 (3-3-0)
Course Description: Immersion review of Spanish for the teacher; developing intermediate-level proficiency in culture and the four skills.
Prerequisite: None.
Registration Information: Admission to Summer Institute for Foreign Language Teaching. Must register for lecture and laboratory.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 514 Issues in Teaching Spanish Credit: 1 (1-0-0)
Course Description: Current theory and practice in second-language instruction; technological applications.
Prerequisite: None.
Registration Information: Concurrent graduate teaching assistantship required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 525 History of the Spanish Language Credits: 3 (3-0-0)
Course Description: Investigation of both internal (strictly linguistic) and external (sociolinguistic) factors in development of the Spanish language.
Prerequisite: LSPA 400.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 536 Topics in Spanish Linguistics Credits: 3 (3-0-0)
Course Description: Acquisition, discourse analysis, and language change and variation over time and space.
Prerequisite: LSPA 500.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 549 Literary Periods of Spanish America Credits: 3 (3-0-0)
Course Description: Advanced studies in critical approaches to selected literary movements or periods of Spanish America.
Prerequisite: None.
Registration Information: Undergraduate degree in Spanish.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 551 Selected Spanish Literary Movements/Periods Credits: 3 (3-0-0)
Course Description: Advanced studies in and critical approaches to selected literary movements or periods.
Prerequisite: None.
Registration Information: Undergraduate degree in Spanish.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 552 Advanced Studies in Spanish Literary Genres Credits: 3 (3-0-0)
Course Description: Advanced studies in and critical approaches to literary genres through study of major works in foreign literatures.
Prerequisite: None.
Registration Information: Undergraduate degree in Spanish.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 553 Advanced Spanish Author Studies Credits: 3 (3-0-0)
Course Description: Critical approaches to the study of selected authors through appreciation and analysis of their major works.
Prerequisite: None.
Registration Information: Undergraduate degree in Spanish.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 554 Advanced Topic Studies-Spanish Credits: 3 (3-0-0)
Course Description: Selected topics (theme, topoi, and interdisciplinary subjects) in Spanish literature.
Prerequisite: None.
Registration Information: Undergraduate degree in Spanish.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 692 Seminar-Spanish Credits: 3 (0-0-3)
Course Description: Treatment of selected topics in seminar.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Undergraduate degree in Spanish.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

LSPA 695 Independent Study-Spanish Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Languages, Literatures, and Cultures

Learning Outcomes

Upon completion of the program of study, students will demonstrate:

- Communicative oral skills in the target language, including grammatical accuracy, correct use of tense, fluency, appropriate intonation, suitable vocabulary and discourse devices for expressing opinions or when giving research presentations.
- Communicative writing skills in the target language, including clarity of ideas, grammatical accuracy and appropriate vocabulary, adequate elaboration of ideas through a variety of sentence structures and vocabulary, and logical flow of ideas through the use of discourse organizational devices.
- Analytical skill in literary and cultural texts of the target language, including ability to formulate and present a topic of inquiry, to critically analyze the topic with valid supporting evidence, and to cogently synthesize and summarize the ideas in bibliographical sources and the results of their own analytical inquiry.
- Increased sensitivity to and appreciation of cultural and linguistic differences.

Study Abroad

The department strongly encourages education or other experiences abroad and has exchange agreements in place with universities in several countries. Students should visit the department prior to studying abroad for clarification on course transfers. Information is available through Education Abroad (http://educationabroad.colostate.edu).

Minors and Other Languages

Minors are offered in Chinese, French, German, Japanese, and Spanish, as well as interdisciplinary minors in Arabic, Italian and Russian Studies.

Basic courses may also be taken in Latin and American Sign Language.

Potential Occupations

Available career choices include, but are not limited to: bilingual educator, foreign language teacher, translation/interpretation, linguist, civil service, foreign service and diplomacy, medical fields, social services, immigration/naturalization, journalism/ broadcasting, customs, banking, import/exports, sales/customer service, publishing, international business, international nonprofit organizations, government/military intelligence, global tourism.

Concentrations

- French Concentration
- German Concentration
- Spanish Concentration

Teaching Endorsement

The Teacher Preparation Program is a non-degree program; bachelor degrees in education are not awarded. Students interested in pursuing a teaching license through CSU may refer to the Center for Educator Preparation (CEP) (https://www.chhs.colostate.edu/soe/center-for-educator-preparation) and the School of Education section for general information.

- Teaching Endorsement

Major in Languages, Literatures, and Cultures, French Concentration

Requirements
Effective Fall 2015

All majors and minors in the department must earn a minimum grade of C (a grade of C- is not acceptable) in each upper-division course that carries the LARA, LCHI, LFRE, LGEN, LGER, LGRK, LITA, LJPN, LKOR, LLAT, LRUS, LSGN, or LSPA subject code.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
HIST 101 or 171	Western Civilization, Modern (GT-HI1) World History~ 1500-Present (GT-HI1)	3D	3
LFRE 100	First-Year French I		5
LFRE 101	First-Year French II		5
Arts and Humanities[1]		3B	3
Social and Behavioral Sciences		3C	3
Electives			8
	Total Credits		30

Sophomore

LFRE 200	Second-Year French I (GT-AH4)	3B	3
LFRE 201	Second-Year French II (GT-AH4)	3B	3
Advanced Writing		2	3
Arts and Humanities[1]		3B	3
Diversity and Global Awareness		3E	3
Quantitative Reasoning		1B	3
Biological and Physical Sciences		3A	7
Elective			3
	Total Credits		28

Junior

LFRE 300	Reading and Writing for Communication-French	3
Select three of the following French elective courses:		9
LFRE 301	Oral Communication-French	
LFRE 312	Introduction to French Linguistics	
LFRE 313	Introduction to French Translation and Interpreting	
LFRE 326	French Phonetics	
LFRE 345	Business French	
LFRE 355	20th Century French Literature	
LFRE 365	Introduction to French Cinema Studies	
LFRE 413	Advanced French Translation and Interpreting	
LFRE 433A[2]	Advanced French/Francophone Culture: Representations	
LFRE 433B[2]	Advanced French/Francophone Culture: Center and Margins	
LFRE 441	Advanced Business French	
LFRE 450	Selected French Literary Movements and Periods	
LFRE 452	Genre Studies in French	
LFRE 453	Author Studies in French	
LFRE 454	Topic Studies in French	
LFRE 460	French/Francophone Women Writers	

LFRE 470	French Grammatical Constructions		
LFRE 310	Approaches to French Literature		3
LFRE 335	Issues in French/Francophone Culture		3
Electives			12
	Total Credits		30

Senior

LFRE 400	Advanced French Communication Skills		3
Select one from the following:			3
LFRE 433A[2]	Advanced French/Francophone Culture: Representations	4A	
LFRE 433B[2]	Advanced French/Francophone Culture: Center and Margins	4A	
Select one French Elective course from the following not taken elsewhere:			3
LFRE 413	Advanced French Translation and Interpreting		
LFRE 433A[2]	Advanced French/Francophone Culture: Representations	4A	
LFRE 433B[2]	Advanced French/Francophone Culture: Center and Margins	4A	
LFRE 441	Advanced Business French		
LFRE 450	Selected French Literary Movements and Periods		
LFRE 452	Genre Studies in French		
LFRE 453	Author Studies in French		
LFRE 454	Topic Studies in French		
LFRE 460	French/Francophone Women Writers		
LFRE 470	French Grammatical Constructions		
LFRE 492[3]	Seminar-French Language, Literature, and Society		
Select one literature course from the following not taken elsewhere:			3
LFRE 450	Selected French Literary Movements and Periods		
LFRE 452	Genre Studies in French		
LFRE 453	Author Studies in French		
LFRE 454	Topic Studies in French		
LFRE 460	French/Francophone Women Writers		
LFRE 492[3]	Seminar-French Language, Literature, and Society		
Select one from the following:			3
LFRE 492[3]	Seminar-French Language, Literature, and Society	4B,4C	
LGEN 492	Language, Literature, and Society-General	4B,4C	
Electives[4]			17
	Total Credits		32
	Program Total Credits:		120

1. Select from the list of courses in category 3B of the All-University Core Curriculum (AUCC). The 200-level French courses may not be used here.
2. Students must take either LFRE 433A or LFRE 433B in the senior year to satisfy AUCC category 4A. Whichever course is not taken there may be taken either in the junior year as part of the three-course French elective selection or in the senior year as a French elective.
3. LFRE 492 may be taken for up to six credits.
4. Select enough elective credits to bring program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level). A minimum of 9 elective credits must be upper-division.

Major Completion Map

Distinctive Requirements for Degree Program:
All majors and minors in the department must earn a minimum grade of C (a grade of C- is not acceptable) in each upper- division course that carries the LARA, LCHI, LFRE, LGEN, LGER, LGRK, LITA, LJPN, LKOR, LLAT, LRUS, LSGN, or LSPA subject code.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
Select one course from the following:					3

HIST 101	Western Civilization, Modern (GT-HI1)			3D	
HIST 171	World History, 1500-Present (GT-HI1)			3D	
LFRE 100	First-Year French I	X			5
Elective					3
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
LFRE 101	First-Year French II	X			5
Arts and Humanities				3B	3
Social and Behavioral Sciences				3C	3
Electives					5
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				16
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
LFRE 200	Second-Year French I (GT-AH4)	X		3B	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
Diversity and Global Awareness				3E	3
Elective					3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
LFRE 201	Second-Year French II (GT-AH4)	X		3B	3
Advanced Writing				2	3
Biological and Physical Sciences				3A	4
Quantitative Reasoning		X		1B	3
	Total Credits				13
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
LFRE 300	Reading and Writing for Communication-French	X			3
Upper-Division LFRE Elective (See List on Concentration Requirements Tab)					3
Electives					9
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
LFRE 310	Approaches to French Literature	X			3
LFRE 335	Issues in French/Francophone Culture	X			3
Upper-Division LFRE Electives (See List on Concentration Requirements Tab)					6
Elective					3
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
LFRE 400	Advanced French Communication Skills	X			3
Select one course from the following:					3
LFRE 433A	Advanced French/Francophone Culture: Representations		X	4A	
LFRE 433B	Advanced French/Francophone Culture: Center and Margins		X	4A	
Select one course from the following:					3
LFRE 450	Selected French Literary Movements and Periods		X		
LFRE 452	Genre Studies in French		X		
LFRE 453	Author Studies in French		X		
LFRE 454	Topic Studies in French		X		
LFRE 460	French/Francophone Women Writers		X		
LFRE 492	Seminar-French Language, Literature, and Society		X	4B,4C	

Electives					7
	Total Credits				16
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
LFRE 492	Seminar-French Language, Literature, and Society	X		4B,4C	
LGEN 492	Language, Literature, and Society-General	X		4B,4C	
LFRE 4**		X			3
Electives		X			10
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				16
	Program Total Credits:				120

Major in Languages, Literatures, and Cultures, German Concentration

Requirements
Effective Fall 2015

All majors and minors in the department must earn a minimum grade of C (a grade of C- is not acceptable) in each upper-division course that carries the LARA, LCHI, LFRE, LGEN, LGER, LGRK, LITA, LJPN, LKOR, LLAT, LRUS, LSGN, or LSPA subject code.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
HIST 101 or 171	Western Civilization, Modern (GT-HI1) World History~ 1500-Present (GT-HI1)	3D	3
LGER 100	First-Year German I		5
LGER 101	First-Year German II		5
Arts and Humanities[1]		3B	3
Social and Behavioral Sciences		3C	3
Electives			8
	Total Credits		30

Sophomore

LGER 200	Second-Year German I (GT-AH4)	3B	3
LGER 201	Second-Year German II (GT-AH4)	3B	3
Advanced Writing		2	3
Arts and Humanities[1]		3B	3
Biological and Physical Sciences		3A	7
Global and Cultural Sciences		3E	3
Mathematics		1B	3
Electives			3
	Total Credits		28

Junior

LGER 300	Reading and Writing for Communication-German	3
Select three German elective courses from the following:		9
LGER 301	Oral Communication-German	
LGER 313	Introduction to German Translation and Interpreting	
LGER 326	German Phonetics	
LGER 335[2]	Issues in German Culture	

LGER 336[2]	Issues in Swiss and Austrian Culture		
LGER 345	Business German		
LGER 355	20th Century German Literature		
LGER 365	Introduction to German Cinema Studies		
LGER 401	Advanced German Oral Communication		
LGER 413	Advanced German Translation and Interpreting		
LGER 441	Advanced Business German		
LGER 450	Selected German Literary Movements and Periods		
LGER 452	Genre Studies in German		
LGER 453	Author Studies in German		
LGER 454	Topic Studies in German		
LGER 465	Advanced Studies in German Film		
LGER 310	Approaches to German Literature		3
Select one course from the following:			3
LGER 335[2]	Issues in German Culture		
LGER 336[2]	Issues in Swiss and Austrian Culture		
Electives			12
	Total Credits		30

Senior

Select one from the following:			3
LGEN 492	Language, Literature, and Society-General	4B,4C	
LGER 492[3]	Seminar-German Language, Literature, and Society	4B,4C	
LGER 400	Advanced German Communication Skills		3
LGER 434	Advanced German Culture	4A	3
Select one German elective course from the following not taken in the junior year.[4]			3
LGER 401	Advanced German Oral Communication		
LGER 413	Advanced German Translation and Interpreting		
LGER 441	Advanced Business German		
LGER 450	Selected German Literary Movements and Periods		
LGER 452	Genre Studies in German		
LGER 453	Author Studies in German		
LGER 454	Topic Studies in German		
LGER 465	Advanced Studies in German Film		
LGER 492[3]	Seminar-German Language, Literature, and Society	4B,4C	
Select one literature course from the following not taken elsewhere:			3
LGER 450	Selected German Literary Movements and Periods		
LGER 452	Genre Studies in German		
LGER 453	Author Studies in German		
LGER 454	Topic Studies in German		
LGER 465	Advanced Studies in German Film		
LGER 492[3]	Seminar-German Language, Literature, and Society	4B,4C	
Electives[4]			17
	Total Credits		32
	Program Total Credits:		120

1. Select from the list of courses in category 3B of the All-University Core Curriculum (AUCC). The 200-level German courses may not be used to fulfill category 3B in this concentration.
2. Students must select either LGER 335 or LGER 336. Whichever of the two is not selected may be included among the selection of three courses in the junior year.
3. LGER 492 may be taken for up to six credits.
4. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400- level). A minimum of 9 elective credits must be upper-division.

Major Completion Map

Distinctive Requirements for Degree Program:

All majors and minors in the department must earn a minimum grade of C (a grade of C- is not acceptable) in each upper- division course that carries the LARA, LCHI, LFRE, LGEN, LGER, LGRK, LITA, LJPN, LKOR, LLAT, LRUS, LSGN, or LSPA subject code.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
Select one course from the following:					3
HIST 101	Western Civilization, Modern (GT-HI1)			3D	
HIST 171	World History, 1500-Present (GT-HI1)			3D	
LGER 100	First-Year German I	X			5
Elective					3
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
LGER 101	First-Year German II	X			5
Arts and Humanities				3B	3
Social and Behavioral Sciences				3C	3
Electives					5
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
LGER 200	Second-Year German I (GT-AH4)	X		3B	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
Global and Cultural Awareness				3E	3
Elective					3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
LGER 201	Second-Year German II (GT-AH4)	X		3B	3
Advanced Writing				2	3
Biological and Physical Sciences				3A	4
Mathematics		X		1B	3
	Total Credits				13

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
LGER 300	Reading and Writing for Communication-German	X			3
Upper-Division LGER Elective (See List on Concentration Requirements Tab)					3
Electives					9
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
LGER 310	Approaches to German Literature	X			3
Select one course from the following:					3
LGER 335	Issues in German Culture	X			
LGER 336	Issues in Swiss and Austrian Culture	X			
Upper-Division LGER Electives (See List on Concentration Requirements Tab)					6
Elective					3
	Total Credits				15

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
LGER 400	Advanced German Communication Skills	X			3
LGER 434	Advanced German Culture		X	4A	3

Select one course from the following:					3
LGER 450	Selected German Literary Movements and Periods		X		
LGER 452	Genre Studies in German		X		
LGER 453	Author Studies in German		X		
LGER 454	Topic Studies in German		X		
LGER 465	Advanced Studies in German Film		X		
LGER 492	Seminar-German Language, Literature, and Society		X	4B,4C	
Electives					7
	Total Credits				16

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
LGER 492	Seminar-German Language, Literature, and Society	X		4B,4C	
LGEN 492	Language, Literature, and Society-General	X		4B,4C	
LGER 4**		X			3
Electives		X			10
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				16
	Program Total Credits:				120

Major in Languages, Literatures, and Cultures, Spanish Concentration

carries the LARA, LCHI, LFRE, LGEN, LGER, LGRK, LITA, LJPN, LKOR, LLAT, LRUS, LSGN, or LSPA subject code.

Requirements
Effective Fall 2019

All majors and minors in the department must earn a minimum grade of C (a grade of C- is not acceptable) in each upper-division course that

Freshman

		AUCC	**Credits**
CO 150	College Composition (GT-CO2)	1A	3
HIST 101 or 171	Western Civilization, Modern (GT-HI1) World History~ 1500-Present (GT-HI1)	3D,3D	3
LSPA 100	First-Year Spanish I		5
LSPA 101	First-Year Spanish II		5
Arts and Humanities[1]		3B	3
Social and Behavioral Sciences		3C	3
Electives			8
	Total Credits		30

Sophomore

LSPA 200	Second-Year Spanish I (GT-AH4)	3B	3
LSPA 201 or 230	Second-Year Spanish II (GT-AH4) Spanish for Heritage Speakers	3B	3
Advanced Writing		2	3
Arts and Humanities[1]		3B	3
Diversity and Global Awareness		3E	3
Quantitative Reasoning		1B	3
Biological and Physical Sciences		3A	7
Electives			3
	Total Credits		28

Junior

LSPA 300	Reading and Writing for Communication-Spanish	3
Select three courses from the following Spanish electives:		9
LSPA 301	Oral Communication-Spanish	
LSPA 312	Introduction to Spanish Linguistics	
LSPA 313	Introduction to Spanish Translation and Interpreting	
LSPA 326	Spanish Phonetics	
LSPA 345	Business Spanish	
LSPA 346	Spanish for Health Care	
LSPA 348	Spanish Professional Terminology in Context	
LSPA 365	Introduction to Spanish Cinema	
LSPA 401	Advanced Spanish Oral Communication	
LSPA 413	Advanced Spanish Translation and Interpreting	
LSPA 435[2]	Caribbean Culture in Hispanic Literature	
LSPA 436[2]	Advanced Latin American Culture	
LSPA 437[2]	Advanced Spanish Culture	
LSPA 441	Advanced Business Spanish	
LSPA 442	Colonial Latin American Literature	
LSPA 443	Spanish Theatre	
LSPA 445	Women Writers in the Hispanic World	
LSPA 449	Spanish-American Literary Movements and Periods	
LSPA 450	Selected Spanish Literary Movements and Periods	
LSPA 452	Genre Studies in Spanish	
LSPA 453	Author Studies in Spanish	
LSPA 454	Topic Studies in Spanish	
LSPA 465A	Studies in Foreign Film: Spain	
LSPA 465B	Studies in Foreign Film: Latin America	
LSPA 470	Spanish Grammatical Constructions	
LSPA 310	Approaches to Spanish Literature	3
LSPA 335	Issues in Hispanic Culture	3
Electives		12
	Total Credits	30

Senior

Select one course from the following:			3
LGEN 492	Language, Literature, and Society-General	4B,4C	
LSPA 492[3]	Seminar-Spanish Language, Literature, and Society	4B,4C	
LSPA 400	Advanced Spanish Communication Skills		3
Select one Spanish elective from the following not taken elsewhere:			3
LSPA 401	Advanced Spanish Oral Communication		
LSPA 413	Advanced Spanish Translation and Interpreting		
LSPA 435[2]	Caribbean Culture in Hispanic Literature	4A	
LSPA 436[2]	Advanced Latin American Culture	4A	
LSPA 437[2]	Advanced Spanish Culture	4A	
LSPA 441	Advanced Business Spanish		
LSPA 442	Colonial Latin American Literature		
LSPA 443	Spanish Theatre		
LSPA 445	Women Writers in the Hispanic World		
LSPA 449	Spanish-American Literary Movements and Periods		
LSPA 450	Selected Spanish Literary Movements and Periods		
LSPA 452	Genre Studies in Spanish		

LSPA 453	Author Studies in Spanish		
LSPA 454	Topic Studies in Spanish		
LSPA 465A	Studies in Foreign Film: Spain		
LSPA 465B	Studies in Foreign Film: Latin America		
LSPA 470	Spanish Grammatical Constructions		
Select one culture course not taken elsewhere from the following:[2]			3
LSPA 435	Caribbean Culture in Hispanic Literature	4A	
LSPA 436	Advanced Latin American Culture	4A	
LSPA 437	Advanced Spanish Culture	4A	
Select one literature course not taken elsewhere from the following:			3
LSPA 442	Colonial Latin American Literature		
LSPA 443	Spanish Theatre		
LSPA 445	Women Writers in the Hispanic World		
LSPA 449	Spanish-American Literary Movements and Periods		
LSPA 450	Selected Spanish Literary Movements and Periods		
LSPA 452	Genre Studies in Spanish		
LSPA 453	Author Studies in Spanish		
LSPA 454	Topic Studies in Spanish		
LSPA 492[3]	Seminar-Spanish Language, Literature, and Society	4B,4C	
Electives[4]			17
	Total Credits		32
	Program Total Credits:		120

1 Select from the list of courses in category 3B of the AUCC. The 200-level Spanish courses may not be selected here.

2 Students must select one course from LSPA 435, LSPA 436, LSPA 437 in the senior year to fulfill AUCC category 4A. The two courses not taken to fulfill the 4A requirement may be taken in either the junior or senior year as a Spanish elective.

3 LSPA 492 may be taken for up to six credits.

4 Select enough elective credits to bring program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level). A minimum of 9 credits of electives must be upper-division.

Major Completion Map

Distinctive Requirements for Degree Program:
All majors and minors in the department must earn a minimum grade of C (a grade of C- is not acceptable) in each upper- division course that carries the LARA, LCHI, LFRE, LGEN, LGER, LGRK, LITA, LJPN, LKOR, LLAT, LRUS, LSGN, or LSPA subject code.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
Select one course from the following:					3
HIST 101	Western Civilization, Modern (GT-HI1)			3D	
HIST 171	World History, 1500-Present (GT-HI1)			3D	
LSPA 100	First-Year Spanish I	X			5
Electives					3-5
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
LSPA 101	First-Year Spanish II	X			5
Arts and Humanities				3B	3
Social and Behavioral Sciences				3C	3
Electives					5
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
LSPA 200	Second-Year Spanish I (GT-AH4)	X		3B	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
Diversity and Global Awareness				3E	3
Elective					3
	Total Credits				15

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:		X			3
LSPA 201	Second-Year Spanish II (GT-AH4)			3B	
LSPA 230	Spanish for Heritage Speakers			3B	
Advanced Writing				2	3
Biological and Physical Sciences				3A	4
Quantitative Reasoning				1B	3
	Total Credits				13

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
LSPA 300	Reading and Writing for Communication-Spanish	X			3
Upper-Division LSPA Elective (See List on Concentration Requirements Tab)					3
Electives					9
	Total Credits				15

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
LSPA 310	Approaches to Spanish Literature	X			3
LSPA 335	Issues in Hispanic Culture	X			3
Upper-Division LSPA Electives (See List on Concentration Requirements Tab)					6
Elective					3
	Total Credits				15

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
LSPA 400	Advanced Spanish Communication Skills	X			3
Select one course from the following:			X		3
LSPA 435	Caribbean Culture in Hispanic Literature			4A	
LSPA 436	Advanced Latin American Culture			4A	
LSPA 437	Advanced Spanish Culture			4A	
Select one course from the following:			X		3
LSPA 442	Colonial Latin American Literature				
LSPA 443	Spanish Theatre				
LSPA 445	Women Writers in the Hispanic World				
LSPA 449	Spanish-American Literary Movements and Periods				
LSPA 450	Selected Spanish Literary Movements and Periods				
LSPA 452	Genre Studies in Spanish				
LSPA 453	Author Studies in Spanish				
LSPA 454	Topic Studies in Spanish				
LSPA 492	Seminar-Spanish Language, Literature, and Society			4B,4C	
Electives					7
	Total Credits				16

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:		X			3
LSPA 492	Seminar-Spanish Language, Literature, and Society			4B,4C	
LGEN 492	Language, Literature, and Society-General			4B,4C	
LSPA 4**		X			3

Electives	X	10
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X	
Total Credits		16
Program Total Credits:		120

Major in Languages, Literatures, and Cultures, Teaching Endorsement

Students interested in pursuing a teaching license through CSU may refer to the Center for Educator Preparation (CEP) (https://www.chhs.colostate.edu/soe/center-for-educator-preparation) and the School of Education section for general information.

Requirements Effective Fall 2019

All majors and minors in the department must earn a minimum grade of C (a grade of C- is not acceptable) in each upper-division course that carries the LARA, LCHI, LFRE, LGEN, LGER, LGRK, LITA, LJPN, LKOR, LLAT, LRUS, LSGN, or LSPA subject code.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
Select one course from the following:			3
HIST 101	Western Civilization, Modern (GT-HI1)	3D	
HIST 171	World History, 1500-Present (GT-HI1)	3D	
L*** 200 Second Year Language I			3
Select one from the following:			3
L*** 201 Second Year Language II			
LSPA 230	Spanish for Heritage Speakers	3B	
Biological and Physical Sciences		3A	4
Quantitative Reasoning		1B	3
Electives			8
	Total Credits		27

Sophomore

CO 300	Writing Arguments (GT-CO3)	2	3
EDUC 275	Schooling in the United States (GT-SS3)	3C	3
EDUC 340	Literacy and the Learner		3
L*** 300 Reading and Writing for Communication			3
L*** 310 Approaches to Literature			3
L*** 326 Phonetics			3
L*** 335 Issues in Culture			3
Arts and Humanities[1]		3B	3
Biological and Physical Sciences		3A	3
Diversity and Global Awareness		3E	3
Social and Behavioral Sciences		3C	3
	Total Credits		33

Junior

Select one course from the following:			3
E 320	Introduction to the Study of Language		
LFRE 312	Introduction to French Linguistics		
LSPA 312	Introduction to Spanish Linguistics		
EDUC 331	Educational Technology and Assessment		2
EDUC 350	Instruction I-Individualization/Management		3
EDUC 386	Practicum-Instruction I		1
L*** 400 Advanced Communication Skills			3

Select one course from the following:			3
LFRE 433A	Advanced French/Francophone Culture: Representations	4A	
LFRE 433B	Advanced French/Francophone Culture: Center and Margins	4A	
LGER 434	Advanced German Culture	4A	
LSPA 435	Caribbean Culture in Hispanic Literature	4A	
LSPA 436	Advanced Latin American Culture	4A	
LSPA 437	Advanced Spanish Culture	4A	
Select one course from the following:			3
LFRE 450	Selected French Literary Movements and Periods		
LFRE 452	Genre Studies in French		
LFRE 453	Author Studies in French		
LFRE 454	Topic Studies in French		
LFRE 460	French/Francophone Women Writers		
LGER 450	Selected German Literary Movements and Periods		
LGER 452	Genre Studies in German		
LGER 453	Author Studies in German		
LGER 454	Topic Studies in German		
LGER 465	Advanced Studies in German Film		
LSPA 442	Colonial Latin American Literature		
LSPA 443	Spanish Theatre		
LSPA 445	Women Writers in the Hispanic World		
LSPA 449	Spanish-American Literary Movements and Periods		
LSPA 450	Selected Spanish Literary Movements and Periods		
LSPA 452	Genre Studies in Spanish		
LSPA 453	Author Studies in Spanish		
LSPA 454	Topic Studies in Spanish		
L*** 300- or 400- level language course			9
Arts and Humanities[1]		3B	3
	Total Credits		30

Senior

Select one course from the following:			3
E 324	Teaching English as a Second Language		
LSPA 348	Spanish Professional Terminology in Context		
LSPA 470	Spanish Grammatical Constructions		
EDUC 450	Instruction II-Standards and Assessment		4
EDUC 462	Methods and Assessment in Teaching Languages		4
EDUC 485B	Student Teaching: Secondary		11
EDUC 486E	Practicum: Instruction II		1
EDUC 493A	Seminar: Professional Relations		1
L*** 492 Language, Literature, and Society		4B,4C	3
L*** 400-level language			3
	Total Credits		30
	Program Total Credits:		120

[1] Select from the list of non-language courses in category 3B of the AUCC.

Certificate in Spanish for Animal Health and Care

The Certificate in Spanish for Animal Health and Care is designed for students who are preparing for a career in large and small animal production and care, as well as for practicing professionals in these and related fields. The certificate is intended to develop intermediate-level, field-specific communication skills in Spanish.

Requirements Effective Fall 2018

Additional coursework may be required due to prerequisites.

Code	Title	Credits
LSPA 340	Spanish for Animal Health and Care Fields	3
LSPA 342	Spanish for Animal Health and Care Fields II	3
LSPA 343	Spanish Terminology-Animal Health/ Agriculture	3
LSPA 444	The Intercultural Workplace-Animal Health/ Ag	3
Program Total Credits:		12

Minor in Chinese

Requirements Effective Fall 2015

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

All majors and minors in the department must earn a minimum grade of C (a grade of C- is not acceptable) in each upper-division course that carries the LCHI subject code. Courses taught in English may not be used to meet the requirements for the minor.

Code	Title	Credits
Lower Division Courses (9 credits may apply toward the minor): [1]		9
LCHI 100	First-Year Chinese I	
LCHI 101	First-Year Chinese II	
LCHI 200	Second-Year Chinese I (GT-AH4)	
LCHI 201	Second-Year Chinese II (GT-AH4)	
LCHI 205	Intermediate Written Chinese	
Upper Division Courses [2]		12
Select a minimum of 12 credits from the following of which at least 6 credits must be at the 400-level:		
LCHI 304	Third-Year Chinese I	
LCHI 305	Third-Year Chinese II	
LCHI 309	Contemporary Chinese Literature and the Arts	
LCHI 365	Introduction to Chinese Cinema Studies	
LCHI 408	Chinese Calligraphy [3]	
LCHI 496	Group Study-Chinese	
Program Total Credits:		21

1. Students must complete lower-division language courses or place out of lower-division courses through placement testing. Students who place into LCHI 201 or LCHI 304 will have to replace some or all of the lower-division credits with upper-division Chinese classes or other language-appropriate department-approved (non-LCHI) courses. See the department for a list of these courses.
2. Other courses, such as LCHI 495, may be petitioned to substitute for one of the courses below.
3. LCHI 408 may only count once toward the minor.

Any transferred language courses, other than gtPathways courses, will be evaluated by the Department of Languages, Literatures and Culture for equivalency to CSU language courses or as substitutions for CSU language courses.

Minor in French

Requirements Effective Fall 2015

All students minoring in French must complete a minimum of 21 credits in the language of the minor, of which at least 15 credits must be upper-division (300- to 400-level).

Additional coursework may be required due to prerequisites.

All majors and minors in the department must earn a minimum grade of C (a grade of C- is not acceptable) in each upper-division course that carries the LFRE subject code. Courses taught in English may not be used to meet the requirements for the minor.

Code	Title	Credits
Lower Division (6 credits may apply toward the minor) [1]		6
LFRE 100	First-Year French I	
LFRE 101	First-Year French II	
LFRE 106	First-Year French Review	
LFRE 108	Intensive French I	
LFRE 200	Second-Year French I (GT-AH4)	
LFRE 201	Second-Year French II (GT-AH4)	
LFRE 208	Intensive French II	
Upper Division [2,3]		15
Select a minimum of 15 credits from the following, of which at least 3 credits must be a culture or literature and at least 3 credits must be at the 400- level:		
LFRE 300	Reading and Writing for Communication-French	
LFRE 301	Oral Communication-French	
LFRE 310	Approaches to French Literature [2]	
LFRE 312	Introduction to French Linguistics	
LFRE 313	Introduction to French Translation and Interpreting	
LFRE 326	French Phonetics	
LFRE 335	Issues in French/Francophone Culture [2]	
LFRE 345	Business French	
LFRE 355	20th Century French Literature [2]	
LFRE 365	Introduction to French Cinema Studies [2]	
LFRE 400	Advanced French Communication Skills	
LFRE 413	Advanced French Translation and Interpreting	
LFRE 433A	Advanced French/Francophone Culture: Representations [2]	
LFRE 433B	Advanced French/Francophone Culture: Center and Margins [2]	
LFRE 441	Advanced Business French	
LFRE 450	Selected French Literary Movements and Periods [2]	
LFRE 452	Genre Studies in French [2]	
LFRE 453	Author Studies in French [2]	
LFRE 454	Topic Studies in French [2]	

LFRE 460	French/Francophone Women Writers [2]	
LFRE 470	French Grammatical Constructions	
LFRE 492	Seminar-French Language, Literature, and Society [2]	
Program Total Credits:		21

1. Students must complete lower-division language courses or place out of lower-division courses through the online placement test. Students who place into LFRE 201 or LFRE 300 will have to replace some or all of the lower-division credits with upper-division French classes or other language-appropriate, department-approved, non-LFRE courses.
2. Designated courses count toward the culture or literature requirement.
3. Other courses, such as LFRE 495 or LGEN 290 may be petitioned to substitute for one of the courses below.

Any transferred language courses, other than gtPathways courses, will be evaluated by the Department of Languages, Literatures and Cultures for equivalency to CSU language courses or as substitutions for CSU language courses.

Minor in German

Requirements Effective Fall 2015

All students minoring in German must complete a minimum of 21 credits in the language of the minor, of which at least 15 credits must be upper-division (300- to 400-level).

Additional coursework may be required due to prerequisites.

All majors and minors in the department must earn a minimum grade of C (a grade of C- is not acceptable) in each upper-division course that carries the LGER subject code. Courses taught in English may not be used to meet the requirements for the minor.

Code	Title	Credits
Lower Division (6 credits may apply toward the minor) [1]		6
LGER 100	First-Year German I	
LGER 101	First-Year German II	
LGER 108	Intensive German I	
LGER 200	Second-Year German I (GT-AH4)	
LGER 201	Second-Year German II (GT-AH4)	
LGER 208	Intensive German II	
Upper Division [2,3]		15
Select a minimum of 15 credits from the following, of which at least 3 credits must be culture or literature and at least 3 credits must be at the 400- level:		
LGER 300	Reading and Writing for Communication-German	
LGER 301	Oral Communication-German	
LGER 310	Approaches to German Literature [2]	
LGER 313	Introduction to German Translation and Interpreting	
LGER 326	German Phonetics	
LGER 335	Issues in German Culture [2]	
LGER 336	Issues in Swiss and Austrian Culture [2]	
LGER 345	Business German	
LGER 355	20th Century German Literature [2]	
LGER 365	Introduction to German Cinema Studies [2]	
LGER 400	Advanced German Communication Skills	
LGER 401	Advanced German Oral Communication	
LGER 413	Advanced German Translation and Interpreting	
LGER 434	Advanced German Culture [2]	
LGER 441	Advanced Business German	
LGER 450	Selected German Literary Movements and Periods [2]	
LGER 452	Genre Studies in German [2]	
LGER 453	Author Studies in German [2]	
LGER 454	Topic Studies in German [2]	
LGER 465	Advanced Studies in German Film [2]	
LGER 492	Seminar-German Language, Literature, and Society [2]	
Program Total Credits:		21

1. Students must complete lower-division language courses or place out of lower-division courses through the online placement test. Students who place into LGER 201 or LGER 300 will have to replace some or all of the lower-division credits with upper-division German classes or other language-appropriate, department-approved, non-LGER courses.
2. Designated courses count toward the culture or literature requirement.
3. Other courses, such as LGER 495 or LGEN 290 may be petitioned to substitute for one of the courses below.

Any transferred language courses, other than gtPathways courses, will be evaluated by the Department of Languages, Literatures and Cultures for equivalency to CSU language courses or as substitutions for CSU language courses.

Minor in Japanese

Requirements Effective Fall 2015

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

All majors and minors in the department must earn a minimum grade of C (a grade of C- is not acceptable) in each upper-division course that carries the LJPN subject code. Courses taught in English may not be used to meet the requirements for the minor.

Code	Title	Credits
Lower Division (9 credits may apply toward the minor) [1]		9
LJPN 100	First-Year Japanese I	
LJPN 101	First-Year Japanese II	
LJPN 200	Second-Year Japanese I (GT-AH4)	
LJPN 201	Second-Year Japanese II (GT-AH4)	

LJPN 208	Kanji Study [2]	
Upper Division [3]		12
Select a minimum of 12 credits from the following, of which at least 6 credits must be at the 400- level:		
LJPN 304	Third-Year Japanese I	
LJPN 305	Third-Year Japanese II	
LJPN 365	Introduction to Japanese Cinema Studies	
LJPN 404	Historical Aspects of the Language and Society	
LJPN 405	Integrated Japanese: Beyond Words	
LJPN 408	Advanced Kanji Study [2]	
Program Total Credits:		21

1. Students must complete lower-division language courses or place out of lower-division courses through the placement testing. Students who place into LJPN 201 or LJPN 304 will have to replace some or all of the lower-division credits with upper-division Janpanese classes or other language-appropriate, department-approved, non-LJPN courses. See the department for a list of these courses.
2. LJPN 208 and LJPN 408 may only count once toward the minor.
3. Other courses, such as LJPN 495 or LJPN 496 may be petitioned to substitute for one of the courses below.

Any transferred language courses, other than gtPathways courses, will be evaluated by the Department of Languages, Literatures and Cultures for equivalency to CSU language courses or as substitutions for CSU language courses.

Minor in Spanish

Requirements Effective Fall 2015

All students minoring in Spanish must complete a minimum of 21 credits in the language of the minor, of which at least 15 credits must be upper-division (300- to 400-level).

Additional coursework may be required due to prerequisites.

All majors and minors in the department must earn a minimum grade of C (a grade of C- is not acceptable) in each upper-division course that carries the LSPA subject code. Courses taught in English may not be used to meet the requirements for the minor.

Code	Title	Credits
Lower Division (6 credits may apply toward minor) [1]		6
LSPA 100	First-Year Spanish I	
LSPA 101	First-Year Spanish II	
LSPA 106	First-Year Spanish Review	
LSPA 108	Intensive Spanish I	
LSPA 200	Second-Year Spanish I (GT-AH4)	
LSPA 201	Second-Year Spanish II (GT-AH4)	
LSPA 208	Intensive Spanish II	
LSPA 230	Spanish for Heritage Speakers	
Upper Division [2,3]		15
Select a minimum of 15 credits from the following, of which at least 3 credits must be culture or literature and at least 3 credits must be at the 400- level:		
LSPA 300	Reading and Writing for Communication-Spanish	
LSPA 301	Oral Communication-Spanish	
LSPA 310	Approaches to Spanish Literature [2]	
LSPA 312	Introduction to Spanish Linguistics	
LSPA 313	Introduction to Spanish Translation and Interpreting	
LSPA 326	Spanish Phonetics	
LSPA 335	Issues in Hispanic Culture [2]	
LSPA 345	Business Spanish	
LSPA 346	Spanish for Health Care	
LSPA 348	Spanish Professional Terminology in Context	
LSPA 365	Introduction to Spanish Cinema [2]	
LSPA 400	Advanced Spanish Communication Skills	
LSPA 401	Advanced Spanish Oral Communication	
LSPA 413	Advanced Spanish Translation and Interpreting	
LSPA 435	Caribbean Culture in Hispanic Literature [2]	
LSPA 436	Advanced Latin American Culture [2]	
LSPA 437	Advanced Spanish Culture [2]	
LSPA 441	Advanced Business Spanish	
LSPA 442	Colonial Latin American Literature [2]	
LSPA 443	Spanish Theatre [2]	
LSPA 445	Women Writers in the Hispanic World [2]	
LSPA 449	Spanish-American Literary Movements and Periods [2]	
LSPA 450	Selected Spanish Literary Movements and Periods [2]	
LSPA 452	Genre Studies in Spanish [2]	
LSPA 453	Author Studies in Spanish [2]	
LSPA 454	Topic Studies in Spanish [2]	
LSPA 465A	Studies in Foreign Film: Spain [2]	
LSPA 465B	Studies in Foreign Film: Latin America [2]	
LSPA 470	Spanish Grammatical Constructions	
LSPA 492	Seminar-Spanish Language, Literature, and Society [2]	
Program Total Credits:		21

1. Students must complete lower-division language courses or place out of lower-division courses through the online placement test. Students who place into LSPA 201 or LSPA 300 will have to replace some or all of the lower-division credits with upper-division Spanish classes or other language-appropriate, department-approved, non-LSPA courses.
2. Designated courses count toward the culture or literature requirement.
3. Other courses, such as LSPA 495 or LGEN 290 may be petitioned to substitute for one of the courses above.

Any transferred language courses, other than gtPathways courses, will be evaluated by the Department of Languages, Literatures and

Cultures for equivalency to CSU language courses or as substitutions for CSU language courses.

Graduate Certificate in French Linguistics and Literary Studies

The Graduate Certificate in French Linguistics and Literary Studies provides academic training to students in the French language, Francophone literatures and cultures at the master's level, while advancing their proficiency of French. Students will take four graduate-level courses in French and will have the possibility to expand some of their own research or teaching interests through their coursework.

Effective Spring 2017

Additional coursework may be required due to prerequisites.

Code	Title	Credits
FRENCH		
Select 12 credits from the following:		12
LFRE 500	Language Analysis/Stylistics-French	
LFRE 536	Topics in French Linguistics	
LFRE 551	Selected French Literary Movements/ Periods	
LFRE 552	Advanced Studies in French Literary Genres	
LFRE 553	Advanced French Author Studies	
LFRE 554	Advanced Topic Studies-French	
Program Total Credits:		12

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Graduate Certificate in Spanish Linguistics and Literary Studies

The Graduate Certificate in Spanish Linguistics and Literary Studies provides academic training to students in the Spanish language, Spanish-speaking literatures and cultures at the master's level, while advancing their proficiency of Spanish. Students will take four graduate-level courses in Spanish and will have the possibility to expand some of their own research or teaching interests through their coursework.

Effective Fall 2018

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Select a minimum of 12 credits from a minimum of 4 courses from the following:		12
LSPA 500A	Spanish Language Analysis: Syntax	
or LSPA 500B	Spanish Language Analysis: Phonetics and Phonology	
LSPA 536	Topics in Spanish Linguistics	
LSPA 549	Literary Periods of Spanish America	
LSPA 551	Selected Spanish Literary Movements/ Periods	
LSPA 552	Advanced Studies in Spanish Literary Genres	
LSPA 553	Advanced Spanish Author Studies	
LSPA 554	Advanced Topic Studies-Spanish	
Program Total Credits:		12

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Master of Arts in Languages, Literatures, and Cultures, Plan A, French Specialization, Interdisciplinary Option

Requirements Effective Fall 2010

Code	Title	Credits
LGEN 510	Research Methods	1
LGEN 530	Literary and Cultural Theory	3
LFRE 536	Topics in French Linguistics	3
LFRE 5**	Topics in French literature	3
LFRE 692	Seminar-French	3
Selected option area [1]		15
LGEN 699	Thesis	6
Program Total Credits:		34

A minimum of 34 credits are required to complete this program.

[1] Choose from courses in selected option area(s), e.g., Women's Studies, International Development, Political Economy, or others, as approved by advisor and committee. Nine credits must be at the 500-level or above.

Master of Arts in Languages, Literatures, and Cultures, Plan B, French Specialization, Interdisciplinary Option

Requirements Effective Fall 2010

Code	Title	Credits
LGEN 510	Research Methods	1
LGEN 530	Literary and Cultural Theory	3
LFRE 536	Topics in French Linguistics	3
LFRE 5**	Topics in French literature	3
LFRE 692	Seminar-French	3
Selected option area [1]		18
LGEN 694	Independent Study: Portfolio	3
Program Total Credits:		34

A minimum of 34 credits are required to complete this program.

[1] Choose from courses in selected option area(s), e.g., Women's Studies, International Development, Political Economy, or others, as approved by advisor and committee. Nine credits must be at the 500-level or higher.

Master of Arts in Languages, Literatures, and Cultures, Plan A, French Specialization, Foreign Languages, Literatures, and Cultures Option

Requirements
Effective Spring 2010

Code	Title	Credits
LGEN 510	Research Methods	1
LGEN 530	Literary and Cultural Theory	3
LFRE 536	Topics in French Linguistics	3
LFRE 5**	Topics in French Literature	3
LFRE 692	Seminar-French	3
Electives [1]		15
LGEN 699	Thesis	6
Program Total Credits:		34

A minimum of 34 credits are required to complete this program.

[1] Choose a minimum of 15 credits with approval of advisor and committee in the language, literature, or culture of specialization.

Master of Arts in Languages, Literatures, and Cultures, Plan B, French Specialization, Foreign Languages, Literatures, and Cultures Option

Requirements
Effective Spring 2010

Code	Title	Credits
LGEN 510	Research Methods	1
LGEN 530	Literary and Cultural Theory	3
LFRE 536	Topics in French Linguistics	3
LFRE 5**	Topics in French Literature	3
LFRE 692	Seminar-French	3
Electives [1]		18
LGEN 694	Independent Study: Portfolio	3
Program Total Credits:		34

A minimum of 34 credits are required to complete this program.

[1] Choose a minimum of 18 credits with approval of advisor and committee in the language, literature, or culture of specialization.

Master of Arts in Languages, Literatures, and Cultures, Plan A, German Specialization, Interdisciplinary Option

Requirements
Effective Fall 2010

Code	Title	Credits
LGEN 510	Research Methods	1
L*** 525	History of the German Language	3
LGEN 530	Literary and Cultural Theory	3
LGER 5**	Topics in German literature	3
LGER 692	Seminar-German	3
Selected option area [1]		15
LGEN 699	Thesis	6
Program Total Credits:		34

A minimum of 34 credits are required to complete this program.

[1] Choose from courses in selected option area(s), e.g., Women's Studies, International Development, Political Economy, or others, as approved by advisor and committee. Nine credits must be at the 500-level or higher.

Master of Arts in Languages, Literatures, and Cultures, Plan B, German Specialization, Interdisciplinary Option

Requirements
Effective Fall 2010

Code	Title	Credits
LGEN 510	Research Methods	1
L*** 525	History of the German Language	3
LGEN 530	Literary and Cultural Theory	3
LGER 5**	Topics in German literature	3
LGER 692	Seminar-German	3
Selected option area [1]		18
LGEN 694	Independent Study: Portfolio	3
Program Total Credits:		34

A minimum of 34 credits are required to complete this program.

[1] Choose from courses in selected option area(s), e.g., Women's Studies, International Development, Political Economy, or others, as approved by advisor and committee. Nine credits must be at the 500-level or above.

Master of Arts in Languages, Literatures, and Cultures, Plan A, German Specialization, Foreign Languages, Literatures, and Cultures Option

Requirements
Effective Spring 2010

Code	Title	Credits
LGEN 510	Research Methods	1
LGEN 530	Literary and Cultural Theory	3
LGER 5**	Topics in German Literature	3
LGER 525	History of the German Language	3
LGER 692	Seminar-German	3
Electives [1]		15
LGEN 699	Thesis	6
Program Total Credits:		34

A minimum of 34 credits are required to complete this program.

[1] Choose a minimum of 15 credits with approval of advisor and committee in the language, literature, or culture of specialization.

Master of Arts in Languages, Literatures, and Cultures, Plan B, German Specialization, Foreign Languages, Literatures, and Cultures Option

Requirements
Effective Spring 2010

Code	Title	Credits
LGEN 510	Research Methods	1
LGEN 530	Literary and Cultural Theory	3
LGER 5**	Topics in German Literature	3
LGER 525	History of the German Language	3
LGER 692	Seminar-German	3
Electives [1]		18
LGEN 694	Independent Study: Portfolio	3
Program Total Credits:		34

A minimum of 34 credits are required to complete this program.

[1] Choose a minimum of 18 credits with approval of advisor and committee in the language, literature, or culture of specialization.

Master of Arts in Languages, Literatures, and Cultures, Plan A, Spanish Specialization, Interdisciplinary Option

Requirements
Effective Fall 2010

Code	Title	Credits
LGEN 510	Research Methods	1
LGEN 530	Literary and Cultural Theory	3
LSPA 536	Topics in Spanish Linguistics	3
LSPA 5**	Topics in Spanish literature	3
LSPA 692	Seminar-Spanish	3
Selected option area [1]		15
LGEN 699	Thesis	6
Program Total Credits:		34

A minimum of 34 credits are required to complete this program.

[1] Choose from courses in selected option area(s), e.g., Women's Studies, International Development, Political Economy, or others, as approved by advisor and committee. Nine credits must be at the 500-level or above.

Master of Arts in Languages, Literatures, and Cultures, Plan B, Spanish Specialization, Interdisciplinary Option

Requirements
Effective Fall 2010

Code	Title	Credits
LGEN 510	Research Methods	1
LGEN 530	Literary and Cultural Theory	3
LSPA 536	Topics in Spanish Linguistics	3
LSPA 5**	Topics in Spanish literature	3
LSPA 692	Seminar-Spanish	3
Selected option area [1]		18
LGEN 694	Independent Study: Portfolio	3
Program Total Credits:		34

A minimum of 34 credits are required to complete this program.

[1] Choose from courses in selected option area(s), e.g., Women's Studies, International Development, Political Economy, or others, as approved by advisor and committee. Nine credits must be at the 500-level or above.

Master of Arts in Languages, Literatures, and Cultures, Plan A, Spanish Specialization, Foreign Languages, Literatures, and Cultures Option

Requirements
Effective Spring 2010

Code	Title	Credits
LGEN 510	Research Methods	1
LGEN 530	Literary and Cultural Theory	3
LSPA 536	Topics in Spanish Linguistics	3
LSPA 5**	Topics in Spanish Literature	3
LSPA 692	Seminar-Spanish	3
Electives [1]		15
LGEN 699	Thesis	6
Program Total Credits:		34

A minimum of 34 credits are required to complete this major.

[1] Choose a minimum of 15 credits with approval of advisor and committee in the language, literature, or culture of specialization.

Master of Arts in Languages, Literatures, and Cultures, Plan B, Spanish Specialization, Foreign Languages, Literatures, and Cultures Option

Requirements
Effective Spring 2010

Code	Title	Credits
LGEN 510	Research Methods	1
LGEN 530	Literary and Cultural Theory	3
LSPA 536	Topics in Spanish Linguistics	3
LSPA 5**	Topics in Spanish Literature	3
LSPA 692	Seminar-Spanish	3
Electives [1]		18
LGEN 694	Independent Study: Portfolio	3
Program Total Credits:		34

A minimum of 34 credits are required to complete this program.

[1] Choose a minimum of 18 credits with approval of advisor and committee in the language, literature, or culture of specialization.

Department of History

Office in Clark Building, Room B356
(970) 491-6335
history.colostate.edu (http://history.colostate.edu)

Professor Robert Gudmestad, Chair

Undergraduate
Majors

- Major in History
  - General History Concentration
  - Language Concentration
  - Social and Behavioral Sciences Concentration
  - Social Studies Teaching Concentration

Minor

- Minor in History

Graduate
Graduate Programs in History

The department offers graduate programs leading to the Master of Arts degree. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of History (http://history.colostate.edu).

Master's Programs

- Master of Arts in History, Plan A, Liberal Arts Specialization
- Master of Arts in History, Plan B, Liberal Arts Specialization
- Master of Arts in History, Plan B, Public History Specialization, Cultural Resource Management Option
- Master of Arts in History, Plan B, Public History Specialization, Historic Preservation Option
- Master of Arts in History, Plan B, Public History Specialization, Museum Studies Option

Courses
History (HIST)

HIST 100 Western Civilization, Pre-Modern (GT-HI1) Credits: 3 (3-0-0)
Course Description: Historical development of Western civilization from antiquity to the early modern era (c. 1600 C.E.)
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 101 Western Civilization, Modern (GT-HI1) Credits: 3 (3-0-0)
Course Description: Historical development of Western civilization from c. 1600 C.E. to the contemporary era.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 115 The Islamic World: Late Antiquity to 1500 Credits: 3 (3-0-0)
Course Description: Religion, society, and culture in the Islamic world from late antiquity to the Ottoman conquest of Constantinople and the Reconquista in Spain.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D.

HIST 116 The Islamic World Since 1500 Credits: 3 (3-0-0)
Course Description: Religion, society, and culture in the Islamic world since 1500.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D.

HIST 120 Asian Civilizations I (GT-HI1) Credits: 3 (3-0-0)
Course Description: Major traditional intellectual and cultural patterns of Asia during the formative years.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 121 Asian Civilizations II (GT-HI1) Credits: 3 (3-0-0)
Course Description: Transformation of major intellectual and cultural patterns and the process of globalization in Asia.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 150 U.S. History to 1876 (GT-HI1) Credits: 3 (3-0-0)
Course Description: Major issues and themes in the development of the United States from the colonial period through reconstruction.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 151 U.S. History Since 1876 (GT-HI1) Credits: 3 (3-0-0)
Course Description: Major issues and themes in the historical development of the United States since Reconstruction.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 170 World History, Ancient-1500 (GT-HI1) Credits: 3 (3-0-0)
Course Description: Historical developments and interactions of world societies from the ancient to modern periods.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 171 World History, 1500-Present (GT-HI1) Credits: 3 (3-0-0)
Course Description: Historical developments and interactions of world societies from 1500 to the present.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 201 Seminar – Approaches to History Credits: 3 (0-0-3)
Course Description: Introduces students to professional historical skills including research methods, citation, and writing via intensive investigation of a historical time period or theme. Topic varies by instructor.
Prerequisite: None.
Registration Information: Seniors not allowed.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D.

HIST 250 African American History (GT-HI1) Credits: 3 (3-0-0)
Also Offered As: ETST 250.
Course Description: Slavery, emancipation, labor, political, socioeconomic, and cultural history of African Americans since colonial times.
Prerequisite: None.
Registration Information: Credit not allowed for both HIST 250 and ETST 250.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 252 Asian American History (GT-HI1) Credits: 3 (3-0-0)
Also Offered As: ETST 252.
Course Description: Asian American historical experience in the United States from 1850s to the present time.
Prerequisite: None.
Registration Information: Sections may be offered: Online. Credit not allowed for both ETST 252 and HIST 252.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 255 Native American History (GT-HI1) Credits: 3 (3-0-0)
Also Offered As: ETST 255.
Course Description: History of Native American peoples in the United States to the present, including origin stories.
Prerequisite: None.
Registration Information: Credit not allowed for both HIST 255 and ETST 255.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 300 Ancient Greece to 323 B.C.E. Credits: 3 (3-0-0)
Course Description: From the Bronze Age to the death of Alexander the Great, emphasizing political, social, intellectual, and cultural developments.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 301 Roman Republic Credits: 3 (3-0-0)
Course Description: Roman history from the monarchy to the fall of the republic; special emphasis on political, cultural, and social history.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 302 Roman Empire Credits: 3 (3-0-0)
Course Description: Roman history from the principate of Augustus to the reign of Constantine; special emphasis on political, intellectual, cultural, and social history.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 303 Hellenistic World: Alexander to Cleopatra Credits: 3 (3-0-0)
Course Description: From Alexander the Great to Cleopatra VII, emphasizing intellectual, social, military, political, and cultural developments.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 304 Women in Ancient Greece and Rome Credits: 3 (3-0-0)
Course Description: Comparative study of roles of women and gender in Ancient Greece and Rome.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 308 Ancient Christianity to 500 A.D. Credits: 3 (3-0-0)
Course Description: Growth of Christian Church from 1st to 5th century; emphasis on its role in Roman Empire; development of ecclesiastical institutions and literature.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 309 Medieval Christianity, 500-1500 Credits: 3 (3-0-0)
Course Description: Christian Church in Eastern and Western Christendom emphasizing its role in medieval society, relationship with the state, and its institutions.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 310 Medieval Europe Credits: 3 (3-0-0)
Course Description: Political, legal, socioeconomic development of Europe from 300-1500 emphasizing emergence of major states.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 311 Medieval England Credits: 3 (3-0-0)
Course Description: Political, social, and intellectual development of England from Romans to end of Middle Ages.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 312 Women in Medieval Europe Credits: 3 (3-0-0)
Course Description: Women in the European Middle Ages; political, social, economic, religious, and cultural developments.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 315 Tudor Stuart England, 1485-1689 Credits: 3 (3-0-0)
Course Description: Political, economic, and social history of England from 1485-1689 emphasizing religious movements, revolution, and constitutional development.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 317 Renaissance and Reformation Europe Credits: 3 (3-0-0)
Course Description: Development of European society during Renaissance and Reformation eras; religion, society, and the rise of nation-states.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 318 The Age of the Enlightenment Credits: 3 (3-0-0)
Course Description: Development of European society from settlement of religious wars to French Revolution emphasizing political, economic, and intellectual trends.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 319 Early Modern France, 1500-1789 Credits: 3 (3-0-0)
Course Description: Political, social, economic, religious, and cultural developments in France (16th-18th centuries) emphasizing formation of the absolutist state.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 320 Women and Gender in Europe, 1450-1789 Credits: 3 (3-0-0)
Course Description: Women and gender in western Europe (15th-18th centuries); political, social, economic, religious, and cultural developments.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 321 Industrial Society in Europe, 1600-1871 Credits: 3 (3-0-0)
Course Description: Causes and consequences of European industrialization and its impact on European Societies between 1600 and 1871.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 322 Industrial Society in Europe, 1871-1989 Credits: 3 (3-0-0)
Course Description: Causes and consequences of industrialization and its impact on European societies between 1871 and 1989.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 323 Russia Before 1700 Credits: 3 (3-0-0)
Course Description: Russia's political predecessors; contacts with Byzantium, Western Europe, and the Mongol Empire, and resulting cultural, religious, and social change.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 324 Imperial Russia Credits: 3 (3-0-0)
Course Description: Tsarist Russia from its beginnings to the November 1917 Revolution; emphasis on modern period.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 325 Ireland: Culture, Politics, Society and Nation Credits: 3 (3-0-0)
Course Description: Creation of modern Ireland from the 18th century to the present, with brief opening overview of the Celtic and Medieval periods.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 328 Modern Europe, 1815-1914 Credits: 3 (3-0-0)
Course Description: Europe in 19th century emphasizing growth of liberalism, nationalism, and industrialism.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 329 Europe in Crisis, 1914-1941 Credits: 3 (3-0-0)
Course Description: Political, social, economic developments since 1914; consequences of world wars, Great Depression, spread of totalitarianism, decline of imperialism.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 330 Eastern Europe Since 1918 Credits: 3 (3-0-0)
Course Description: Breakup of Austrian, German, Russian, Turkish Empires; successor states between wars; communist revolutions and character of East European socialist regimes.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 331 The Soviet Union Credits: 3 (3-0-0)
Course Description: Formation of Soviet system in 1918 to its demise in 1991 emphasizing emergence of an advanced socialist state.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 332 Germany Since World War I Credits: 3 (3-0-0)
Course Description: German history, culture, and everyday life from 1914 to present.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 333 Contemporary Europe Credits: 3 (3-0-0)
Course Description: Political, economic, social, and cultural history of major European nations since World War II.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 334 European Culture in the 20th Century Credits: 3 (3-0-0)
Course Description: Cultural developments since World War I emphasizing science, art, clash of ideologies, existentialism, youth culture, and environmental issues.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 335 Britain in the 20th Century Credits: 3 (3-0-0)
Course Description: Political, economic, and social developments emphasizing role of Britain in world affairs and internal changes that led to welfare state.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 336 Germany from Napoleon to WWI Credits: 3 (3-0-0)
Course Description: Modern Germany from the late eighteenth to the early twentieth centuries.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 338 The Holocaust in Historical Perspective Credits: 3 (3-0-0)
Course Description: Comprehensive introduction to the Holocaust as a defining event of modern Jewish, European and world history. Strong emphasis on historical context, including the evolution of modern antisemitism and the rise of fascism. While the course will focus on Hitler's singular war against European Jewry, it also examines Nazi campaigns against other targeted populations, including the disabled, Roma/Sinti, homosexuals, communists, Jehovah's Witnesses, and others.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 339 World War II in Europe Credits: 3 (3-0-0)
Course Description: WWII in Europe (1939-1945): military strategy, tactics; political and diplomatic events; economic and social impacts; ethnic and gender consequences.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 340 Colonial North America, 1492-1800 Credits: 3 (3-0-0)
Course Description: New World encounters between Native Americans, Europeans, and Africans, and the colonial societies they built.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 341 Eighteenth Century America Credits: 3 (3-0-0)
Course Description: Politics, culture, and society in Colonial British America and the new United States, 1700-1815.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 344 Antebellum America Credits: 3 (3-0-0)
Course Description: National growth, 1800 to 1860, emphasizing political, social, and economic developments.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 345 Civil War Era Credits: 3 (3-0-0)
Course Description: U.S. history between 1848 and 1865 emphasizing causes and results of the Civil War.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 346 Reconstruction and the New South Credits: 3 (3-0-0)
Course Description: Reconstruction Era, 1865-1877, and the South to present with emphasis on purposes and results of Reconstruction.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 347 United States, 1876-1917 Credits: 3 (3-0-0)
Course Description: Victorian way of life; rise of industry; reform movements; imperialism; World War I.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 348 United States, 1917-1945 Credits: 3 (3-0-0)
Course Description: World War I, the 1920s, the Great Depression, and World War II.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 349 United States Since 1945 Credits: 3 (3-0-0)
Course Description: History of the United States during the post-World War II era, including the Cold War, foreign and domestic affairs from the Truman era to the present.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits. Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 350 United States Foreign Relations Since 1914 Credits: 3 (3-0-0)
Course Description: Main problems in U.S. foreign relations in the 20th century; especially causes and consequences of the two world wars, Great Depression and the Cold War.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 351 American West to 1900 Credits: 3 (3-0-0)
Course Description: Social, political, economic, environmental developments and intercultural relations in trans-Mississippi West to 1900.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 352 American West Since 1900 Credits: 3 (3-0-0)
Course Description: Social, political, economic, environmental developments and intercultural relationships in trans-Mississippi West since 1900.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 353 U.S.-Mexico Borderlands Credits: 3 (3-0-0)
Course Description: Borderlands, northern Mexico, southwestern U.S.; intercultural relationships among Indian, Spanish, Mexican, U.S. cultures.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 354 American Architectural History Credits: 3 (3-0-0)
Course Description: Broad historical interpretation of the North American built environment from 1500 to present.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 355 American Environmental History Credits: 3 (3-0-0)
Course Description: Interaction of humans and nature in American history with emphasis on relationships between environmental, social, and cultural change.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 356 American Cultural and Intellectual History Credits: 3 (3-0-0)
Course Description: Role of American cultural and intellectual developments in American society and the world.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 357 The American Military Experience Credits: 3 (3-0-0)
Also Offered As: MLSC 357.
Course Description: Role of the armed forces in American society; development of military traditions, institutions, and practices.
Prerequisite: HIST 100 or HIST 101 or HIST 115 or HIST 120 or HIST 121 or HIST 150 or HIST 151 or HIST 170 or HIST 171.
Registration Information: Completion of 45 credits. Credit not allowed for both MLSC 357 and HIST 357.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Traditional.
Special Course Fee: No.

HIST 358 American Women's History to 1800 Credits: 3 (3-0-0)
Course Description: History of Indian, African, and European women in North America from early colonial contact through the American Revolution and into Early Republic.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 359 American Women's History Since 1800 Credits: 3 (3-0-0)
Course Description: Social, cultural, economic, and political history of women in the United States since 1800.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 360 United States Immigration History Credits: 3 (3-0-0)
Course Description: Central themes of U.S. immigration from perspective of major immigrant groups and within context of U.S. immigration policy.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 361 American Indians in the Age of Conquest Credits: 3 (3-0-0)
Course Description: American Indian history from pre-contact to the era of Indian removal (1840s) focused on the impact of colonization.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 362 American Indian Renaissance in Modern America Credits: 3 (3-0-0)
Course Description: American Indian history from the reservation era to the present with a focus on cultural and political renewal.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 363 Colorado History Credits: 3 (3-0-0)
Course Description: History of Colorado from pre-history to present.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 364 Asian American Social Movements, 1945-Present Credits: 3 (3-0-0)
Also Offered As: ETST 364.
Course Description: Historical relationships between Asian Americans and social movements for social, economic, and political equity in the U.S. since 1945.
Prerequisite: HIST 151 or HIST 252 or ETST 252.
Registration Information: Completion of 45 credits. Credit not allowed for both HIST 364 and ETST 364.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 365 American West Field Study Credits: 3 (2-3-0)
Course Description: Explore western U.S. history through primary sources and field trips to sites in Colorado and the West. Topic varies by semester and instructor.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Required field trips. Students may take course only once for credit toward degree completion.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 366 African-American History to 1865 Credits: 3 (3-0-0)
Course Description: African-American history from the colonial era to the end of the Civil War.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 367 African-American History Since 1865 Credits: 3 (3-0-0)
Course Description: African-American history from the end of the Civil War to the late twentieth century.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 368 The American South Credits: 3 (3-0-0)
Course Description: The American South, 1607 to the present; plantation system, slave culture, secession, Civil War, Reconstruction, Jim Crow, Civil Rights, and the modern South.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 369 History of Sexuality in America Credits: 3 (3-0-0)
Course Description: History of sexuality in North America and the United States from the pre-colonial period to the present.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 370 United States History Through Film Credits: 3 (3-0-0)
Course Description: Examining American history through the medium of film with an emphasis on changing depictions of critical events and people. Strong emphasis on historical context, including how changing social, political, cultural, and environmental ideas and practices shaped the production and consumption of film.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 371 Civil Rights in America Credits: 3 (3-0-0)
Course Description: A survey of the various civil rights movements in American history, including the efforts of African Americans, women, Chicanos, Native Americans, and the LGBTQ community to gain equality.
Prerequisite: HIST 100 to 499X - at least 3 credits.
Registration Information: Completion of 30 credits.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 379 Economic History of the United States Credits: 3 (3-0-0)
Also Offered As: ECON 379.
Course Description: Economic analysis of growth and welfare from beginning of industrialization to present.
Prerequisite: ECON 101 or ECON 202 or AREC 202.
Registration Information: Any 2 courses in American history; Completion of 45 credits. Credit not allowed for both HIST 379 and ECON 379.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 382B Study Abroad: The Normandy Campaign Credit: 1 (0-0-1)
Course Description: Study abroad experience focused on understanding WWII in Europe, specifically the Normandy Campaign and its implications for the western front.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits. Written consent of instructor.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 382C Study Abroad - South Korea: Cinema, Culture, and History Credits: 3 (0-0-3)
Also Offered As: SPCM 382C.
Course Description: A survey of post-1945 South Korean cinema from Golden Age classics of the 1950s and 1960s to the rise of new blockbuster hits and art-house films throughout the contemporary period. Cinematic texts are examined within various historical, sociopolitical, and cultural contexts of postcolonial South Korea, with attention to the issues of Japanese colonialism, national division, civil war, U.S. neocolonialism, military dictatorships, the democratic movement, and globalization.
Prerequisite: None.
Registration Information: Sophomore standing. Required field trips. Credit not allowed for both HIST 382C and SPCM 382C.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 382D Study Abroad: History, Community, and Environment in Mexico Credits: 3 (0-0-3)
Course Description: Explores history, identity, community, and human relationships to the environment in Baja California Sur, Mexico. Employs theories and tools of Public History and Environmental History.
Prerequisite: CO 150.
Registration Information: Sophomore standing. Offered as Mixed Face-to-Face.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 410 Colonial Latin America Credits: 3 (3-0-0)
Course Description: Spanish and Portuguese America from pre-Columbian times through independence (c. 1825).
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 411 Latin America Since Independence Credits: 3 (3-0-0)
Course Description: Major trends in the social, cultural, political, and economic evolution of Spanish America and Brazil since independence.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 412 Mexico Credits: 3 (3-0-0)
Course Description: Social, economic, and political development of Mexican people from pre-Columbian times to present.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits. Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 414 Revolutions in Latin America Credits: 3 (3-0-0)
Course Description: Historical and theoretical issues arising from revolutionary episodes in Latin America, with emphasis on 20th century case studies.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 420 Africa: Precolonial States and Empires Credits: 3 (3-0-0)
Course Description: Origins of societal and political development in Africa before 1800; technology, the environment, human migrations, and trade.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 421 Africa: Colonialism to Independence Credits: 3 (3-0-0)
Course Description: Africa from abolition of the slave trade to independence, focusing on economic, social, and political change under colonialism.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 422 Modern Africa Credits: 3 (3-0-0)
Course Description: Colonial roots of modern Africa focusing on the period since 1935. Case studies of social and political change in Africa since World War II.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 423 South African History Credits: 3 (3-0-0)
Course Description: South African history from human origins to the end of Apartheid.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 424 East African History Credits: 3 (3-0-0)
Course Description: Overview of East African history from human origins to modern times, focusing on Kenya, Tanzania, and Uganda.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 430 Ancient Near East Credits: 3 (3-0-0)
Course Description: Neolithic period to 500 B.C.E. emphasizing political, social, intellectual, and cultural developments.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 431 Ancient Israel Credits: 3 (3-0-0)
Course Description: Ancient Israel and the Near Eastern world of the Hebrew Bible/Old Testament.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 432 Sacred History in the Bible and the Qur'an Credits: 3 (3-0-0)
Course Description: Conceptions of sacred history in the Biblical and Qur'anic traditions, emphasizing pre-modern historiography and exegesis.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 433 Muhammad and the Origins of Islam Credits: 3 (3-0-0)
Course Description: Emergence of Islam and growth of the Islamic community from time of Muhammad to decline of the Arab Caliphate.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 435 Jihad and Reform in Islamic History Credits: 3 (3-0-0)
Course Description: Jihad and reform in classical and modern Islamic thought and practice.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 436 The Land of Israel-Past and Present Credits: 3 (3-0-0)
Course Description: Diverse physical geography, rich material culture, and complex history of the land of Israel--ancient, medieval, and modern.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits. Credit not allowed for both HIST 436 and HIST 436A.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 438 The Modern Middle East Credits: 3 (3-0-0)
Course Description: Historical developments in the Middle East in the 19th and 20th centuries.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 439 Environmental History of the Middle East Credits: 3 (3-0-0)
Course Description: Explores the social, political, and ecological consequences of past human interactions with the environment in the Middle East and North Africa.
Prerequisite: HIST 100 to 499X - at least 3 credits.
Registration Information: Completion of 45 credits. Credit not allowed for both HIST 381A2 and HIST 439.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 440 Modern South Asia: Colonialism and Nationalism Credits: 3 (3-0-0)
Course Description: Major political, social, economic, and cultural developments in South Asia from the 17th century to the present.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 441 South Asia Since Independence Credits: 3 (3-0-0)
Course Description: Major political, social, economic, and cultural developments in South Asia after independence.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 450 Ancient China Credits: 3 (3-0-0)
Course Description: Development of civilizations in China from Neolithic times to 200 B.C.E.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 451 Medieval China and Central Asia Credits: 3 (3-0-0)
Course Description: Historical developments in China and Central Asia from 200 B.C.E. to 1300 C.E.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 452 China in the Modern World, 1600-Present Credits: 3 (3-0-0)
Course Description: Historical developments in China since 1600.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 455 Tokugawa and Modern Japan, 1600-Present Credits: 3 (3-0-0)
Course Description: Historical developments in Japan since 1600.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 456 East Asia in the Age of Empire, 1800-Present Credits: 3 (3-0-0)
Course Description: Rise of modern imperialism in East Asia, both from without (the "West") and from within (Japan), 1800-present.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 460 Slavery in the Americas Credits: 3 (3-0-0)
Course Description: Slave labor; Atlantic world economy; African contributions to American culture; gender and racial dynamics; emancipation movements.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 461 Rise and Fall of British Empire 1600-1947 Credits: 3 (3-0-0)
Course Description: Beginnings of globalization; its origins in the spread of the British Empire; major causes of expansion, forms of control, long-term effects.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 463 Science and Technology in Modern History Credits: 3 (3-0-0)
Course Description: Impact of science and technology on industry, agriculture, medicine, education, etc. Issues in science and technology policy.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 464 Pacific Wars: Philippines-WWII Credits: 3 (3-0-0)
Course Description: Diplomatic, ideological, political, cultural, and military aspects of war in the Pacific from the Philippines war through WWII.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 465 Pacific Wars: Korea and Vietnam Credits: 3 (3-0-0)
Course Description: Diplomatic, ideological, political, cultural, and military aspects of war in the Pacific from the war in Korea through the war in Vietnam.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 466 U.S.-China Relations Since 1800 Credits: 3 (3-0-0)
Course Description: United States-China relations as represented in travel narratives, memoirs, journalistic and diplomatic writing, biography, and autobiography.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 467 Modern Jewish History Credits: 3 (3-0-0)
Course Description: Political, social, cultural, and economic dimensions of modern Jewish history from both a regional and global perspective.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 469 The Crusades Credits: 3 (3-0-0)
Course Description: The Crusades, emphasizing religion, politics, and warfare in Western Europe, Byzantium, the Near East, and the Mongol world empire, c. 1050-1300.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 470 World Environmental History, 1500-Present Credits: 3 (3-0-0)
Course Description: World environmental history since 1500, emphasizing the dynamic interaction of nature, culture, and human activity.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 471 History of Antarctica, 1800-Present Credits: 3 (3-0-0)
Course Description: History of Antarctica from discovery in the early nineteenth century to the present.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 472A Study Abroad: WWII in Europe - The Normandy Campaign Credits: 3 (0-0-3)
Course Description: Focuses on understanding World War II in Europe, specifically the Normandy Campaign and its implications for the western front. The class travels to England, crosses the English Channel, tours the D-Day invasion beaches along the French coast, and then travels to Paris. Also, visit cultural sites in both London and Paris.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits. Written consent of instructor. Credit not allowed for both HIST 382A and HIST 472A.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 475 History in the Digital Age Credits: 3 (3-0-0)
Course Description: Examine recent works of digital history and explore the critical issues and technologies used in digital history.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 476 History of America's National Parks Credits: 3 (3-0-0)
Course Description: The national park system and its development from concept to design to implementation.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 477 Teaching History Credits: 3 (3-0-0)
Course Description: Teaching history, emphasizing teaching historical literacy, research, and writing at the middle and high school levels.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 478 Heritage Resource Management Credits: 3 (3-0-0)
Also Offered As: ANTH 478.
Course Description: Cultural resource laws and policy; practices commonly employed in the management and preservation of these diverse resources.
Prerequisite: None.
Restriction: .
Registration Information: Junior or senior standing. Credit not allowed for both HIST 478 and ANTH 478.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 479 Practice of Public History Credits: 3 (3-0-0)
Course Description: Public history methods and career paths into interpretation, museums, archives, historic preservation, oral history, and other fields.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Assisting the instructor in teaching introductory history courses; relevant readings and discussions.
Prerequisite: None.
Registration Information: Completion of 45 credits. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HIST 487 Internship Credits: Var[1-3] (0-0-0)
Course Description: Application of historical methods in museums, libraries, and at historic sites.
Prerequisite: None.
Registration Information: Completion of 45 credits. A maximum of 10 combined credits for all 384 and 484 courses are counted toward graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 492 Capstone Seminar Credits: 3 (0-0-3)
Course Description: Seminar involving critical reading, writing, research, and discussion. Topics vary by instructor.
Prerequisite: None.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing; history majors only. To count toward the major, the course must be completed with a grade of C or better.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 497 Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 501 Historical Method: Historiography Credits: 3 (0-0-3)
Course Description: Historiographical skills and methods, emphasis on research, writing, and interpretation.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 502 Historical Method: Archives Credits: 3 (0-0-3)
Course Description: Historiographical skills and methods; emphasis on fundamentals of archival science.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 503 Historical Method: Preservation Credits: 3 (0-0-3)
Course Description: Historiographical skills and methods; emphasis on theory and practice of historic preservation.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 504 Historical Method: Museums Credits: 3 (0-0-3)
Course Description: Historiographical skills and methods; emphasis on philosophy and practices of history museums.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 505 Historical Method - Digital History Credits: 3 (3-0-0)
Course Description: Historiographical skills and methods; emphasis on theory and practice of digital history.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Credit not allowed for both HIST 505 and HIST 580A1.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 511 Reading Seminar: U.S. to 1877 Credits: 3 (0-0-3)
Course Description: Readings on United States history to 1877.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 512 Reading Seminar: U.S. Since 1877 Credits: 3 (0-0-3)
Course Description: Readings on United States history since 1877.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 515 Records Management Credits: 3 (3-0-0)
Course Description: Basic records management techniques and concepts such as retention, vital records, disaster planning, and electronic records.
Prerequisite: HIST 501.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 520 Reading Seminar-Europe to 1815 Credits: 3 (0-0-3)
Course Description: Readings on European history to 1815.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 521 Reading Seminar-Europe Since 1815 Credits: 3 (0-0-3)
Course Description: Readings on European history since 1815.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 530 Reading Seminar: Africa Credits: 3 (0-0-3)
Course Description: Readings on major historiographical issues in African history.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 531 Reading Seminar: Latin America Credits: 3 (0-0-3)
Course Description: Readings on major historiographical issues in Latin American history.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 532 Reading Seminar: Middle East Credits: 3 (0-0-3)
Course Description: Readings on major historiographical issues in Middle East history.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 533 Reading Seminar: East Asia Credits: 3 (0-0-3)
Course Description: Readings on major historiographical issues in East Asian history.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 534 Reading Seminar: South Asia Credits: 3 (0-0-3)
Course Description: Major historiographical issues in South Asian history.
Prerequisite: HIST 501.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 539 Reading Seminar--World Environmental History Credits: 3 (0-0-3)
Course Description: Major works in the field of world environmental history and the major historiographical debates.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 540 Material Culture Credits: 3 (0-0-3)
Course Description: Social, cultural, economic, and political developments in history as interpreted through artifacts.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 586 Practicum Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 587 Internship Credits: Var[1-6] (0-0-0)
Course Description: Work-oriented instruction involving implementation of classroom and laboratory experiences coordinated by a faculty member.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 611 Research Seminar: United States Credits: 3 (0-0-3)
Course Description: Research in United States history.
Prerequisite: HIST 501.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 621 Research Seminar: Europe Credits: 3 (0-0-3)
Course Description: Research in European history.
Prerequisite: HIST 501.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 640 Research Seminar: State and Local History Credits: 3 (0-0-3)
Course Description: Research in and interpretation of state and local history within the broader context of United States history.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: Discussions and readings to enhance teaching proficiency.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: HIST 501.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 697 Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: HIST 501.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in History

History analyzes the course of human affairs through evidence and reason. It sheds light on our present by showing how individuals and groups in the past made decisions, exercised power, and responded to changes through revolution, migration, war, ecological disturbance, and globalization. History also explains how people understood and sometimes exploited class, ethnicity, gender, race, and sexuality, and how they conceptualized the world through religion and ideology.

The Major in History also offers courses in public history (such as the National Parks, museums, documentary films, historic preservation, and urban planning), a Social Studies Teaching concentration, and courses in digital history which give students the opportunity to apply twenty-

first century tools and technologies to understand and interpret the past. Students can focus their coursework in these areas.

The Major in History is designed to enlarge students' knowledge about the past, improve their ability to think logically and critically, and sharpen their powers of written and oral expression. It is an outstanding choice for students planning further professional study in law, medicine, ministry, academia, business, and many other fields.

Learning Outcomes

Students in History courses:

- Analyze and interpret historical materials, such as documents, material artifacts, and images;
- Engage in chronological reasoning to understand causation and change over time;
- Examine critically how people in the past understood their own history in scholarly works and in popular forms such as myths, memorials, and other public commemorations;
- Interpret, write, and speak about the past using evidence and according to the standards and expectations of the historical discipline, including honest use of evidence, openness to multiple perspectives, and historical empathy; and
- Analyze both change and continuities over time by considering how events such as revolution, migration, war, ecological disturbance, and globalization changed societies as well as how structures like class, ethnicity, gender, race, sexuality, climate and religion shaped societies over a longer time horizon.

Potential Occupations

- Government official in foreign service, national security, military, cultural resources management, and other areas;
- History teacher in public and private schools;
- Any professional occupation in business or public service requiring a liberal arts education and skills in research, writing, and the analysis of information;
- With additional graduate training: lawyer, physician, social worker, minister, librarian, museum curator, archivist, professor, educational administrator, or other professional.

Concentrations

- General History Concentration
- Language Concentration
- Social and Behavioral Sciences Concentration
- Social Studies Teaching Concentration

Major in History, General History Concentration

The General History concentration is an excellent choice for students planning careers in history, government service, other professional occupations requiring broad intellectual and practical skills. This concentration is also a good choice for students who want an introduction to and training in public history to work in museums, government agencies, consulting, and historical societies. History majors who select the General History concentration must complete another major or minor offered at CSU (except the minor in History).

Requirements
Effective Fall 2019

A minimum grade of C (2.00) must be earned in HIST 492 **and all 100-level courses required in the history major.**

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
Select one course from the following:			3
HIST 100	Western Civilization, Pre-Modern (GT-HI1)	3D	
HIST 115	The Islamic World: Late Antiquity to 1500	3D	
HIST 120	Asian Civilizations I (GT-HI1)	3D	
HIST 170	World History, Ancient-1500 (GT-HI1)	3D	
Select one course from the following:			3
HIST 101	Western Civilization, Modern (GT-HI1)	3D	
HIST 121	Asian Civilizations II (GT-HI1)	3D	
HIST 171	World History, 1500-Present (GT-HI1)	3D	
Minor or Second Major[1]			3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	7
Social and Behavioral Sciences		3C	3
Quantitative Reasoning		1B	3
Elective			3
	Total Credits		31

Sophomore

HIST 150 or 151	U.S. History to 1876 (GT-HI1) U.S. History Since 1876 (GT-HI1)	3D	3
History Elective, Upper-Division[2]			3
Minor or Second Major[1]			6
Advanced Writing		2	3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Electives			9
	Total Credits		30

Junior

HIST *** History, AUCC Category 4A (See list below)		4A	3
HIST *** History, Upper-Division non U.S.[3]			6
HIST *** History, Upper-Division U.S.[4]			3
Minor or Second Major[1]			6
Electives			12
	Total Credits		30

Senior

HIST 492	Capstone Seminar	4A,4B,4C	3
History Electives, Upper-Division[2]			6
Minor or Second Major[1]			6-15
Electives[5]			6-15
	Total Credits		29
	Program Total Credits:		120

History, AUCC Category 4A Courses

Code	Title	AUCC	Credits
HIST 300	Ancient Greece to 323 B.C.E.	4A	3
HIST 301	Roman Republic	4A	3
HIST 303	Hellenistic World: Alexander to Cleopatra	4A	3
HIST 304	Women in Ancient Greece and Rome	4A	3
HIST 308	Ancient Christianity to 500 A.D.	4A	3
HIST 309	Medieval Christianity, 500-1500	4A	3
HIST 311	Medieval England	4A	3
HIST 315	Tudor Stuart England, 1485-1689	4A	3
HIST 317	Renaissance and Reformation Europe	4A	3
HIST 318	The Age of the Enlightenment	4A	3
HIST 319	Early Modern France, 1500-1789	4A	3
HIST 320	Women and Gender in Europe, 1450-1789	4A	3
HIST 321	Industrial Society in Europe, 1600-1871	4A	3
HIST 322	Industrial Society in Europe, 1871-1989	4A	3
HIST 323	Russia Before 1700	4A	3
HIST 324	Imperial Russia	4A	3
HIST 328	Modern Europe, 1815-1914	4A	3

HIST 329	Europe in Crisis, 1914-1941	4A	3
HIST 330	Eastern Europe Since 1918	4A	3
HIST 331	The Soviet Union	4A	3
HIST 332	Germany Since World War I	4A	3
HIST 333	Contemporary Europe	4A	3
HIST 334	European Culture in the 20th Century	4A	3
HIST 335	Britain in the 20th Century	4A	3
HIST 340	Colonial North America, 1492-1800	4A	3
HIST 341	Eighteenth Century America	4A	3
HIST 344	Antebellum America	4A	3
HIST 345	Civil War Era	4A	3
HIST 346	Reconstruction and the New South	4A	3
HIST 347	United States, 1876-1917	4A	3
HIST 348	United States, 1917-1945	4A	3
HIST 349	United States Since 1945	4A	3
HIST 350	United States Foreign Relations Since 1914	4A	3
HIST 351	American West to 1900	4A	3
HIST 352	American West Since 1900	4A	3
HIST 353	U.S.-Mexico Borderlands	4A	3
HIST 354	American Architectural History	4A	3
HIST 355	American Environmental History	4A	3
HIST 356	American Cultural and Intellectual History	4A	3
HIST 357/MLSC 357	The American Military Experience	4A	3
HIST 359	American Women's History Since 1800	4A	3
HIST 360	United States Immigration History	4A	3
HIST 410	Colonial Latin America	4A	3
HIST 412	Mexico	4A	3
HIST 414	Revolutions in Latin America	4A	3
HIST 421	Africa: Colonialism to Independence	4A	3
HIST 422	Modern Africa	4A	3
HIST 423	South African History	4A	3
HIST 430	Ancient Near East	4A	3
HIST 431	Ancient Israel	4A	3
HIST 432	Sacred History in the Bible and the Qur'an	4A	3
HIST 433	Muhammad and the Origins of Islam	4A	3
HIST 438	The Modern Middle East	4A	3
HIST 440	Modern South Asia: Colonialism and Nationalism	4A	3
HIST 441	South Asia Since Independence	4A	3
HIST 450	Ancient China	4A	3
HIST 451	Medieval China and Central Asia	4A	3
HIST 452	China in the Modern World, 1600-Present	4A	3
HIST 455	Tokugawa and Modern Japan, 1600-Present	4A	3
HIST 461	Rise and Fall of British Empire 1600-1947	4A	3
HIST 463	Science and Technology in Modern History	4A	3
HIST 464	Pacific Wars: Philippines-WWII	4A	3

HIST 465	Pacific Wars: Korea and Vietnam	4A	3
HIST 466	U.S.-China Relations Since 1800	4A	3
HIST 469	The Crusades	4A	3
HIST 479	Practice of Public History	4A	3

History, Upper-Division Course Categories

Course Number Range	Title
HIST 300 - HIST 339	Europe
HIST 340 - HIST 379	North America/US
HIST 410 - HIST 419	Latin America
HIST 420 - HIST 429	Africa
HIST 430 - HIST 439	Middle East
HIST 440 - HIST 449	South Asia
HIST 450 - HIST 459	East Asia
HIST 460 - HIST 471	World/Trans-regional

[1] Students must complete a minor or second major to fulfill the requirements for the major in History, General History concentration. Select any minor offered at CSU except the History minor for a minimum of 21 credits; or select any second major offered at CSU for a minimum of 27 credits.

[2] Students may not count more than 3 credits of HIST 484 and HIST 487 toward their history Upper-Division electives requirement.

[3] Select one Upper-Division course from two of the following categories: Africa, East Asia, Europe, Latin America/Caribbean, Middle East, South Asia, World/Trans-regional. See Upper-Division Course Categories table.

[4] Select one Upper-Division course from the North America/US category.

[5] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be Upper-Division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
Students must earn a C or better in all 100-level History classes and HIST 492 capstone.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
Select one course from the following:					3
HIST 100	Western Civilization, Pre-Modern (GT-HI1)			3D	
HIST 115	The Islamic World: Late Antiquity to 1500			3D	
HIST 120	Asian Civilizations I (GT-HI1)			3D	
HIST 170	World History, Ancient-1500 (GT-HI1)			3D	
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
Quantitative Reasoning				1B	3
	Total Credits				15

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
HIST 101	Western Civilization, Modern (GT-HI1)			3D	
HIST 121	Asian Civilizations II (GT-HI1)			3D	
HIST 171	World History, 1500-Present (GT-HI1)			3D	
Biological and Physical Sciences				3A	4
Social and Behavioral Sciences				3C	3
Minor or Second Major Course (Lower-Division)					3
Elective (or course in Second Major)					3
AUCC 1B (Quantitative Reasoning), CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
HIST 150 or 151	U.S. History to 1876 (GT-HI1) U.S. History Since 1876 (GT-HI1)			3D	3
Arts and Humanities				3B	3
Diversity and Global Awareness				3E	3
Minor or Second Major Course (Lower-Division)					3

Elective (or course in Second Major)				3
	Total Credits			15
Semester 4	**Critical**	**Recommended**	**AUCC**	**Credits**
History Elective, Upper-Division				3
Advanced Writing			2	3
Minor or Second Major Course (Lower-Division)				3
Electives (or courses in Second Major)				6
HIST 1*** History, 100-level must be completed by the end of Semester 4.	X			
	Total Credits			15
Junior				
Semester 5	**Critical**	**Recommended**	**AUCC**	**Credits**
HIST*** History, Upper-Division non U.S.				3
HIST*** History, Upper-Division U.S.				3
Minor or Second Major Course (Upper-Division)				3
Electives (or courses in Second Major)				6
	Total Credits			15
Semester 6	**Critical**	**Recommended**	**AUCC**	**Credits**
HIST*** History, AUCC Category 4A (See Department List on Concentration Requirements tab)			4A	3
HIST*** History, Upper-Division non U.S.				3
Minor or Second Major Course (Upper-Division)				3
Electives (or courses in Second Major)				6
	Total Credits			15
Senior				
Semester 7	**Critical**	**Recommended**	**AUCC**	**Credits**
History Electives, Upper-Division				6
Minor or Second Major Course (Upper-Division)				3
Electives (or courses in Second Major)				6
	Total Credits			15
Semester 8	**Critical**	**Recommended**	**AUCC**	**Credits**
HIST 492 Capstone Seminar	X		4A,4B,4C	3
Minor or Second Major Course (Upper-Division)	X			3
Electives (or courses in Second Major)	X			6
Elective	X			2
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X			
	Total Credits			14
	Program Total Credits:			120

Major in History, Language Concentration

The Language concentration is an especially appropriate choice for students who plan to pursue graduate study in history or international affairs, and for those who hope to work in the areas of national security, diplomacy, or international business.

Requirements Effective Fall 2019

A minimum grade of C (2.000) must be earned for HIST 492 and all 100-level courses required in the history major.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
Select one course from the following:			3
HIST 100	Western Civilization, Pre-Modern (GT-HI1)	3D	

HIST 115	The Islamic World: Late Antiquity to 1500	3D	
HIST 120	Asian Civilizations I (GT-HI1)	3D	
HIST 170	World History, Ancient-1500 (GT-HI1)	3D	
Select one course from the following:			3
HIST 101	Western Civilization, Modern (GT-HI1)	3D	
HIST 121	Asian Civilizations II (GT-HI1)	3D	
HIST 171	World History, 1500-Present (GT-HI1)	3D	
L*** 100 First Year Language I[1,2]			5
L*** 101 First Year Language II[2]			5
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	7
Quantitative Reasoning		1B	3
	Total Credits		32

Sophomore

HIST 150 or 151	U.S. History to 1876 (GT-HI1) U.S. History Since 1876 (GT-HI1)	3D	3
L*** 200 Second Year Language I[2]			3
L*** 201 Second Year Language II[2]			3
History Elective, Upper-Division[3]			3
Advanced Writing		2	3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Social and Behavioral Sciences		3C	3
Electives			6
	Total Credits		30

Junior

HIST *** History, AUCC Category 4A (See list below)		4A	3
HIST *** History, Upper-Division non-U.S.[4]			6
HIST *** History, Upper-Division U.S.[5]			3
Electives			18
	Total Credits		30

Senior

HIST 492	Capstone Seminar	4A,4B,4C	3
History Electives, Upper-Division[3]			6
Electives[6]			19
	Total Credits		28
	Program Total Credits:		120

History, AUCC Category 4A Courses

Code	Title	AUCC	Credits
HIST 300	Ancient Greece to 323 B.C.E.	4A	3
HIST 301	Roman Republic	4A	3
HIST 303	Hellenistic World: Alexander to Cleopatra	4A	3
HIST 304	Women in Ancient Greece and Rome	4A	3
HIST 308	Ancient Christianity to 500 A.D.	4A	3
HIST 309	Medieval Christianity, 500-1500	4A	3
HIST 311	Medieval England	4A	3

HIST 315	Tudor Stuart England, 1485-1689	4A	3
HIST 317	Renaissance and Reformation Europe	4A	3
HIST 318	The Age of the Enlightenment	4A	3
HIST 319	Early Modern France, 1500-1789	4A	3
HIST 320	Women and Gender in Europe, 1450-1789	4A	3
HIST 321	Industrial Society in Europe, 1600-1871	4A	3
HIST 322	Industrial Society in Europe, 1871-1989	4A	3
HIST 323	Russia Before 1700	4A	3
HIST 324	Imperial Russia	4A	3
HIST 328	Modern Europe, 1815-1914	4A	3
HIST 329	Europe in Crisis, 1914-1941	4A	3
HIST 330	Eastern Europe Since 1918	4A	3
HIST 331	The Soviet Union	4A	3
HIST 332	Germany Since World War I	4A	3
HIST 333	Contemporary Europe	4A	3
HIST 334	European Culture in the 20th Century	4A	3
HIST 335	Britain in the 20th Century	4A	3
HIST 340	Colonial North America, 1492-1800	4A	3
HIST 341	Eighteenth Century America	4A	3
HIST 344	Antebellum America	4A	3
HIST 345	Civil War Era	4A	3
HIST 346	Reconstruction and the New South	4A	3
HIST 347	United States, 1876-1917	4A	3
HIST 348	United States, 1917-1945	4A	3
HIST 349	United States Since 1945	4A	3
HIST 350	United States Foreign Relations Since 1914	4A	3
HIST 351	American West to 1900	4A	3
HIST 352	American West Since 1900	4A	3
HIST 353	U.S.-Mexico Borderlands	4A	3
HIST 354	American Architectural History	4A	3
HIST 355	American Environmental History	4A	3
HIST 356	American Cultural and Intellectual History	4A	3
HIST 357/MLSC 357	The American Military Experience	4A	3
HIST 359	American Women's History Since 1800	4A	3
HIST 360	United States Immigration History	4A	3
HIST 410	Colonial Latin America	4A	3
HIST 412	Mexico	4A	3
HIST 414	Revolutions in Latin America	4A	3
HIST 421	Africa: Colonialism to Independence	4A	3
HIST 422	Modern Africa	4A	3
HIST 423	South African History	4A	3
HIST 430	Ancient Near East	4A	3
HIST 431	Ancient Israel	4A	3
HIST 432	Sacred History in the Bible and the Qur'an	4A	3
HIST 433	Muhammad and the Origins of Islam	4A	3

HIST 438	The Modern Middle East	4A	3
HIST 440	Modern South Asia: Colonialism and Nationalism	4A	3
HIST 441	South Asia Since Independence	4A	3
HIST 450	Ancient China	4A	3
HIST 451	Medieval China and Central Asia	4A	3
HIST 452	China in the Modern World, 1600-Present	4A	3
HIST 455	Tokugawa and Modern Japan, 1600-Present	4A	3
HIST 461	Rise and Fall of British Empire 1600-1947	4A	3
HIST 463	Science and Technology in Modern History	4A	3
HIST 464	Pacific Wars: Philippines-WWII	4A	3
HIST 465	Pacific Wars: Korea and Vietnam	4A	3
HIST 466	U.S.-China Relations Since 1800	4A	3
HIST 469	The Crusades	4A	3
HIST 479	Practice of Public History	4A	3

History, Upper-Division Course Categories

Course Number Range	Title
HIST 300 - HIST 339	Europe
HIST 340 - HIST 379	North America/US
HIST 410 - HIST 419	Latin America
HIST 420 - HIST 429	Africa
HIST 430 - HIST 439	Middle East
HIST 440 - HIST 449	South Asia
HIST 450 - HIST 459	East Asia
HIST 460 - HIST 471	World/Trans-regional

[1] Placement exam required.

[2] Foreign language courses are in separate subject codes (all starting with L and followed by three letters designating the language, e.g., LFRE is French, LGER is German, etc.).

[3] Students may not count more than 3 credits of HIST 484 and HIST 487 toward their history Upper-Division electives requirement.

[4] Select one Upper-Division course from two of the following categories: Africa, East Asia, Europe, Latin America/Caribbean, Middle East, South Asia, World/Trans-regional. See Upper-Division Course Categories table.

[5] Select one Upper-Division course from the North America/US Category.

[6] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be Upper-Division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
Students must earn a C or better in all 100-level History classes and HIST 492 capstone.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
CO 150	College Composition (GT-CO2)			1A	3
Select one course from the following:					3
HIST 100	Western Civilization, Pre-Modern (GT-HI1)			3D	
HIST 115	The Islamic World: Late Antiquity to 1500			3D	
HIST 120	Asian Civilizations I (GT-HI1)			3D	
HIST 170	World History, Ancient-1500 (GT-HI1)			3D	
L*** 100 First Year Language I Course					5
Biological and Physical Sciences				3A	4
	Total Credits				15

Semester 2		Critical	Recommended	AUCC	Credits
Select one course from the following:					3
HIST 101	Western Civilization, Modern (GT-HI1)			3D	
HIST 121	Asian Civilizations II (GT-HI1)			3D	
HIST 171	World History, 1500-Present (GT-HI1)			3D	
L*** 101 First Year Language II Course					5

Arts and Humanities			3B	3
Biological and Physical Sciences			3A	3
Quantitative Reasoning	X		1B	3
CO 150 must be completed by the end of Semester 2.	X			
Total Credits				17

Sophomore

Semester 3	**Critical**	**Recommended**	**AUCC**	**Credits**
HIST 150 or 151 U.S. History to 1876 (GT-HI1) U.S. History Since 1876 (GT-HI1)			3D	3
L*** 200 Second Year Language I				3
Arts and Humanities			3B	3
Diversity and Global Awareness			3E	3
Social and Behavioral Sciences			3C	3
Total Credits				15

Semester 4	**Critical**	**Recommended**	**AUCC**	**Credits**
L*** 201 Second Year Language II				3
History Elective, Upper-Division				3
Advanced Writing			2	3
Electives				6
HIST 1*** History, 100-level must be completed by the end of Semester 4.	X			
Total Credits				15

Junior

Semester 5	**Critical**	**Recommended**	**AUCC**	**Credits**
HIST*** History, Upper-Division non-U.S.				3
HIST*** History, Upper-Division U.S.				3
Electives				6
Upper-Division Elective				3
Total Credits				15

Semester 6	**Critical**	**Recommended**	**AUCC**	**Credits**
HIST*** History, AUCC Category 4A (See Department List on Concentration Requirements tab)			4A	3
HIST*** History, Upper-Division non-U.S.				3
Elective				3
Upper-Division Electives				6
Total Credits				15

Senior

Semester 7	**Critical**	**Recommended**	**AUCC**	**Credits**
History Electives, Upper-Division				6
Upper-Division Electives				6
Elective				3
Total Credits				15

Semester 8	**Critical**	**Recommended**	**AUCC**	**Credits**
HIST 492 Capstone Seminar	X		4A,4B,4C	3
Upper-Division Elective	X			3
Electives	X			7
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X			
Total Credits				13
Program Total Credits:				120

Major in History, Social and Behavioral Sciences Concentration

The Social and Behavioral Sciences concentration is intended to facilitate the timely graduation of History majors who decide to transition from the Social Studies Teaching concentration to another concentration in their third or fourth year of study at CSU.

Requirements Effective Fall 2019

A minimum grade of C (2.000) must be earned for HIST 492 and all 100-level courses required in the history major.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
Select one course from the following:			3
HIST 100	Western Civilization, Pre-Modern (GT-HI1)	3D	
HIST 115	The Islamic World: Late Antiquity to 1500	3D	
HIST 120	Asian Civilizations I (GT-HI1)	3D	
HIST 170	World History, Ancient-1500 (GT-HI1)	3D	
Select one course from the following:			3
HIST 101	Western Civilization, Modern (GT-HI1)	3D	
HIST 121	Asian Civilizations II (GT-HI1)	3D	
HIST 171	World History, 1500-Present (GT-HI1)	3D	
Arts and Humanities		3B	6
Biological and Physical Sciences		3A	7
Diversity and Global Awareness		3E	3
Quantitative Reasoning		1B	3
Elective			2
	Total Credits		30

Sophomore

Select one from the following:			3
EDUC 275	Schooling in the United States (GT-SS3)	3C	
EDUC 340	Literacy and the Learner		
Select one from the following:			3
HIST 150	U.S. History to 1876 (GT-HI1)	3D	
HIST 151	U.S. History Since 1876 (GT-HI1)	3D	
Advanced Writing		2	3
Social and Behavioral Sciences		3C	3
Select courses from the following:[1]			3-12
ANTH, ECON, GR, POLS, PSY, SOC			
Electives			6-15
	Total Credits		30

Junior

HIST *** History, AUCC Category 4A (See list below)		4A	3
HIST *** History, Upper-Division non-U.S.[2]			6
HIST *** History, Upper-Division U.S.[3]			3
Select courses from the following:[1]			9-18
ANTH, ECON, GR, POLS, PSY, SOC			
Electives			0-9
	Total Credits		30

Senior

HIST 492	Capstone Seminar	4A,4B,4C	3
History Electives, Upper-Division[4]			9
Electives[5]			18
	Total Credits		30
	Program Total Credits:		120

History, AUCC Category 4A Courses

Code	Title	AUCC	Credits
HIST 300	Ancient Greece to 323 B.C.E.	4A	3
HIST 301	Roman Republic	4A	3
HIST 303	Hellenistic World: Alexander to Cleopatra	4A	3
HIST 304	Women in Ancient Greece and Rome	4A	3
HIST 308	Ancient Christianity to 500 A.D.	4A	3
HIST 309	Medieval Christianity, 500-1500	4A	3
HIST 311	Medieval England	4A	3
HIST 315	Tudor Stuart England, 1485-1689	4A	3
HIST 317	Renaissance and Reformation Europe	4A	3
HIST 318	The Age of the Enlightenment	4A	3
HIST 319	Early Modern France, 1500-1789	4A	3
HIST 320	Women and Gender in Europe, 1450-1789	4A	3
HIST 321	Industrial Society in Europe, 1600-1871	4A	3
HIST 322	Industrial Society in Europe, 1871-1989	4A	3
HIST 323	Russia Before 1700	4A	3
HIST 324	Imperial Russia	4A	3
HIST 328	Modern Europe, 1815-1914	4A	3
HIST 329	Europe in Crisis, 1914-1941	4A	3
HIST 330	Eastern Europe Since 1918	4A	3
HIST 331	The Soviet Union	4A	3
HIST 332	Germany Since World War I	4A	3
HIST 333	Contemporary Europe	4A	3
HIST 334	European Culture in the 20th Century	4A	3
HIST 335	Britain in the 20th Century	4A	3
HIST 340	Colonial North America, 1492-1800	4A	3
HIST 341	Eighteenth Century America	4A	3
HIST 344	Antebellum America	4A	3
HIST 345	Civil War Era	4A	3
HIST 346	Reconstruction and the New South	4A	3
HIST 347	United States, 1876-1917	4A	3
HIST 348	United States, 1917-1945	4A	3
HIST 349	United States Since 1945	4A	3
HIST 350	United States Foreign Relations Since 1914	4A	3
HIST 351	American West to 1900	4A	3
HIST 352	American West Since 1900	4A	3
HIST 353	U.S.-Mexico Borderlands	4A	3

HIST 354	American Architectural History	4A	3
HIST 355	American Environmental History	4A	3
HIST 356	American Cultural and Intellectual History	4A	3
HIST 357/MLSC 357	The American Military Experience	4A	3
HIST 359	American Women's History Since 1800	4A	3
HIST 360	United States Immigration History	4A	3
HIST 410	Colonial Latin America	4A	3
HIST 412	Mexico	4A	3
HIST 414	Revolutions in Latin America	4A	3
HIST 421	Africa: Colonialism to Independence	4A	3
HIST 422	Modern Africa	4A	3
HIST 423	South African History	4A	3
HIST 430	Ancient Near East	4A	3
HIST 431	Ancient Israel	4A	3
HIST 432	Sacred History in the Bible and the Qur'an	4A	3
HIST 433	Muhammad and the Origins of Islam	4A	3
HIST 438	The Modern Middle East	4A	3
HIST 440	Modern South Asia: Colonialism and Nationalism	4A	3
HIST 441	South Asia Since Independence	4A	3
HIST 450	Ancient China	4A	3
HIST 451	Medieval China and Central Asia	4A	3
HIST 452	China in the Modern World, 1600-Present	4A	3
HIST 455	Tokugawa and Modern Japan, 1600-Present	4A	3
HIST 461	Rise and Fall of British Empire 1600-1947	4A	3
HIST 463	Science and Technology in Modern History	4A	3
HIST 464	Pacific Wars: Philippines-WWII	4A	3
HIST 465	Pacific Wars: Korea and Vietnam	4A	3
HIST 466	U.S.-China Relations Since 1800	4A	3
HIST 469	The Crusades	4A	3
HIST 479	Practice of Public History	4A	3

History, Upper-Division Course Categories

Course Number Range	Title
HIST 300 - HIST 339	Europe
HIST 340 - HIST 379	North America/US
HIST 410 - HIST 419	Latin America
HIST 420 - HIST 429	Africa
HIST 430 - HIST 439	Middle East
HIST 440 - HIST 449	South Asia
HIST 450 - HIST 459	East Asia
HIST 460 - HIST 471	World/Trans-regional

[1] 12 of the 21 credits must be Upper-Division regular courses (300-379; 400-479).

[2] Select one Upper-Division course from two categories: Africa, East Asia, Europe, Latin America/Caribbean, Middle East, South Asia, World/Trans-regional. See Upper-Division Course Categories table.

[3] Select one Upper-Division course from the North America/US Category.

[4] Students may not count more than 3 credits of HIST 484 and HIST 487 toward their history Upper-Division electives requirement.

[5] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be Upper-Division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
Students must earn a C or better in all 100-level History classes and HIST 492 capstone.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
Select one course from the following:					3
HIST 100	Western Civilization, Pre-Modern (GT-HI1)			3D	
HIST 115	The Islamic World: Late Antiquity to 1500			3D	
HIST 120	Asian Civilizations I (GT-HI1)			3D	
HIST 170	World History, Ancient-1500 (GT-HI1)			3D	
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
Quantitative Reasoning				1B	3
	Total Credits				15

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
HIST 101	Western Civilization, Modern (GT-HI1)			3D	
HIST 121	Asian Civilizations II (GT-HI1)			3D	
HIST 171	World History, 1500-Present (GT-HI1)			3D	
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	4
Diversity and Global Awareness				3E	3
Elective					2
AUCC 1B (Quantitative Reasoning), CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
HIST 150	U.S. History to 1876 (GT-HI1)			3D	
HIST 151	U.S. History Since 1876 (GT-HI1)			3D	
Social and Behavioral Sciences				3C	3
ANTH, ECON, GR, POLS, PSY, or SOC Courses					0-6
Electives					3-9
	Total Credits				15

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
EDUC 275	Schooling in the United States (GT-SS3)			3C	
EDUC 340	Literacy and the Learner				
Advanced Writing				2	3
ANTH, ECON, GR, POLS, PSY or SOC Courses					3-6
Electives					3-6
	Total Credits				15

Junior

Semester 5	**Critical**	**Recommended**	**AUCC**	**Credits**
HIST*** History, AUCC Category 4A (See Department List on Concentration Requirements tab)			4A	3
HIST*** History, Upper-Division non-U.S.				3
ANTH, ECON, GR, POLS, PSY, or SOC Courses				6-9
Elective				0-3
Total Credits				15

Semester 6	**Critical**	**Recommended**	**AUCC**	**Credits**
HIST*** History, Upper-Division non-U.S.				3

HIST*** History, Upper-Division U.S.					3
ANTH, ECON, GR, POLS, PSY, or SOC Courses					3-9
Electives					0-6
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Upper-Division HIST Electives					6
Electives					9
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
HIST 492	Capstone Seminar	X		4A,4B,4C	3
Upper-Division HIST Elective		X			3
Electives		X			9
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in History, Social Studies Teaching Concentration

The Social Studies Teaching concentration is for students who plan to teach in middle school, junior high, or high school. Students must also complete the requirements for the Social Studies Undergraduate Teaching Licensure through the Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu) in the College of Health and Human Sciences.

Students interested in pursuing a teaching license through CSU may refer to the Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu) and the School of Education, or visit the Education Building, Room 111 for general information.

Requirements Effective Fall 2019

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
GR 100	Introduction to Geography (GT-SS2)	3C	3
Select one course from the following:			3
HIST 100[1]	Western Civilization, Pre-Modern (GT-HI1)	3D	
HIST 115[1]	The Islamic World: Late Antiquity to 1500	3D	
HIST 120[1]	Asian Civilizations I (GT-HI1)	3D	
HIST 170[1]	World History, Ancient-1500 (GT-HI1)	3D	
Select one course from the following:			3
HIST 101[1]	Western Civilization, Modern (GT-HI1)	3D	
HIST 121[1]	Asian Civilizations II (GT-HI1)	3D	
HIST 171[1]	World History, 1500-Present (GT-HI1)	3D	
SPCM 200[1]	Public Speaking		3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	7
Quantitative Reasoning		1B	3
Elective			2
	Total Credits		30

Sophomore

Select one course from the following:			3
ANTH 100	Introductory Cultural Anthropology (GT-SS3)	3C	
PSY 100	General Psychology (GT-SS3)	3C	

SOC 100	General Sociology (GT-SS3)	3C	
SOC 105	Social Problems (GT-SS3)	3C	
Select two courses from the following:			6
ECON 101	Economics of Social Issues (GT-SS1)	3C	
ECON 202	Principles of Microeconomics (GT-SS1)	3C	
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	
ECON 211	Gender in the Economy (GT-SS1)	3E	
ECON 212	Racial Inequality and Discrimination (GT-SS1)	3C	
ECON 240/AREC 240	Issues in Environmental Economics (GT-SS1)	3C	
EDUC 275	Schooling in the United States (GT-SS3)	3C	3
HIST 150[1]	U.S. History to 1876 (GT-HI1)	3D	3
HIST 151[1]	U.S. History Since 1876 (GT-HI1)	3D	3
POLS 101	American Government and Politics (GT-SS1)	3C	3
POLS 241	Comparative Government and Politics (GT-SS1)	3E	3
Advanced Writing		2	3
	Total Credits		27

Junior

EDUC 331	Educational Technology and Assessment		2
EDUC 340	Literacy and the Learner		3
EDUC 350	Instruction I-Individualization/Management		3
EDUC 386	Practicum-Instruction I		1
EDUC 450	Instruction II-Standards and Assessment		4
EDUC 465	Methods and Materials in Social Studies		4
EDUC 486E	Practicum: Instruction II		1
GR 320	Cultural Geography		3
HIST *** History, AUCC Category 4A (See list below)[2,3]		4A	3
HIST *** History, upper-division non-U.S.[3,4]			3-6
HIST *** History, upper-division U.S.[3,5]			3-6
	Total Credits		33

Senior

EDUC 485B	Student Teaching: Secondary		11
EDUC 493A	Seminar: Professional Relations		1
HIST 492	Capstone Seminar	4A,4B,4C	3
Arts and Humanities		3B	3
HIST *** History, upper-division non-U.S.[3,4]			0-6
HIST *** History, upper-division U.S.[3,5]			0-6
Electives[6]			6
	Total Credits		30
	Program Total Credits:		120

History, AUCC Category 4A Courses

Select course, with advisor approval, to fulfill the category 4A requirement. The selected course may apply toward the History, upper-division (U.S. or non-U.S.) program requirements.

Code	Title	AUCC	Credits
HIST 300	Ancient Greece to 323 B.C.E.	4A	3
HIST 301	Roman Republic	4A	3
HIST 303	Hellenistic World: Alexander to Cleopatra	4A	3

HIST 304	Women in Ancient Greece and Rome	4A	3
HIST 308	Ancient Christianity to 500 A.D.	4A	3
HIST 309	Medieval Christianity, 500-1500	4A	3
HIST 311	Medieval England	4A	3
HIST 315	Tudor Stuart England, 1485-1689	4A	3
HIST 317	Renaissance and Reformation Europe	4A	3
HIST 318	The Age of the Enlightenment	4A	3
HIST 319	Early Modern France, 1500-1789	4A	3
HIST 320	Women and Gender in Europe, 1450-1789	4A	3
HIST 321	Industrial Society in Europe, 1600-1871	4A	3
HIST 322	Industrial Society in Europe, 1871-1989	4A	3
HIST 323	Russia Before 1700	4A	3
HIST 324	Imperial Russia	4A	3
HIST 328	Modern Europe, 1815-1914	4A	3
HIST 329	Europe in Crisis, 1914-1941	4A	3
HIST 330	Eastern Europe Since 1918	4A	3
HIST 331	The Soviet Union	4A	3
HIST 332	Germany Since World War I	4A	3
HIST 333	Contemporary Europe	4A	3
HIST 334	European Culture in the 20th Century	4A	3
HIST 335	Britain in the 20th Century	4A	3
HIST 340	Colonial North America, 1492-1800	4A	3
HIST 341	Eighteenth Century America	4A	3
HIST 344	Antebellum America	4A	3
HIST 345	Civil War Era	4A	3
HIST 346	Reconstruction and the New South	4A	3
HIST 347	United States, 1876-1917	4A	3
HIST 348	United States, 1917-1945	4A	3
HIST 349	United States Since 1945	4A	3
HIST 350	United States Foreign Relations Since 1914	4A	3
HIST 351	American West to 1900	4A	3
HIST 352	American West Since 1900	4A	3
HIST 353	U.S.-Mexico Borderlands	4A	3
HIST 354	American Architectural History	4A	3
HIST 355	American Environmental History	4A	3
HIST 356	American Cultural and Intellectual History	4A	3
HIST 357/MLSC 357	The American Military Experience	4A	3
HIST 359	American Women's History Since 1800	4A	3
HIST 360	United States Immigration History	4A	3
HIST 410	Colonial Latin America	4A	3
HIST 412	Mexico	4A	3
HIST 414	Revolutions in Latin America	4A	3
HIST 421	Africa: Colonialism to Independence	4A	3
HIST 422	Modern Africa	4A	3
HIST 423	South African History	4A	3
HIST 430	Ancient Near East	4A	3

HIST 431	Ancient Israel	4A	3
HIST 432	Sacred History in the Bible and the Qur'an	4A	3
HIST 433	Muhammad and the Origins of Islam	4A	3
HIST 438	The Modern Middle East	4A	3
HIST 440	Modern South Asia: Colonialism and Nationalism	4A	3
HIST 441	South Asia Since Independence	4A	3
HIST 450	Ancient China	4A	3
HIST 451	Medieval China and Central Asia	4A	3
HIST 452	China in the Modern World, 1600-Present	4A	3
HIST 455	Tokugawa and Modern Japan, 1600-Present	4A	3
HIST 461	Rise and Fall of British Empire 1600-1947	4A	3
HIST 463	Science and Technology in Modern History	4A	3
HIST 464	Pacific Wars: Philippines-WWII	4A	3
HIST 465	Pacific Wars: Korea and Vietnam	4A	3
HIST 466	U.S.-China Relations Since 1800	4A	3
HIST 469	The Crusades	4A	3
HIST 479	Practice of Public History	4A	3

History, Upper-Division Course Categories

Course Number Range	Title
HIST 300 - HIST 339	Europe
HIST 340 - HIST 379	North America/US
HIST 410 - HIST 419	Latin America
HIST 420 - HIST 429	Africa
HIST 430 - HIST 439	Middle East
HIST 440 - HIST 449	South Asia
HIST 450 - HIST 459	East Asia
HIST 460 - HIST 471	World/Trans-regional

History, Upper-Division U.S. Courses

Select one course from each category (Pre-1876, Post-1876, Any Period) for a total of 9 credits. The selected AUCC Category 4A course may apply toward this requirement.

Code	Title	Credits
U.S. History Courses Pre-1876 – Select one course from the following:		
HIST 340	Colonial North America, 1492-1800	3
HIST 341	Eighteenth Century America	3
HIST 344	Antebellum America	3
HIST 345	Civil War Era	3
HIST 351	American West to 1900	3
HIST 353	U.S.-Mexico Borderlands	3
HIST 358	American Women's History to 1800	3
HIST 361	American Indians in the Age of Conquest	3
HIST 366	African-American History to 1865	3
U.S. History Post-1876 – Select one course from the following:		
HIST 346	Reconstruction and the New South	3
HIST 347	United States, 1876-1917	3
HIST 348	United States, 1917-1945	3
HIST 349	United States Since 1945	3
HIST 350	United States Foreign Relations Since 1914	3
HIST 352	American West Since 1900	3
HIST 354	American Architectural History	3
HIST 355	American Environmental History	3
HIST 356	American Cultural and Intellectual History	3
HIST 357/MLSC 357	The American Military Experience	3
HIST 359	American Women's History Since 1800	3
HIST 360	United States Immigration History	3
HIST 362	American Indian Renaissance in Modern America	3
HIST 363	Colorado History	3
HIST 364/ETST 364	Asian American Social Movements, 1945-Present	3
HIST 365	American West Field Study	3
HIST 367	African-American History Since 1865	3
HIST 379/ECON 379	Economic History of the United States	3
HIST 476	History of America's National Parks	3
HIST 479	Practice of Public History	3
U.S. History Any Period – Select one course from the following:		
Any HIST course numbered 340-379		3
HIST 476	History of America's National Parks	3
HIST 477	Teaching History	3
HIST 479	Practice of Public History	3

1 Grade of C or better required.

2 Select from the list below, with advisor approval, to fulfill the All-University Core Curriculum (AUCC) category 4A requirement. The selected course may apply toward the History, upper-division (U.S. or non-U.S.) program requirements.

[3] Any student seeking to register for 300- or 400-level history courses must have completed 45 credits or have received written consent from the instructor.

[4] Select one upper-division course from three different categories (Africa, East Asia, Europe, Latin America/Caribbean, Middle East, South Asia, World/Trans-regional) for a total of 9 credits. The selected History, Category 4A course may apply towards this requirement.

[5] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
During their sophomore year, students must apply for admission to the licensure program. This requires completion of at least 30 credits, a minimum 3.000 GPA, and passing a criminal background check. To continue in the major, students must maintain a 3.000 GPA. Grades in all History, Social Studies and Education courses must be C or above.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
Select one course from the following:					3
HIST 100	Western Civilization, Pre-Modern (GT-HI1)			3D	
HIST 115	The Islamic World: Late Antiquity to 1500			3D	
HIST 120	Asian Civilizations I (GT-HI1)			3D	
HIST 170	World History, Ancient-1500 (GT-HI1)			3D	
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
Quantitative Reasoning				1B	3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
GR 100	Introduction to Geography (GT-SS2)			3C	3
Select one course from the following:					3
HIST 101	Western Civilization, Modern (GT-HI1)			3D	
HIST 121	Asian Civilizations II (GT-HI1)			3D	
HIST 171	World History, 1500-Present (GT-HI1)			3D	
SPCM 200	Public Speaking				3
Biological and Physical Sciences				3A	4
Elective					2
AUCC 1B (Quantitative Reasoning), CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
ANTH 100	Introductory Cultural Anthropology (GT-SS3)			3C	
PSY 100	General Psychology (GT-SS3)			3C	
SOC 100	General Sociology (GT-SS3)			3C	
SOC 105	Social Problems (GT-SS3)			3C	
EDUC 275	Schooling in the United States (GT-SS3)			3C	3
Select one course from the following:					3
ECON 101	Economics of Social Issues (GT-SS1)			3C	
ECON 202	Principles of Microeconomics (GT-SS1)			3C	
ECON 204	Principles of Macroeconomics (GT-SS1)			3C	
ECON 211	Gender in the Economy (GT-SS1)			3E	
ECON 212	Racial Inequality and Discrimination (GT-SS1)			3C	
ECON 240	Issues in Environmental Economics (GT-SS1)			3C	
Select one course from the following:					3
HIST 150	U.S. History to 1876 (GT-HI1)			3D	

HIST 151	U.S. History Since 1876 (GT-HI1)			3D	
POLS 101	American Government and Politics (GT-SS1)			3C	3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
ECON 101	Economics of Social Issues (GT-SS1)			3C	
ECON 202	Principles of Microeconomics (GT-SS1)			3C	
ECON 204	Principles of Macroeconomics (GT-SS1)			3C	
ECON 211	Gender in the Economy (GT-SS1)			3E	
ECON 212	Racial Inequality and Discrimination (GT-SS1)			3C	
ECON 240	Issues in Environmental Economics (GT-SS1)			3C	
Select one course from the following:					3
HIST 150	U.S. History to 1876 (GT-HI1)			3D	
HIST 151	U.S. History Since 1876 (GT-HI1)			3D	
POLS 241	Comparative Government and Politics (GT-SS1)			3E	3
Advanced Writing				2	3
Background Check		X			
EDUC 275, HIST 150, HIST 151 must be completed by the end of Semester 4.		X			
	Total Credits				12
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 340	Literacy and the Learner	X			3
EDUC 465	Methods and Materials in Social Studies		X		4
GR 320	Cultural Geography	X			3
HIST*** History, AUCC Category 4A (See Department List on Concentration Requirements tab)				4A	3
HIST*** Upper-Division History -U.S. or non-U.S. (See Department List on Concentration Requirements tab)					3
Admission to licensure and EDUC 340 must be completed by the end of Semester 5.		X			
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 331	Educational Technology and Assessment	X			2
EDUC 350	Instruction I-Individualization/Management	X			3
EDUC 386	Practicum-Instruction I	X			1
EDUC 450	Instruction II-Standards and Assessment		X		4
EDUC 486E	Practicum: Instruction II		X		1
HIST*** Upper-Division History -U.S. or non-U.S. (See Department List on Concentration Requirements tab)					6
	Total Credits				17
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
HIST 492	Capstone Seminar			4A,4B,4C	3
Arts and Humanities				3B	3
HIST*** History, Upper-Division non-U.S.					0-6
HIST*** History, Upper-Division U.S.					0-6
Electives					3-6
EDUC 450, EDUC 465, EDUC 486E must be completed by the end of Semester 7.		X			
Pass PLACE or Praxis II exam.		X			
	Total Credits				18
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 485B	Student Teaching: Secondary	X			11

EDUC 493A	Seminar: Professional Relations	X	1
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X	
	Total Credits		12
	Program Total Credits:		120

Minor in History

The minor in History allows students to explore historical questions and issues while broadly exploring the past or pursuing a specific concentration. In addition to gaining knowledge in specific subjects – including the history of humans and the environment, empires, race, immigration, war and society, gender and sexuality, digital history, public history, and religion across multiple continents – the minor in History trains students to use and apply the tools and methods of historical analysis.

The customizable minor consists of 21 semester credit hours, 12 of which must be taken at the upper division level, and complements a wide variety of majors in other disciplines. Majors in international studies, political science, economics, natural resources, foreign languages, literature, and philosophy will be provided with a historical understanding of social, cultural, political, and economic issues. Majors in business, mathematics, the sciences, and communication can use the minor to apply interpretive and analytical skills to evaluate and assess evidence and sources.

To declare the minor in History, please obtain a declaration form from the History Office, B356 Clark.

Requirements Effective Fall 2019

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Lower Division HIST subject code courses		
Appropriate courses as determined in consultation with a History Department advisor.		9
Upper Division HIST subject code courses		
Minimum of 12 credits		12
Program Total Credits:		21

Master of Arts in History, Plan A, Liberal Arts Specialization

The Liberal Arts Specialization, Plan A is based on instruction through small seminars and individual study, stressing historiography and research methods. The Plan A is usually pursued in anticipation of an advanced degree, mainly in fields of history, business or law.

Requirements Effective Fall 2011

Code	Title	Credits
Required Courses		
HIST 501	Historical Method: Historiography	3
Select four of the following courses in consultation with advisor:		12
HIST 511	Reading Seminar: U.S. to 1877	
HIST 512	Reading Seminar: U.S. Since 1877	
HIST 520	Reading Seminar-Europe to 1815	
HIST 521	Reading Seminar-Europe Since 1815	
HIST 530	Reading Seminar: Africa	
HIST 531	Reading Seminar: Latin America	
HIST 532	Reading Seminar: Middle East	
HIST 533	Reading Seminar: East Asia	
HIST 534	Reading Seminar: South Asia	
HIST 539	Reading Seminar--World Environmental History	
HIST 611	Research Seminar: United States	3
or HIST 621	Research Seminar: Europe	
500- or 600-level HIST courses		3
300-, 400-, 500-, or 600-level HIST course(s)		3-6
Electives [1]		3-6
HIST 699	Thesis	3-6
Program Total Credits:		33

A minimum of 33 credits are required to complete this program.

[1] Non-HIST subject code courses numbered 300-699.

Master of Arts in History, Plan B, Liberal Arts Specialization

The Liberal Arts specialization, Plan B is especially appropriate for students desiring employment in secondary education (licensure may be required) or who do not want to pursue further advanced degrees. This program requires a minimum of 33 credits, emphasizing area and/or topical historical study offered in seminars. The Plan B does not require a thesis or a foreign language.

Requirements Effective Fall 2011

Code	Title	Credits
Required Courses		
HIST 501	Historical Method: Historiography	3
Select five of the following courses in consultation with advisor:		15
HIST 511	Reading Seminar: U.S. to 1877	
HIST 512	Reading Seminar: U.S. Since 1877	

HIST 520	Reading Seminar-Europe to 1815	
HIST 521	Reading Seminar-Europe Since 1815	
HIST 530	Reading Seminar: Africa	
HIST 531	Reading Seminar: Latin America	
HIST 532	Reading Seminar: Middle East	
HIST 533	Reading Seminar: East Asia	
HIST 534	Reading Seminar: South Asia	
HIST 539	Reading Seminar--World Environmental History	
HIST 611	Research Seminar: United States	3
HIST 621	Research Seminar: Europe	3
Electives [1]		9
Program Total Credits:		33

A minimum of 33 credits are required to complete this program.

[1] HIST and non-HIST subject code courses numbered 300-699. At least 3 credits must be non-HIST.

Master of Arts in History, Plan B, Public History Specialization, Cultural Resource Management Option

The Cultural Resource Management option emphasizes the identification and interpretation of historic and prehistoric resources held by public land agencies, such as the National Park Service and U.S. Forest Service. It requires a broad understanding of cultural heritage that includes archaeological sites and historic landscapes. CRM professionals often enter careers within federal agencies.

Requirements Effective Fall 2011

Code	Title	Credits
Required History Courses		
HIST 501	Historical Method: Historiography	3
HIST 511	Reading Seminar: U.S. to 1877	3
HIST 512	Reading Seminar: U.S. Since 1877	3
Select two courses from the following:		6
HIST 520	Reading Seminar-Europe to 1815	
HIST 521	Reading Seminar-Europe Since 1815	
HIST 530	Reading Seminar: Africa	
HIST 531	Reading Seminar: Latin America	
HIST 532	Reading Seminar: Middle East	
HIST 533	Reading Seminar: East Asia	
HIST 534	Reading Seminar: South Asia	
HIST 539	Reading Seminar--World Environmental History	
HIST 586	Practicum	3
or HIST 587	Internship	
HIST 611	Research Seminar: United States	3
or HIST 640	Research Seminar: State and Local History	
Required Cultural Resource Management Option Courses		
ANTH 456	Archaeology and the Public	3
or ANTH 551	Historical Archaeology	
HIST 502	Historical Method: Archives	3
or HIST 504	Historical Method: Museums	
HIST 503	Historical Method: Preservation	3
Select 6 credits from the following:		6
ANTH 478/ HIST 478	Heritage Resource Management	
GR 420	Spatial Analysis with GIS	
HIST 354	American Architectural History	
HIST 355	American Environmental History	
HIST 362	American Indian Renaissance in Modern America	
HIST 476	History of America's National Parks	
HIST 540	Material Culture	
MGT 305	Fundamentals of Management	
POLS 351	Public Administration	
Program Total Credits:		36

A minimum of 36 credits are required to complete this program.

Master of Arts in History, Plan B, Public History Specialization, Historic Preservation Option

The Historic Preservation option is a broad interdisciplinary program that focuses on the identification, interpretation, and rehabilitation of the historic built environment including buildings, structures, neighborhoods, and landscapes. Historians typically work in administrative or consulting positions using their historical training to research and evaluate the significance of architecture to its historic context.

Requirements Effective Fall 2011

Code	Title	Credits
Required Courses		
HIST 354	American Architectural History	3
HIST 501	Historical Method: Historiography	3
HIST 503	Historical Method: Preservation	3
HIST 511	Reading Seminar: U.S. to 1877	3
HIST 512	Reading Seminar: U.S. Since 1877	3
HIST 502	Historical Method: Archives	3
or HIST 504	Historical Method: Museums	
Select two of the following courses:		6
HIST 520	Reading Seminar-Europe to 1815	
HIST 521	Reading Seminar-Europe Since 1815	
HIST 530	Reading Seminar: Africa	
HIST 531	Reading Seminar: Latin America	
HIST 532	Reading Seminar: Middle East	
HIST 533	Reading Seminar: East Asia	
HIST 534	Reading Seminar: South Asia	
HIST 539	Reading Seminar--World Environmental History	

HIST 586	Practicum	3
or HIST 587	Internship	
HIST 611	Research Seminar: United States	3
or HIST 640	Research Seminar: State and Local History	
Electives [1]		6
Program Total Credits:		36

A minimum of 36 credits are required to complete this program.

[1] HIST and/or non-HIST courses numbered 300-699, chosen in consultation with advisor.

Master of Arts in History, Plan B, Public History Specialization, Museum Studies Option

The Museum Studies option prepares historians for museum positions by providing training in the fields of artifactual interpretation, curation, and museum management.

Requirements Effective Fall 2011

Code	Title	Credits
Required Courses		
HIST 501	Historical Method: Historiography	3
HIST 502	Historical Method: Archives	3
or HIST 503	Historical Method: Preservation	
HIST 504	Historical Method: Museums	3
HIST 511	Reading Seminar: U.S. to 1877	3
HIST 512	Reading Seminar: U.S. Since 1877	3
HIST 540	Material Culture	3
Select two of the following courses:		6
HIST 520	Reading Seminar-Europe to 1815	
HIST 521	Reading Seminar-Europe Since 1815	
HIST 530	Reading Seminar: Africa	
HIST 531	Reading Seminar: Latin America	
HIST 532	Reading Seminar: Middle East	
HIST 533	Reading Seminar: East Asia	
HIST 534	Reading Seminar: South Asia	
HIST 539	Reading Seminar--World Environmental History	
HIST 586	Practicum	3
or HIST 587	Internship	
HIST 611	Research Seminar: United States	3
or HIST 640	Research Seminar: State and Local History	
Electives [1]		6
Program Total Credits:		36

A minimum of 36 credits are required to complete this program.

[1] HIST and/or non-HIST courses number 300-699, chosen in consultation with advisor.

Department of Journalism and Media Communication

Office in Clark Building, Room C244
(970) 491-6310
journalism.colostate.edu (http://journalism.colostate.edu)

Professor Greg Luft, Chair
Professor Pete Seel, Graduate Director

Undergraduate

Majors

- Journalism and Media Communication

Minors

- Technical and Science Communication

Interdepartmental and Interdisciplinary Minors

Media Studies Minor

The Departments of Journalism and Media Communication and Communication Studies jointly offer a minor in Media Studies. See the minor in Media Studies under the College of Liberal Arts.

Music, Stage, and Sports Production Interdisciplinary Minor

The Department of Journalism and Media Communication and the School of Music, Theatre, and Dance offer an Interdisciplinary Minor in Music, Stage, Sports Production.

Information Science and Technology Interdisciplinary Minor

The Department of Journalism and Media Communication participates in an Interdisciplinary Minor in Information Science and Technology (http://catalog.colostate.edu/general-catalog/university-wide-programs/interdisciplinary-studies/information-science-technology-interdisciplinary-minor).

Graduate

Graduate Programs in Public Communication and Technology

The department offers a Master of Science degree in Public Communication and Technology for students aspiring to communication management careers in technical and scientific communication, public relations, or public information for business, industry, government, and educational institutions.

The department's Ph.D. program in Public Communication and Technology enables students to explore the role of information in the public's understanding of contemporary issues and the impact of new communication technologies in people's lives. Doctoral students develop expertise in one of three areas: human behavior and technology, organizations and technology, or social policy and technology.

A description of these programs may be found in the Graduate and Professional Bulletin and the Department of Journalism and Media Communication (http://journalism.colostate.edu).

Master's Programs

- Master of Science in Public Communication and Technology, Plan A
- Master of Science in Public Communication and Technology, Plan B
- Master of Communications and Media Management, Plan C (M.C.M.M.)

Ph.D.

- Ph.D. in Public Communication and Technology*

* Please see department for program of study.

Courses

Journalism and Technical Communication (JTC)

JTC 100 Media in Society (GT-SS3) Credits: 3 (3-0-0)
Course Description: Role of media in American democracy; impact of media on individuals and society.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).

JTC 192 Freshman Seminar Credits: 3 (1-4-0)
Course Description: Basic journalism skills; newsgathering and newswriting.
Prerequisite: None.
Registration Information: Admission as JTC major. Credit not allowed for both JTC 192 and JTC 210. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 200 Professional Writing Credits: 3 (1-0-2)
Course Description: Basic elements of writing for professional and specialized audiences.
Prerequisite: CO 150 or HONR 193.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 203 Television Studio Production Credit: 1 (0-0-1)
Course Description: Hands-on application of the skills needed to produce programs in a television studio.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 204 Radio Operations Credit: 1 (0-0-1)
Course Description: Hands-on application of the skills needed to operate a radio station.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 210 Newswriting Credits: 3 (1-4-0)
Course Description: Theory and practice in newswriting.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory for face-to-face offerings. Sections may be offered: Online. Credit not allowed for both JTC 210 and JTC 192. Sections offered as Face-to-Face 03(1-4-0) or Online only 03(3-0-0).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 211 Visual Communication Credits: 3 (2-2-0)
Course Description: Theory and techniques for visually presenting information in various media industries.
Prerequisite: JTC 210.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

JTC 270 Analyzing Data in Journalism and Media Credits: 3 (2-0-1)
Course Description: Application of quantitative concepts and methodologies of data analysis to investigation of media and communication problems.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 300 Professional and Technical Communication (GT-CO3) Credits: 3 (2-0-1)
Course Description: Professional writing and presentation skills applied to students' major fields.
Prerequisite: CO 150 or HONR 193.
Registration Information: Must register for lecture and recitation. JTC students may not take JTC 300. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Advanced Writing 2, Advanced Writing (GT-CO3).

JTC 301 Corporate and Professional Communication (GT-CO3) Credits: 3 (2-0-1)
Course Description: Principles and practice of effective corporate communication with emphasis on written professional reports.
Prerequisite: CO 150 or HONR 193.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
Additional Information: Advanced Writing 2, Advanced Writing (GT-CO3).

JTC 305 Media and Global Cultural Identity Credits: 3 (3-0-0)
Course Description: Examines cultural diversity and how the media influences cultural identities.
Prerequisite: None.
Registration Information: Sophomore standing. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 308 Mobile Media Technology and Communication Credit: 1 (1-0-0)
Course Description: Using mobile technology as a tool in journalism.
Prerequisite: None.
Registration Information: Sophomore standing.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 310 Copy Editing Credits: 3 (2-2-0)
Course Description: Theory of copy preparation and editing; publication layout.
Prerequisite: JTC 210.
Registration Information: Sophomore standing. Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 311 History of Media Credits: 3 (3-0-0)
Course Description: Media development, growth, trends within context of political, social, and economic change.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 316 Multiculturalism and the Media Credits: 3 (3-0-0)
Course Description: Media and multiculturalism with emphasis on race, ethnicity, and other protected groups.
Prerequisite: None.
Registration Information: Sophomore standing. Sections may be offered: Online. Credit not allowed for both JTC 316 and ETST 316.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320A Reporting: General News Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320B Reporting: Sports Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320C Reporting: Business Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320D Reporting: Government and Political Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320E Reporting: Health and Medicine Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320F Reporting: Technology and Innovation Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320G Reporting: Education Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320H Reporting: Special Topics Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 326 Online Storytelling and Audience Engagement Credits: 3 (2-2-0)
Course Description: Production, theory, and techniques in online and mobile device storytelling, information sharing, and audience engagement.
Prerequisite: JTC 210 and JTC 211.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 328 Feature Writing Credits: 3 (3-0-0)
Course Description: Theory, methods and practice of reporting and writing feature stories, including human-interest, travel/adventure, reflective and in-depth articles.
Prerequisite: JTC 210.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 330 Narrative Journalism Credits: 3 (3-0-0)
Course Description: Examination of new journalism, long-form journalism, narrative descriptive journalism, and creative nonfiction, and the practitioners of the form whose work has illumined such disparate topics as history, business practices, race relations, and biomedical science.
Prerequisite: CO 150.
Registration Information: Sophomore standing. Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

JTC 335 Digital Photography Credits: 3 (2-2-0)
Course Description: Basic photographic theory and practice using digital camera and image processing technology.
Prerequisite: JTC 211.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

JTC 340 Digital Video Editing Credits: 3 (2-2-0)
Course Description: Theory and technique of editing picture and sound on digital platforms.
Prerequisite: JTC 210.
Registration Information: Must register for lecture and laboratory. Required field trips. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

JTC 341 TV News Writing, Reporting and Producing Credits: 3 (2-2-0)
Course Description: Practical application of principles, theory, and methods used in television newswriting, reporting, and producing.
Prerequisite: JTC 210.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

JTC 342 Writing for Specialized Electronic Media Credits: 3 (2-2-0)
Course Description: Audience and subject research; script structure and development; narrative techniques; visual story and role of visual media as change agents.
Prerequisite: JTC 210.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 343 Advanced Television News Production Credits: 3 (2-2-0)
Course Description: Advanced theory and practice of reporting and producing television news; basics of television news management.
Prerequisite: JTC 341.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 344 Fact to Fiction Credits: 3 (3-0-0)
Course Description: Crafting clear, precise prose in reporting the news and researching and writing long-form fiction.
Prerequisite: JTC 211.
Registration Information: Sophomore standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 345 Electronic Field Production Credits: 3 (2-2-0)
Course Description: Theory and techniques of video field production emphasizing news, current affairs, and special interest programs.
Prerequisite: JTC 340.
Registration Information: Junior standing. Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

JTC 347 Audio Production and Editing Credits: 3 (3-0-0)
Course Description: Principles and practice of producing, recording, mixing and editing sound for films, television, and video.
Prerequisite: None.
Registration Information: Junior Standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 350 Public Relations Credits: 3 (3-0-0)
Course Description: Public relations principles and practices of business, industry, education, and public agencies.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 351 Publicity and Media Relations Credits: 3 (2-2-0)
Course Description: Public relations techniques to gain exposure in news and entertainment media.
Prerequisite: JTC 210 and JTC 211.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 352 University Public Relations Credit: 1 (1-0-0)
Course Description: Overview of a multi-faceted university public relations operation, constituencies, staff, management and products.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 353 Communications Campaigns Credits: 3 (3-0-0)
Course Description: Development of professional communications programs, including analysis and research, strategy, implementation and evaluation.
Prerequisite: (JTC 210) and (JTC 350 or JTC 355 or JTC 365).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 355 Advertising Credits: 3 (3-0-0)
Course Description: Advertising principles and techniques used to develop effective advertising campaigns.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 356 Advertising Creativity and Copywriting Credits: 3 (3-0-0)
Course Description: Principles and practices producing advertising materials-print, broadcast, digital, out-of-home media, direct response, and collateral.
Prerequisite: JTC 211 and JTC 355.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 357 Persuasion in Advertising Credits: 3 (3-0-0)
Course Description: Theoretical issues in the study of persuasion and its application in creating advertising campaigns.
Prerequisite: JTC 355.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 358 Advertising Media Buying and Selling Credits: 3 (3-0-0)
Course Description: Principles of advertising, planning, assessment and sales for client, agency and media organization personnel.
Prerequisite: JTC 211 and JTC 355.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 361 Writing for Specialized Magazines Credits: 3 (2-2-0)
Course Description: Writing articles for agricultural, business, hobby, technical, trade, and other specialized periodicals whose readers use information to make decisions.
Prerequisite: JTC 210.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 363 Data Journalism Credits: 3 (3-0-0)
Course Description: Computer assisted journalistic reporting.
Prerequisite: JTC 211.
Registration Information: Junior standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 365 Trends in Digital Communication Credits: 3 (3-0-0)
Course Description: Issues and research in computer-mediated communication relating to individuals, groups, community, and society.
Prerequisite: JTC 210.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 370 Web Programming for Media Producers Credits: 3 (2-0-1)
Course Description: Web programming and scripting languages used commonly in developing rich content for visual narratives.
Prerequisite: JTC 211.
Registration Information: Sophomore standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 371 Publications Design and Production Credits: 3 (2-2-0)
Course Description: Principles of producing publications for print and electronic delivery, including newspapers, magazines, newsletters, brochures, and printed ephemera.
Prerequisite: JTC 211.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 372 Web Design and Management Credits: 3 (2-2-0)
Course Description: Design, development, and management of World Wide Web content.
Prerequisite: JTC 210 and JTC 211.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 373 Digital Promotion Management Credits: 3 (3-0-0)
Course Description: How organizations use digital technologies for advertising, publicity, promotional, and information purposes.
Prerequisite: JTC 211.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 374 Social Media Management Credits: 3 (3-0-0)
Course Description: Organizational uses of interactive media to build relationships and manage online communities.
Prerequisite: JTC 211.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 382 Travel Journalism in Croatia Credits: 3 (3-0-0)
Course Description: Study and practice of international travel journalism, including newspaper and magazine writing, photography, video, social media, and blogs.
Prerequisite: CO 150 or JTC 210.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 386 Communication Practicum Credit: 1,3 (0-0-0)
Course Description: Practicum in using the different communication tools that comprise student media.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 410 Newspaper Editing Credits: 2 (2-0-0)
Course Description: Editorial techniques, responsibilities, news evaluation.
Prerequisite: JTC 310.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 411 Media Ethics and Issues Credits: 3 (3-0-0)
Course Description: Professional ethics, issues of media performance and of the relation of media systems to the social systems.
Prerequisite: None.
Restriction: Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Junior or senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 412 International Mass Communication Credits: 3 (3-0-0)
Course Description: Media communication systems, their roles throughout the world; news flow; propaganda in national development; role of foreign correspondents.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 413 New Communication Technologies and Society Credits: 3 (3-0-0)
Course Description: Political, economic, social, philosophical, legal, and educational impacts of new technologies.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 414 Media Effects Credits: 3 (3-0-0)
Course Description: Perspectives on audience processes and media effects on individuals and society.
Prerequisite: None.
Registration Information: Junior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 415 Communications Law Credits: 3 (3-0-0)
Course Description: Constitutional, statutory law of political speech, obscenity, advertising, libel, privacy, copyright, information ownership and access.
Prerequisite: None.
Restriction: Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Junior or senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 416 Global Communication Technologies Credits: 3 (3-0-0)
Course Description: Broad-based survey of evolving and emergent global communication technologies.
Prerequisite: JTC 210.
Registration Information: Required field trips.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 417 Information Graphics Credits: 3 (2-0-1)
Course Description: Static and interactive data visualization and information design using charts, graphs, maps and other visual elements.
Prerequisite: JTC 211.
Registration Information: Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 418 Journalism, Peace, and War Credits: 3 (3-0-0)
Course Description: How the news media can contribute to a more harmonious world, more frequent conflict resolution, and the general well-being of all people.
Prerequisite: None.
Registration Information: Junior, senior, or graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 419 Food and Natural Resources Communication Credits: 3 (3-0-0)
Course Description: Natural resources issues and the role of news media, PR, and advertising and how people form beliefs about food and natural resources in communication.
Prerequisite: None.
Registration Information: Junior, senior, or graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 420 Advanced Reporting Credits: 3 (1-4-0)
Course Description: Advanced techniques for gathering and evaluating information; interpretive reporting of public affairs issues.
Prerequisite: (JTC 310 and JTC 211) and (JTC 320A or JTC 320B or JTC 320C or JTC 320D or JTC 320E or JTC 320F or JTC 320G or JTC 320H).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 421 Media, Business, and Economics Credits: 3 (3-0-0)
Course Description: Media coverage of U.S. and global businesses, economies, markets, recessions, crime, and government regulation.
Prerequisite: None.
Registration Information: Junior standing. Business Minor enrollment recommended.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 422 Entrepreneurial Journalism Credits: 3 (3-0-0)
Course Description: The concepts and practices of developing media content solutions for the digital age.
Prerequisite: JTC 326.
Registration Information: Junior standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 425 Strategic Multicultural Communication Credits: 3 (3-0-0)
Course Description: Identify, formulate and implement effective strategies in integrated advertising and communication campaigns to effectively connect with individuals of Hispanic/Latino, African-American and Asian descent as well as the LGBT sub-segments of the general market in the U.S.; consideration of the globalized marketplace and consumers across under-served markets internationally.
Prerequisite: JTC 326.
Registration Information: Junior standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 430 Advanced Digital Documentary Photography Credits: 3 (2-2-0)
Course Description: Conceptualization, production, and editing of photographic documentaries.
Prerequisite: JTC 326 and JTC 335.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 433 Advanced Video Editing Credits: 3 (3-0-0)
Course Description: Professional video editing practices, theories, and techniques with practical applications using current hardware and software.
Prerequisite: JTC 345.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 435 Documentary Video Production Credits: 3 (2-3-0)
Course Description: Writing, directing, and editing of long-form television documentaries.
Prerequisite: JTC 345.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

JTC 440 Advanced Electronic Media Production Credits: 3 (2-2-0)
Course Description: Techniques and concepts used in advanced media production for television.
Required field trips.
Prerequisite: JTC 341 and JTC 345.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

JTC 445 Communication in Human-Computer Interaction Credits: 3 (3-0-0)
Course Description: Evolution of human-computer interaction, from teletypewriters to virtual reality technologies.
Prerequisite: JTC 211.
Registration Information: Junior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 450 Public Relations Cases Credits: 3 (3-0-0)
Course Description: Analysis of specializations in the field; use of media to achieve objectives with target audiences.
Prerequisite: JTC 350.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 454A Study Abroad: International Media Studies–Europe Credits: 3 (2-0-1)
Course Description: Field survey of international media systems, technologies, and providers in diverse national and regional cultures.
Prerequisite: None.
Registration Information: Junior standing. Written consent of instructor.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 454B Study Abroad: International Media Studies–Australia and NZ Credits: 3 (0-0-3)
Course Description: A field survey of international media systems, technologies, and providers in diverse national and regional cultures.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 456 Documentary Film as a Liberal Art Credits: 3 (2-2-0)
Also Offered As: LB 456.
Course Description: Documentary film and its role in human history, culture, and social interaction.
Prerequisite: None.
Restriction: Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Credit not allowed for both JTC 456 and LB 456. Junior or senior standing. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 460 Senior Capstone Credits: 3 (3-0-0)
Course Description: Integration and reflection for seniors with a career component that will prepare them for the job market.
Prerequisite: JTC 326.
Registration Information: Senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 461 Writing About Science, Health, and Environment Credits: 3 (2-2-0)
Course Description: Writing about science, health, and the environment for lay audiences from a journalistic perspective.
Prerequisite: JTC 210 or JTC 300 or LB 300.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 464 Technical Communication Credits: 3 (2-2-0)
Course Description: Writing and producing technical and scientific information for electronic and print media for professionals.
Prerequisite: JTC 210 or JTC 300 or LB 300.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 465 Specialized and Technical Editing Credits: 3 (2-2-0)
Course Description: Editorial purpose, techniques, and evaluation of specialized and technical print and online information.
Prerequisite: (JTC 210 or JTC 300 or LB 300) and (JTC 211) and (JTC 461 or JTC 464).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 468 Convergence and Hypermedia Credits: 3 (3-0-0)
Course Description: Applications of theories of convergence, hypermedia, and social practices in computer-mediated communication. Development of a professional portfolio.
Prerequisite: JTC 310 and JTC 365.
Registration Information: JTC 310; JTC 365; 9 credits selected from JTC 326, JTC 372, JTC 373, or JTC 487.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 470 Transmedia Storytelling Credits: 3 (3-0-0)
Course Description: Examining and developing transmedia storytelling techniques and products that are applied to a single topic, entity or organization.
Prerequisite: JTC 326.
Registration Information: Junior standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 471 Research for Public Communicators Credits: 3 (3-0-0)
Course Description: Skills, knowledge and strategies needed to read, interpret, evaluate, and communicate about research reports across diverse fields.
Prerequisite: STAT 000 to 9999 - at least 1 course or ST 000 to 9999 - at least 1 course or STCC 000 to 9999 - at least 1 course.
Registration Information: Credit not allowed for both JTC 471 and JTC 500.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 475 News Literacy Credits: 3 (3-0-0)
Course Description: Discerning truthful reporting from propaganda to become critical analysts.
Prerequisite: None.
Registration Information: Junior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 487 Internship Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of department. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

JTC 490 Workshop Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495A Independent Study: Electronic Reporting Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495B Independent Study: Editing Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495C Independent Study: Photojournalism Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495D Independent Study: Public Relations Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495E Independent Study: Readings Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495F Independent Study: Reporting Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495G Independent Study: Technical Communication Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 496 Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 500 Communication Research and Evaluation Methods Credits: 4 (4-0-0)
Course Description: Theory and applied communication research and evaluation methodologies for assessing and improving communication in technological environment.
Prerequisite: None.
Registration Information: Credit not allowed for both JTC 500 and JTC 471.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 501 Process and Effects of Communication Credits: 4 (4-0-0)
Course Description: Examination of communication theory including communicator credibility, messages, channels, audiences, and information, behavior, and attitude change.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 505 Advanced Professional Writing Credits: 3 (3-0-0)
Course Description: How communication in the corporate, business, and professional world is changing as a result of technology and globalization.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 511 Corporate Media Ethics and Issues Credits: 3 (3-0-0)
Course Description: Professional ethics in corporate and media settings.
Prerequisite: None.
Registration Information: Graduate standing. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 513 Impacts of New Communication Technologies Credits: Var[1-2] (0-0-0)
Course Description: Current topics and issues regarding uses and impacts of video and computer-based communication technologies.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 526 Digital Media Writing and Production Credits: 3 (3-0-0)
Course Description: Writing and producing media content that will be delivered via a variety of communication channels to diverse publics.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 535 Electronic Media Regulation and Policy Credits: 3 (3-0-0)
Course Description: Role of legislators, regulatory agencies, judiciary and public in the evolution of U.S. broadcast and digital media. Implications for free press.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 540 Corporate Digital Video Editing Credits: 3 (3-0-0)
Course Description: Advanced theory and techniques of digital video editing in a corporate setting.
Prerequisite: None.
Registration Information: Graduate standing. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 544 Corporate and Institutional Media Production Credits: 3 (2-3-0)
Course Description: Advanced techniques in media production and management in corporate and institutional settings.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

JTC 545 Organizational Media Production Credits: 3 (3-0-0)
Course Description: Incorporation of multimedia content in video production in governmental, corporate and institutional media production.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 550 Public Relations Credits: 3 (3-0-0)
Course Description: Contemporary public relations principles and practices.
Prerequisite: None.
Registration Information: Graduate standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 555 Advertising and Marketing Communication Credits: 3 (3-0-0)
Course Description: Advertising and marketing communication principles and techniques used to develop effective strategic campaigns.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 560 Managing Communications Systems Credits: 3 (3-0-0)
Course Description: Examination of role, responsibilities of communication managers in translating theory into effective, applied communication programs.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 568A Journalism for High School Advisers: Journalism Concepts Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 568B Journalism for High School Advisers: Newspapers Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 568C Journalism for High School Advisers: Yearbooks Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 570 Political Economy of Global Media Credits: 3 (3-0-0)
Course Description: Examination of the changing media information system worldwide and the role of social, political, legal and economic forces upon it.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

JTC 571 Digital Media Research and Evaluation Methods Credits: 3 (3-0-0)
Course Description: Basic conceptual processes and tools for conducting applied research in the field of communication; research tools in real-world professions.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 572 Corporate Web Design and Management Credits: 3 (3-0-0)
Course Description: Design, development, and management of corporate digital media content.
Prerequisite: None.
Registration Information: Graduate standing. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 573 Strategic Digital Communication Credits: 3 (3-0-0)
Course Description: Development, implementation and assessment of digital communication projects and campaigns/programs.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 601 Cognitive Communication Theory Credits: 3 (3-0-0)
Course Description: Theories of information technology and communication as they relate to cognitive and social cognitive processing.
Prerequisite: JTC 501.
Restriction: Must be a: Graduate, Professional.
Registration Information: JTC 501 or written consent of graduate advisor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 602 Social and Cultural Communication Theory Credits: 3 (3-0-0)
Course Description: Theories of information technology and communication as they relate to the field of media systems, organizations, and culture.
Prerequisite: JTC 501.
Restriction: Must be a: Graduate, Professional.
Registration Information: JTC 501 or written consent of graduate advisor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 604 Colloquium--Grad/Teaching/Learning/Research Credit: 1 (1-0-0)
Course Description: Orientation to graduate studies; communication theories, processes, media, and technology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online. Maximum of 4 combined credits may be taken from JTC 604 and JTC 701.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

JTC 614 Public Communication Campaigns Credits: 3 (3-0-0)
Course Description: Conceptual, methodological issues and decisions underpinning determination of communication campaign effects, planning, implementation, and evaluation.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Written consent of graduate advisor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 630 Health Communication Credits: 3 (3-0-0)
Course Description: Role of health communication in public health programs and campaigns.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Written consent of instructor.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

JTC 640 Public Communication Technologies Credits: 3 (3-0-0)
Course Description: Analysis of evolving and emergent communication technologies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 650 Strategic Communications Credits: 3 (3-0-0)
Course Description: Theoretical/practical management issues in public relations, advertising/promotional communications including behavioral, societal, ethical, legal.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 660 Communication and Innovation Credits: 3 (3-0-0)
Course Description: Communication's role in the process of innovation as well as the diffusion of new technologies, products, ideas, behaviors and attitudes.
Prerequisite: JTC 501.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: JTC 501 or written consent of graduate advisor.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 661 Information Design Credits: 3 (3-0-0)
Course Description: Theoretical and empirical review of creation, presentation, storage, and distribution of information.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 662 Communicating Science and Technology Credits: 3 (3-0-0)
Course Description: Examination of theoretical and empirical studies concerning communication of science and technology subject matter.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 664 Quantitative Research in Communication Credits: 3 (3-0-0)
Course Description: Advanced quantitative research methods used in communication research.
Prerequisite: JTC 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: JTC 500 or written consent of graduate advisor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 665 Qualitative Methods in Communication Research Credits: 3 (3-0-0)
Course Description: Techniques for collecting; interpreting, analyzing qualitative communication data.
Prerequisite: JTC 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: JTC 500 or written consent of graduate advisor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 670 Communication in the Social Processes of Risk Credits: 3 (0-0-3)
Course Description: Communication and psychological, sociological, and cultural factors shaping risk involving technology, health, environment, disasters, sustainability.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: Philosophy, techniques, and approaches to teaching journalism skills courses, as supervised by faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 687 Internship Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 690 Workshop Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 695 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 698 Research Credits: 3 (0-0-3)
Course Description: Development of theoretical basis and methodology for thesis or research project.
Prerequisite: JTC 500 and JTC 501.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 790 Workshop Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 792A Seminar: Health and Risk Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 792B Seminar: Human Computer Interaction Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 792C Seminar: Communication Technology in Organizations Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 792D Seminar: Ethics, Law, and Policy Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 792E Seminar: Strategic Communication Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 792F Seminar: Media Technology and Society Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 793A Seminar: Experimental Design Credits: 3 (0-0-3)
Course Description:
Prerequisite: JTC 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: JTC 500 or written consent of graduate advisor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 793B Seminar: Survey Design Credits: 3 (0-0-3)
Course Description:
Prerequisite: JTC 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: JTC 500 or written consent of graduate advisor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 793C Seminar: Content Analysis Credits: 3 (0-0-3)
Course Description:
Prerequisite: JTC 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: JTC 500 or written consent of graduate advisor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 793D Seminar: Qualitative Methods Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of graduate advisor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 793E Seminar: Human Factors Credits: 3 (0-0-3)
Course Description:
Prerequisite: JTC 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: JTC 500 or written consent of graduate advisor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 793F Seminar: Critical and Cultural Methods Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of graduate advisor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 798 Research Credits: 3 (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of graduate advisor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Journalism and Media Communication

The study of journalism, mass communication, and specialized media combines high-level professional training with a broad foundation in the liberal arts. All students complete a common 21-credit core, including writing, multimedia, and conceptual courses, as well as a capstone course and an internship. Students work closely with a faculty advisor to select an additional 19 credits in a focus area crafted to match their career interests. Practical experience can be gained on the staffs of the daily *Rocky Mountain Collegian*, the award-winning campus television station Collegian TV, *College Avenue* magazine, and KCSU-FM Radio. Graduating seniors present professional portfolios for assessment by panels of faculty and communication professionals from Denver and elsewhere in Colorado. Because successful communicators require broad knowledge, this flexible program encourages development of a background in the humanities, social sciences, natural sciences, and in-depth study in an area of interest outside journalism. The addition of a minor or double major in disciplines such as political science, information

technology, history, economics, business, communication studies, psychology, the arts, or natural or applied sciences is possible.

The Department of Journalism and Media Communication is one of a relatively small number of departments formally recognized by the Accrediting Council on Education in Journalism and Mass Communications. Participation in volunteer activities, cooperative education opportunities, or communication-related part time jobs is highly recommended to enhance practical training and development.

Learning Outcomes

Students will demonstrate:

- Competence in writing, editing, and producing media messages as well as in planning, designing, and evaluating effective public information programs.
- Knowledge and use of communication theory and research principles to guide the selection of communication audiences, message content and format, and media channels to enhance communication impact.
- Understanding of the ethics, laws, and values associated with professional communication activity.

Potential Occupations

The Journalism and Media Communication program emphasizes the role of mass and specialized media in society and prepares students for entry-level work in private business, government, and education. Depending upon the focus of study, students may find career opportunities in a wide variety of professional communication venues. Specific career opportunities may include: advertising copywriter, designer, or producer; agriculture writer, reporter, or editor; attorney specializing in communication law; blogger, columnist, or editorial cartoonist; college professor; communications manager or director; company spokesperson; corporate media specialist; e-mail and direct mail strategist; environmental media specialist; freelance writer, editor, or photographer; health writer, editor, or producer; marketing coordinator; media relations director or strategist; multimedia producer; non-profit communications director; novelist or non-fiction author; reporter or photojournalist for the web, magazines, newspapers, or television; owner of public relations agency or production company; professional speaker; public affairs officer for government agency; public relations agency account executive; publication designer for magazines or newspapers; radio disc jockey, reporter, or music director; reality television producer, writer, photographer, or on-camera talent; science writer or editor; social media specialist; sports writer, photographer, or producer; technical writer or editor; teacher for any level of K-12 education upon completion of appropriate licensing (see the Center for Educator Preparation (http://cep.chhs.colostate.edu)); television news anchor or program host; television or radio news program producer or director; television documentary producer; travel writer, photographer, or program host; video editor for news, corporate, or entertainment television; website designer and manager.

Requirements Effective Fall 2018

All majors in the department must earn a minimum grade of C (a grade of C- is not acceptable) in each course that carries the JTC subject code.

Association for Education in Journalism and Mass Communication Accreditation Requirements

Majors in Journalism and Media Communication must take a minimum of 40 credits of JTC courses and a minimum of 72 credits outside of JTC.

Of the 72 credits outside of JTC, 21 must meet **one** of the following Second Field criteria with approval of advisor.[1]

1. a Minor;
2. an Interdisciplinary Minor;
3. 21 credits in one subject code;
4. 9 credits from one subject code and 12 credits from a second subject code;
5. a selection of 21 credits comprising a Second Field developed by the student and the advisor.

Courses taken outside of the department may include All-University Core Curriculum (AUCC) courses, Minor or Second Field courses, or any other out-of-department (non-JTC) courses used to complete the major as approved by advisor.

The 40 JTC required credits include 21 credits specified in the curriculum below plus 19 credits of directed electives to create an individualized focus area from the following 4 categories (Writing, Production, Internship/Practicum, Additional credits).

Directed Electives for Individualized Focus Area

Over the sophomore, junior, and senior years, students must complete a minimum of 19 credits in an individually designed focus area. Students must select those 19 credits from among the following categories and courses in consultation with advisor, as follows:

Code	Title	AUCC	Credits
Writing			
Select at least six credits (two courses) from the following:			6
JTC 310	Copy Editing		
JTC 320A	Reporting: General News		
JTC 320B	Reporting: Sports		
JTC 320C	Reporting: Business		
JTC 320D	Reporting: Government and Political		
JTC 320E	Reporting: Health and Medicine		
JTC 320F	Reporting: Technology and Innovation		
JTC 320G	Reporting: Education		

JTC 320H	Reporting: Special Topics		
JTC 328	Feature Writing		
JTC 341	TV News Writing, Reporting and Producing		
JTC 342	Writing for Specialized Electronic Media		
JTC 351	Publicity and Media Relations		
JTC 355	Advertising		
JTC 356	Advertising Creativity and Copywriting		
JTC 361	Writing for Specialized Magazines		
JTC 363	Data Journalism		
JTC 365	Trends in Digital Communication	4A	
JTC 420	Advanced Reporting	4A,4C	
JTC 422	Entrepreneurial Journalism		
JTC 461	Writing About Science, Health, and Environment		
JTC 464	Technical Communication		
JTC 465	Specialized and Technical Editing	4A,4C	
Production			
Select at least six credits (two courses) from the following:			6
JTC 335	Digital Photography		
JTC 340	Digital Video Editing		
JTC 343	Advanced Television News Production		
JTC 345	Electronic Field Production		
JTC 347	Audio Production and Editing		
JTC 353	Communications Campaigns		
JTC 358	Advertising Media Buying and Selling		
JTC 370	Web Programming for Media Producers		
JTC 371	Publications Design and Production		
JTC 372	Web Design and Management		
JTC 373	Digital Promotion Management		
JTC 374	Social Media Management		
JTC 417	Information Graphics		
JTC 430	Advanced Digital Documentary Photography		
JTC 433	Advanced Video Editing		
JTC 435	Documentary Video Production		
JTC 440	Advanced Electronic Media Production	4A,4C	
JTC 450	Public Relations Cases		
JTC 468	Convergence and Hypermedia	4C	
JTC 470	Transmedia Storytelling		
Internship/Practicum [2]			1-4
Select a minimum of 1 credit (a maximum of 4 credits) from the following:			
JTC 487	Internship		
LB 386A	Practicum: CTV		
LB 386B	Practicum: KCSU		
LB 386C	Practicum: Collegian		
LB 386D	Practicum: College Avenue		
LB 386E	Practicum: Arts Production		

Additional Credits [3]		6
Select six additional credits from the courses listed above under Writing, Production, Internship/Practicum, and Concept Courses and/or from the courses listed below. Students may select no more than a total of 4 credits of Internship/Practicum, and no more than a total of 7 credits of reserved number (-80 to -99) courses to satisfy this requirement.		
JTC 308	Mobile Media Technology and Communication	
JTC 350	Public Relations	
JTC 357	Persuasion in Advertising	
JTC 425	Strategic Multicultural Communication	
JTC 484	Supervised College Teaching	
JTC 490	Workshop	
JTC 495A	Independent Study: Electronic Reporting	
JTC 495B	Independent Study: Editing	
JTC 495C	Independent Study: Photojournalism	
JTC 495D	Independent Study: Public Relations	
JTC 495E	Independent Study: Readings	
JTC 495F	Independent Study: Reporting	
JTC 495G	Independent Study: Technical Communication	
JTC 496	Group Study	
Program Total Credits:		19-22

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
JTC 100	Media in Society (GT-SS3)	3C	3
JTC 210	Newswriting		3
Arts and Humanities		3B	6
Biological and Physical Sciences		3A	7
Historical Perspectives		3D	3
Quantitative Reasoning		1B	3
Elective			2
	Total Credits		30

Sophomore

JTC 211	Visual Communication		3
Individualized Focus Area and/or Second Field courses[4]			15
Statistics[5]			3
Advanced Writing [6]		2	3
Diversity and Global Awareness		3E	3
Social and Behavioral Sciences[7]		3C	3
	Total Credits		30

Junior

Select one course from the following to fulfill the Concept Course requirement:			3
JTC 311	History of Media		
JTC 316	Multiculturalism and the Media		
JTC 411	Media Ethics and Issues	4A,4B	

JTC 412	International Mass Communication		
JTC 413	New Communication Technologies and Society	4A,4B	
JTC 414	Media Effects		
JTC 415	Communications Law	4A,4B	
JTC 418	Journalism, Peace, and War		
JTC 419	Food and Natural Resources Communication		
JTC 421	Media, Business, and Economics		
JTC 456/LB 456	Documentary Film as a Liberal Art		
JTC 471	Research for Public Communicators		
JTC 445	Communication in Human-Computer Interaction		
JTC 326	Online Storytelling and Audience Engagement		3
Individualized Focus Area and/or Second Field courses[4]			15
Out-of-department courses[8]			9
	Total Credits		30

Senior

Select one of the following:			3
JTC 411[9]	Media Ethics and Issues	4A,4B	
JTC 415[9]	Communications Law	4A,4B	
JTC 460	Senior Capstone	4C	3
Individualized Focus Area and/or Second Field courses[4]			10
Out-of-department courses[8]			14
	Total Credits		30
	Program Total Credits:		120

1. Of the 21 credits required for the Second Field, 12 must be upper-division (300- to 400-level) and none may be from JTC.
2. With approval of the department and advisor, students may substitute a 400-level Journalism and Media Communication study abroad course for 1 credit of the Internship/Practicum requirement and up to 3 credits of the Additional Credits requirement, for a maximum total of 4 credits for study abroad.
3. High-achieving students, with approval of advisor, may select JTC 544 to satisfy 3 credits of the Additional Credit requirement.
4. Select a minimum of 19 credits of Focus Area courses and 21 credits of Second Field courses over the sophomore, junior, and senior years, in consultation with advisor.
5. Select a three-credit statistics course offered by any department, with approval of advisor.
6. Select 3 credits other than JTC 300 from the list of courses in category 2 of the All-University Core Curriculum (AUCC).
7. Select 3 credits other than JTC 100 from the list of courses in category 3C of the AUCC. Students in this major must take 3 credits of Social and Behavioral Sciences other than JTC 100, which is required in the freshman year.
8. Of the 23 credits required for out-of-department courses in the junior and senior years, a minimum of 5 credits must be upper-division (300- to 400-level).
9. If either JTC 411 or JTC 415 was taken as a Concept Course in the junior year, students may take any different concept course here. High-achieving students, with approval of advisor, may select JTC 535 as an alternative here, providing they have completed or will complete the AUCC category 4B requirement with another course.

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
JTC 100	Media in Society (GT-SS3)			3C	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	4
Elective					2
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
JTC 210	Newswriting	X			3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3

Historical Perspectives				3D	3
Quantitative Reasoning		X		1B	3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
JTC 211	Visual Communication	X			3
STAT ***					3
Social and Behavioral Sciences				3C	3
Individualized Focus Area and/or Second Field courses (See List on Requirements Tab)					6
	Total Credits				15

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Advanced Writing				2	3
Diversity and Global Awareness				3E	3
Individualized Focus Area and/or Second Field courses (See List on Requirements Tab)					9
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
JTC 311	History of Media				
JTC 316	Multiculturalism and the Media				
JTC 411	Media Ethics and Issues			4A,4B	
JTC 412	International Mass Communication				
JTC 413	New Communication Technologies and Society			4A,4B	
JTC 414	Media Effects				
JTC 415	Communications Law			4A,4B	
JTC 418	Journalism, Peace, and War				
JTC 419	Food and Natural Resources Communication				
JTC 421	Media, Business, and Economics				
JTC 445	Communication in Human-Computer Interaction				
JTC 456/ LB 456	Documentary Film as a Liberal Art				
JTC 471	Research for Public Communicators				
Individualized Focus Area and/or Second Field courses (See List on Requirements Tab)					9
Out-of-Department Course					3
	Total Credits				15

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
JTC 326	Online Storytelling and Audience Engagement		X		3
Individualized Focus Area and/or Second Field courses (See List on Requirements Tab)					6
Out-of-Department Courses					6
	Total Credits				15

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:		X			3
JTC 411	Media Ethics and Issues			4A,4B	
JTC 415	Communications Law			4A,4B	
Individualized Focus Area and/or Second Field courses (See List on Requirements Tab)					5
Out-of-Department Courses					7

30 Credits of JTC and JTC 326 must be completed by the end of Semester 7.		X			
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
JTC 460	Senior Capstone	X		4C	3
Individualized Focus Area and/or Second Field courses (See List on Requirements Tab)		X			5
Out-of-Department Courses		X			7
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Technical and Science Communication Minor

Dakota Cotner, Coordinator
Journalism and Media Communication
Clark Building, Room C244

The minor in Technical and Science Communication is designed to educate highly qualified communicators who have interests in specialized academic disciplines and career fields. Because science and technology often involve complicated research and processes, communicating the results of that work requires special skills. This program is designed to prepare students for a wide range of niche career opportunities in media, corporate communication, technology related industries, and scientific environments.

Students in this minor will learn to write and manage communication efforts, with a focus on turning complex ideas and processes into simple, clear messages applicable for publication and electronic delivery via broadcast, cable, or online. The accuracy and effectiveness of this communication is especially important as the internet and the ubiquity of mobile devices make the delivery and consumption of information widely available. Having the skills to interpret and communicate complicated processes provides significant career advantages in one of the highest-paying areas of professional communication.

Requirements Effective Fall 2018

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
JTC 210	Newswriting	3
JTC 211	Visual Communication	3
JTC 310	Copy Editing	3
JTC 465	Specialized and Technical Editing	3
Select one course from the following:		3
JTC 320C	Reporting: Business	
JTC 419	Food and Natural Resources Communication	
JTC 461	Writing About Science, Health, and Environment	
JTC 464	Technical Communication	
Writing Elective - select one course from the following:		3
JTC 326	Online Storytelling and Audience Engagement	
JTC 361	Writing for Specialized Magazines	
JTC 363	Data Journalism	
JTC 365	Trends in Digital Communication	
JTC 421	Media, Business, and Economics	
JTC 471	Research for Public Communicators	
Productive Elective - select one course from the following:		3
JTC 335	Digital Photography	
JTC 370	Web Programming for Media Producers	
JTC 371	Publications Design and Production	
JTC 372	Web Design and Management	
JTC 417	Information Graphics	
Program Total Credits:		21

Master of Science in Public Communication and Technology, Plan A

As both a theoretical and applied program, the M.S. in Public Communication and Technology prepares students for careers in the following:

- **Health, Environmental, Science, or Technical Communication:** Enhancing public and specialized audience understanding of health problems, environmental issues, or scientific and technical topics.
- **Public Relations and Strategic Communication:** Public relations, public information, and strategic communication programs for corporations, government agencies, and nonprofit organizations.
- **New Communication Technologies:** Uses and effects of new communication technologies, computer-mediated communication, and the World Wide Web; computer, print, and multimedia-based documentation, instruction, and training.
- **Journalism:** Issues related to news media culture and multimedia delivery, and influences on news and documentary content.
- **Academia:** Preparation for higher-level academic work, such as obtaining a doctorate, and teaching and conducting research at the college level.

Requirements Effective Fall 2008

First Year		Credits
JTC 500	Communication Research and Evaluation Methods	4
JTC 501	Process and Effects of Communication	4
JTC 701		1
Elective Core:		
Select 6 credits from the following:		6
JTC 560	Managing Communications Systems	
JTC 601	Cognitive Communication Theory	
JTC 602	Social and Cultural Communication Theory	
JTC 614	Public Communication Campaigns	
JTC 630	Health Communication	
JTC 640	Public Communication Technologies	
JTC 650	Strategic Communications	
JTC 660	Communication and Innovation	
JTC 661	Information Design	
JTC 662	Communicating Science and Technology	
JTC 664	Quantitative Research in Communication	
JTC 665	Qualitative Methods in Communication Research	
	Total Credits	15
Second Year		
JTC 698	Research	3
JTC 699	Thesis	3
Additional Courses[1]		9
	Total Credits	15
	Program Total Credits:	30

[1] Select nine credits determined by advisor and graduate committee.

Master of Science in Public Communication and Technology, Plan B

As both a theoretical and applied program, the M.S. in Public Communication and Technology prepares students for careers in the following:

- **Health, Environmental, Science, or Technical Communication:** Enhancing public and specialized audience understanding of health problems, environmental issues, or scientific and technical topics.
- **Public Relations and Strategic Communication:** Public relations, public information, and strategic communication programs for corporations, government agencies, and nonprofit organizations.
- **New Communication Technologies:** Uses and effects of new communication technologies, computer-mediated communication, and the World Wide Web; computer, print, and multimedia-based documentation, instruction, and training.
- **Journalism:** Issues related to news media culture and multimedia delivery, and influences on news and documentary content.
- **Academia:** Preparation for higher-level academic work, such as obtaining a doctorate, and teaching and conducting research at the college level.

Requirements Effective Fall 2008

First Year		Credits
JTC 500	Communication Research and Evaluation Methods	4
JTC 501	Process and Effects of Communication	4
JTC 701		1
Elective Core:		
Select 6 credits from the following:		6
JTC 560	Managing Communications Systems	
JTC 601	Cognitive Communication Theory	
JTC 602	Social and Cultural Communication Theory	
JTC 614	Public Communication Campaigns	
JTC 630	Health Communication	
JTC 640	Public Communication Technologies	
JTC 650	Strategic Communications	
JTC 660	Communication and Innovation	
JTC 661	Information Design	
JTC 662	Communicating Science and Technology	
JTC 664	Quantitative Research in Communication	
JTC 665	Qualitative Methods in Communication Research	
	Total Credits	15
Second Year		
JTC 695	Independent Study	3

JTC 698	Research	3
Additional Courses[1]		9
	Total Credits	15
	Program Total Credits:	30

[1] Select nine credits with approval of advisor and graduate committee.

Master of Communications and Media Management, Plan C (M.C.M.M.)

The Master of Communications and Media Management, Plan C (M.C.M.M.) is designed for students with a bachelor's degree seeking to transition to a communication-related career, or for those seeking to move up into a management role in their present media profession. The rapid rate of technological change in media technology has created a need for constant retraining and the acquisition of new multimedia knowledge and management skills. The program curriculum is designed to provide students with a comprehensive overview of "new media" developments. Upon completion of the program, students will be prepared to strategize and manage specific communications projects, as well as manage and direct staff members or contract workers in a communications unit within a corporate, educational, or nonprofit organization.

Requirements Effective Fall 2018

Code	Title	Credits
Required Courses		
JTC 526	Digital Media Writing and Production	3
JTC 545	Organizational Media Production	3
JTC 560	Managing Communications Systems	3
JTC 571	Digital Media Research and Evaluation Methods	3
JTC 573	Strategic Digital Communication	3
JTC 640	Public Communication Technologies	3
Selected Courses		
Select four courses from the following, two of which must be at the 500-level:		12
JTC 300	Professional and Technical Communication (GT-CO3)	
JTC 301	Corporate and Professional Communication (GT-CO3)	
JTC 311	History of Media	
JTC 355	Advertising	
JTC 361	Writing for Specialized Magazines	
JTC 505	Advanced Professional Writing	
JTC 511	Corporate Media Ethics and Issues	
JTC 540	Corporate Digital Video Editing	
JTC 550	Public Relations	
JTC 555	Advertising and Marketing Communication	
JTC 572	Corporate Web Design and Management	
Program Total Credits:		30

School of Music, Theatre, and Dance

The School of Music, Theatre, and Dance empowers students to create, collaborate, innovate and inspire. Through teaching, creative artistry, research, advocacy, and service, we elevate arts education.

Office in University Center for the Arts, Room 120
(970) 491-5529
music.colostate.edu (http://music.colostate.edu)
theatre.colostate.edu (http://theatre.colostate.edu)
dance.colostate.edu (http://dance.colostate.edu)

Dr. Daniel Goble, Director, School of Music, Theatre, and Dance

Undergraduate

The School of Music, Theatre, and Dance at CSU provides a rigorous undergraduate educational experience.

The Music program is focused on the belief that music is both an artistic and intellectual pursuit. We offer intense training in specialized music disciplines combined with a balance of core music courses in music history and theory. Most of all, our renowned and versatile faculty are committed to helping students discover their own unique identities through music. We offer B.M. degrees in Music Therapy, Music Education, Music Composition, and Music Performance, as well as a B.A. in Music. Additionally undergraduates can earn a performance-based music minor.

The Theatre program emphasizes a reciprocal relationship between practice and scholarly study, combining practical training with theory and history, while stressing creative critical thinking. Students are encouraged to engage intellectual and physical approaches to explore diverse cultural forms, historical traditions, and contemporary theatre practice. During their first two years as Theatre majors, all students will take the same core of courses in all sub-disciplines. Following their sophomore review, students will be directed into one of three concentrations offered to Theatre majors at CSU: General Theatre, Performance, and Theatrical Design and Production.

The Dance program offers a rigorous program in classical and contemporary dance education culminating in a B.A. in Dance. The degree requires a total of 120 credits with the following foci: technical training and foundations, performance, composition, pedagogy, professional preparation, theatrical production and design, and academics. In the Dance major, students explore the many possibilities for movement expression, along with creativity and scholarly examination, in a challenging and supportive environment.

Majors

- Major in Dance
- Major in Music (B.M.)
  - Composition Concentration
  - Music Education Concentration
    - Choral Option
    - Instrumental Option
  - Music Therapy Concentration
  - Performance Concentration
    - Jazz Studies Option
    - Orchestral Instrument Option
    - Organ Option
    - Piano Option
    - Piano Pedagogy Option
    - String Pedagogy Option
    - Voice Option
- Major in Music (B.A.)
- Major in Theatre
  - Design and Technology Concentration
  - General Theatre Concentration
  - Performance Concentration

Minors

- Minor in Music
- Minor in Theatre – Acting/Directing
- Minor in Theatre – Design/Technical Theatre

Graduate

The department offers graduate programs leading to the Master of Music (M.M.), offering students the skills and experience necessary to become highly skilled music educators, music therapists, performing artists, and conductors.

The vibrant learning environment fosters and supports creativity and growth while high standards of teaching, scholarship, performance and research are developed. We are pleased to offer small academic classes, applied study with highly qualified faculty, and careful attention to advising. With over 100 performance dates a year, performance opportunities are extensive and the department represents the arts on campus in a highly visible and prestigious environment.

Applicants to graduate programs in music must have a B.M., B.M.E., or equivalent bachelor's degree. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the School of Music (http://music.colostate.edu).

Master's Programs

- Master of Music**,** Choral Conducting Specialization
- Master of Music, Collaborative Piano Specialization
- Master of Music, Instrumental Conducting Specialization
- Master of Music, Music Education Specialization
- Master of Music, Music Education—Composition Specialization
- Master of Music, Music Education—Conducting Specialization
- Master of Music, Music Education—Kodaly Emphasis Option
- Master of Music, Performance Option
- Master of Music, Music Therapy Specialization, Plan A
- Master of Music, Music Therapy Specialization, Plan B

Courses

Subjects in this department include: Dance (D), Music (MU), Theatre (TH)

Dance (D)

D 110 Understanding Dance (GT-AH1) Credits: 3 (3-0-0)
Course Description: Broad examination of dance involving limited student participation in basic dance movements.
Prerequisite: None.
Registration Information: For non-dance majors. Previous dance experience not necessary.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Arts & Expression (GT-AH1).

D 120A Dance Techniques I: Modern Credits: 2 (0-4-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 120B Dance Techniques I: Ballet Credits: 2 (0-4-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 120C Dance Techniques I: Jazz Credits: 2 (0-4-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 121A Dance Techniques II: Modern Credits: 2 (0-4-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 121B Dance Techniques II: Ballet Credits: 3 (0-6-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 121C Dance Techniques II: Jazz Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 120C.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 126 Dance Improvisation Credits: 2 (1-2-0)
Course Description: Organic movement and inventive dance movement through improvisational skills, body physicality, space/direction/level imagery and partnering.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 160 Musical Tap Forms Credits: 2 (0-4-0)
Course Description: Basic tap dance forms with emphasis on terminology, study of rhythm, and tap styles; historical development of tap in American culture.
Prerequisite: None.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

D 186 Production Practicum Credits: Var[1-3] (0-0-0)
Course Description: Experiential production learning including management of properties, light, soundboard, video/projection, curtain/rail, and wardrobe operations.
Prerequisite: None.
Registration Information: This is a partial semester course. This course may be repeated twice for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 192 Dance First Year Seminar Credit: 1 (0-0-1)
Course Description: Foundational knowledge and practical tools for navigating life as a dance practitioner in college and beyond.
Prerequisite: None.
Registration Information: Enrollment in dance major.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

D 220A Dance Techniques III: Modern Credits: 2 (0-4-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 220B Dance Techniques III: Ballet Credits: 3 (0-6-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 220C Dance Techniques III: Jazz Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 121C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

D 221A Dance Techniques IV: Modern Credits: 2 (0-4-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 221B Dance Techniques IV: Ballet Credits: 3 (0-6-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 221C Dance Techniques IV: Jazz Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 220C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 226 Dance Choreography I Credits: 2 (1-2-0)
Course Description: Elements of dance composition including space, levels, rhythm, dynamics, qualities of movement, form, style.
Prerequisite: D 121A and D 121B and D 126.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 286 Performance Practicum Credits: Var[1-3] (0-0-0)
Course Description: Learning, rehearsal, and performance of dance repertoire staged or choreographed by faculty and/or guest artists.
Prerequisite: None.
Registration Information: Written consent of instructor. This course may be repeated for a maximum number of 4 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 292 Seminar - The Dancing Body Credits: 2 (0-0-2)
Course Description: Through a combination of theory and practice, explore inside the dancing body to discover structures and functions of the bones, joints, muscles, and more. Specifically geared towards dance practitioners; basic principles of anatomy, kinesiology, and somatics.
Prerequisite: D 192 with a minimum grade of C.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

D 320A Dance Techniques V: Modern Credits: 3 (0-6-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 320B Dance Techniques V: Ballet Credits: 5 (0-10-0)
Course Description:
Prerequisite: D 221B.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 320C Dance Techniques V: Jazz Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 221C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

D 321A Dance Techniques VI: Modern Credits: 3 (0-6-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 321B Dance Techniques VI: Ballet Credits: 5 (0-10-0)
Course Description:
Prerequisite: D 320B.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 321C Dance Techniques VI: Jazz Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 320C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 324 Teaching Creative Movement for Children Credits: 2 (1-2-0)
Course Description: Theoretical and practical experience in teaching creative movement.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 326 Dance Choreography II Credits: 3 (1-4-0)
Course Description: Advanced choreographic elements: group work, music influence, and nontraditional performance venues.
Prerequisite: D 226.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 330 Dance Repertory Ensemble Credits: 2 (0-4-0)
Course Description: Study and performance of original and historic dance repertoire of the classical and contemporary variety. Immersive rehearsal periods emulate experiences of dance artists working in professional settings.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 340 Dance Repertory Outreach Credits: 2 (0-4-0)
Course Description: Preparation of arts integration units, residencies, and lecture demonstrations based on original and/or historic dance repertoire investigated during the previous semester in D330, to be performed at local elementary, middle, high schools, and/or other community venues.
Prerequisite: D 330.
Registration Information: Written consent of instructor. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 392 Dance Seminar Credit: 1 (0-0-1)
Course Description: Knowledge and skills to prepare for post-graduate applications, interviews, auditions, and professional orientation for careers in dance.
Prerequisite: None.
Registration Information: Junior standing. Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 420A Dance Techniques VII: Modern Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 321A.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

D 420B Dance Techniques VII: Ballet Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 321B.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 420C Dance Techniques VII: Jazz Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 321C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

D 421A Dance Techniques VIII: Modern Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 420A.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 421B Dance Techniques VIII: Ballet Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 420B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 421C Dance Techniques VIII: Jazz Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 420C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 424 Ballet Technique Pedagogy Credits: 3 (3-0-0)
Course Description: Theory and practice of ballet technique teaching methods.
Prerequisite: D 324.
Registration Information: Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 426 Dance Choreography III Credits: 2 (1-2-0)
Course Description: Studies in 20th-century dance composition forms.
Prerequisite: D 321A or D 321B or D 321C.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 427 Dance History I Credits: 3 (3-0-0)
Course Description: History of classical ballet to modern times from its origins in folk dance of Middle Ages and social dance of Renaissance.
Prerequisite: None.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

D 428 Dance History II Credits: 3 (3-0-0)
Course Description: History and examination of modern and contemporary dance from United States foundation and diverse global influences.
Prerequisite: None.
Registration Information: Dance major; junior or senior standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

D 432 Dance Therapy Credits: 3 (2-2-0)
Course Description: Use of dance forms in therapy for mentally and physically handicapped.
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

D 434 Modern Technique Pedagogy Credits: 3 (2-3-0)
Course Description: Theory and practice of modern dance technique teaching methods.
Prerequisite: None.
Registration Information: Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 471 Dance Concert Credits: 3 (0-6-0)
Course Description: Demonstration of individual performance and choreographic proficiency in a public performance. Supporting paper and video demonstration required.
Prerequisite: D 326.
Registration Information: Written consent of faculty.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: D 324 or D 424 or D 434.
Registration Information: Written consent of instructor. Student must have taken the course they would be assisting. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 486 Practicum Credits: Var[1-3] (0-0-0)
Course Description: Practicum in dance topics.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

D 487 Dance Internship Credits: Var[1-3] (0-0-0)
Course Description: Supervised work experience in professional dance companies, schools, performing arts centers, and related affiliations.
Prerequisite: D 226 and D 324 and D 427 or D 428.
Registration Information: Sophomore standing. Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

D 491 Workshop Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

D 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

D 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

D 527 Contemporary Dance Credits: 2 (0-4-0)
Course Description: Techniques of dance movement and choreography.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Music (MU)

MU 100 Music Appreciation (GT-AH1) Credits: 3 (3-0-0)
Course Description: Survey of music from a wide range of periods and styles.
Prerequisite: None.
Registration Information: Previous musical training not necessary. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Arts & Humanities 3B, Arts & Expression (GT-AH1).

MU 110 Music and Technology Credits: 3 (2-1-0)
Course Description: Historical and cultural perspectives on the role of technology in music combined with applied skills in digital music production.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B.

MU 111 Music Theory Fundamentals (GT-AH1) Credits: 3 (3-0-0)
Course Description: Basic visual and aural fundamentals of music including intervals, scales, key and time signatures, chord construction, basic harmony, melodic writing.
Prerequisite: None.
Registration Information: For non-music majors and majors needing basic skills.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Arts & Humanities 3B, Arts & Expression (GT-AH1).

MU 117 Music Theory I Credits: 3 (3-0-0)
Course Description: Introduction to diatonic harmony, harmonic analysis, and part-writing/counterpoint.
Prerequisite: None.
Registration Information: Must satisfactorily complete placement exam.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 118 Music Theory II Credits: 3 (3-0-0)
Course Description: Four-part diatonic writing; diatonic sequences and related linear techniques; diatonic modulation.
Prerequisite: MU 117.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 127 Aural Skills I Credit: 1 (0-2-0)
Course Description: Introduction to aural skills, including melodic dictation (one- and two-part), diatonic harmonic dictation; rhythmic dictation in simple and compound meters; prepared singing and sight singing.
Prerequisite: None.
Registration Information: Must have concurrent registration in MU 117.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 128 Aural Skills II Credit: 1 (0-2-0)
Course Description: Further introduction to aural skills, including melodic dictation (one- and two-part), diatonic harmonic dictation; rhythmic dictation in simple and compound meters; prepared singing and sight singing in new clefs.
Prerequisite: MU 127.
Registration Information: Must have concurrent registration in MU 118.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 131 Introduction to Music History and Literature (GT-AH1) Credits: 3 (3-0-0)
Course Description: Landmarks of music history and literature from 1300 to the present.
Prerequisite: None.
Term Offered: Fall. Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Arts & Expression (GT-AH1).

MU 132 Exploring World Music Credits: 3 (3-0-0)
Course Description: Global aspects of music and its meaning with connections to the environment, sound, and world cultures.
Prerequisite: None.
Registration Information: Sections may be offered: Online. Credit not allowed for both MU 132 and MU 380A4.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E.

MU 150 Piano Class I Credit: 1 (0-2-0)
Course Description: Basic piano technique; keyboard harmony.
Prerequisite: None.
Registration Information: Required of all Bachelor of Music majors, except those in the piano or organ performance option. May test out if adequate keyboard skills.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 151A Piano Class II: Music Educators Credit: 1 (0-2-0)
Course Description: Intermediate piano skills for music education.
Prerequisite: MU 150.
Registration Information: Credit allowed for only one of the following: MU 151, MU 151A or MU 151B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 151B Piano Class II: Performance, Composition, and General Studies Credit: 1 (0-2-0)
Course Description: Intermediate Piano Skills for performance, composition, and general studies students.
Prerequisite: MU 150.
Registration Information: Credit allowed for only one of the following: MU 151, MU 151A or MU 151B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 152 Piano Skills for Choral Directors Credit: 1 (0-2-0)
Course Description: Advanced piano skills necessary for choral directing and accompaniment.
Prerequisite: MU 151A.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MU 153 Piano Skills for Music Therapists Credit: 1 (0-2-0)
Course Description: Practical application of functional piano skills for clinical music therapists.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 154 Jazz Piano Class Credit: 1 (0-2-0)
Course Description: Basic jazz piano skills that serve as the foundation for a jazz pianist or composer.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 155 Guitar Class I Credits: 2 (2-0-0)
Course Description: Fundamental techniques for guitar emphasizing chord study and related literature.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 156 Guitar Class II Credits: 2 (2-0-0)
Course Description: Fundamentals of guitar emphasizing solo literature and accompaniment.
Prerequisite: MU 155.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 157 Voice Class I Credits: 2 (2-0-0)
Course Description: Techniques of singing, emphasizing posture, breathing, tone production and diction, as applied to song literature.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 158 Voice Class II Credits: 2 (2-0-0)
Course Description: Techniques of singing, emphasizing resonance, articulation, projection, and repertoire.
Prerequisite: MU 157.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170A Applied Music Instruction: Euphonium Credit: 1 (0-0-1)
Course Description: One-on one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170B Applied Music Instruction: French Horn Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170C Applied Music Instruction: Trombone Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170D Applied Music Instruction: Trumpet Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170E Applied Music Instruction: Tuba Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170G Applied Music Instruction: Harpsichord Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170H Applied Music Instruction: Organ Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170I Applied Music Instruction: Piano Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170J Applied Music Instruction: Percussion Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170L Applied Music Instruction: Harp Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170M Applied Music Instruction: String Bass Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170N Applied Music Instruction: Viola Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170O Applied Music Instruction: Violin Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170P Applied Music Instruction: Violoncello Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170Q Applied Music Instruction: Voice Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170R Applied Music Instruction: Bassoon Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170S Applied Music Instruction: Clarinet Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170T Applied Music Instruction: Flute Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170U Applied Music Instruction: Oboe Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170V Applied Music Instruction: Saxophone (Alto) Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 172A Freshman Voice Studio: English/Italian Credits: 2 (1-2-0)
Course Description: Applied voice study and English/Italian diction in a group setting for freshman voice majors.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 172B Freshman Voice Studio: German, French Credits: 2 (1-2-0)
Course Description: Applied voice study and German/French diction in a group setting for freshman voice majors.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 173 Freshman Voice Studio Credit: 1 (0-2-0)
Course Description: Applied voice study in a group setting for freshmen music majors.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Music majors only. May be taken twice for credit.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 201 Men's Chorus Credit: 1 (0-3-0)
Course Description: Rehearsal and performance of a variety of types and styles of music for men's voices.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 202 University Chorus Credit: 1 (0-3-0)
Course Description: Rehearsal and performance of a variety of types and styles of music for mixed voices.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 204 Marching Band Credit: 1 (0-5-0)
Course Description: Marching routines utilizing popular and jazz musical idioms with performances at all home football games and other athletic events.
Prerequisite: None.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

MU 205 Concert Band Credit: 1 (0-3-0)
Course Description: Rehearsal and performance of basic concert band literature.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 206 Colorado State University Concert Orchestra Credit: 1 (0-3-0)
Course Description: Performance opportunity for music majors and non music majors to perform standard orchestral literature.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 217 Music Theory III Credits: 3 (3-0-0)
Course Description: Introduction to chromatic harmony; analysis of small forms.
Prerequisite: MU 118.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 218 Music Theory IV Credits: 3 (3-0-0)
Course Description: Introduction to sonata form analysis; Introduction to post-tonal music analysis.
Prerequisite: MU 217.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 225 Jazz Theory Credits: 2 (2-0-0)
Course Description: Music theory as it pertains to the jazz idiom; the aural language of jazz.
Prerequisite: MU 118.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 227 Aural Skills III Credit: 1 (0-2-0)
Course Description: Intermediate aural skills, including dictation of chromatic melodies (one- and two-part), diatonic harmonic dictation with chromatic embellishments; rhythmic dictation in simple and compound meters; prepared singing and sight singing in new clefs.
Prerequisite: MU 128.
Registration Information: Must have concurrent registration in MU 217.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 228 Aural Skills IV Credit: 1 (0-2-0)
Course Description: Advanced aural skills for chromatic music; chromatic and atonal melodic dictation; modulating harmonic dictation and atonal pitch patterns; rhythmic dictation of techniques from music since 1900; prepared singing and sight singing of chromatic and atonal melodies.
Prerequisite: MU 227.
Registration Information: Must have concurrent registration in MU 218.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 230 Music of Black Americans Credits: 3 (3-0-0)
Course Description: Music indigenous to or composed by Black Americans.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 231 Women in Music Credits: 3 (3-0-0)
Course Description: Examination of the role of women in music from historical and societal perspectives.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 232 Soundscapes-Music as Human Practice Credits: 3 (3-0-0)
Also Offered As: ANTH 232.
Course Description: Musical communities and soundscapes from around the world provide exploration points for how music and sound inform human life. Study everything from playlists to music of distant lands. Ability to read notated music not required.
Prerequisite: None.
Registration Information: Previous music experience not required. Credit allowed for only one of the following: ANTH 232, MU 232, or MU 280A2.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C.

MU 241 Introduction to Music Therapy Credits: 3 (3-0-0)
Course Description: Overview of music therapy, related helping professions, and problems in human functioning; emphasizes basic skills for managing behavior problems.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 250 Music Therapy Practice Credits: 3 (2-2-0)
Course Description: Development of fundamental interactive and professional skills used in music therapy practice.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 251 Voice Techniques Credit: 1 (0-2-0)
Course Description: Basic voice production, exercises, materials and methods for teaching, including child and adolescent voice concerns.
Prerequisite: None.
Registration Information: Instrumental music education majors only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 252A Instrumental Techniques: Brass Credits: 2 (1-2-0)
Course Description: Tone production, tuning, fingerings, care, materials, and teaching methods for brass instruments.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 252B Instrumental Techniques: Woodwinds Credits: 2 (1-2-0)
Course Description: Tone production, tuning, fingerings, care, materials, and teaching methods for woodwind instruments.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 252C Instrumental Techniques: Strings Credit: 1 (0-2-0)
Course Description: Tone production, tuning, fingerings, care, materials, and teaching methods for string instruments.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 252D Instrumental Techniques: Percussion Credit: 1 (0-2-0)
Course Description: Tone production, tuning, fingerings, care, materials, and teaching methods for percussion instruments.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 254 Beginning Conducting Credits: 2 (2-0-0)
Course Description: Basic conducting patterns and techniques.
Prerequisite: MU 117.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 265A Singers Diction: German/English Credit: 1 (0-2-0)
Course Description: Pronunciation of German and English for singing. Basic vocabulary from German song poetry. Use of the International Phonetic Alphabet (IPA).
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Music major or music minor only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 265B Singers Diction: French/Italian Credit: 1 (0-2-0)
Course Description: Pronunciation of each language for singing, basic vocabulary from song poetry of each language, use of the International Phonetic Alphabet.
Prerequisite: MU 265A.
Restriction: Must be a: Undergraduate.
Registration Information: Music majors and music minors only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272A Applied Music Instruction: Euphonium Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272B Applied Music Instruction: French Horn Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272C Applied Music Instruction: Trombone Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272D Applied Music Instruction: Trumpet Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272E Applied Music Instruction: Tuba Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272G Applied Music Instruction: Harpsichord Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272H Applied Music Instruction: Organ Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272I Applied Music Instruction: Piano Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272J Applied Music Instruction: Percussion Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272K Applied Music Instruction: Guitar Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272L Applied Music Instruction: Harp Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272M Applied Music Instruction: String Bass Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272N Applied Music Instruction: Viola Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272O Applied Music Instruction: Violin Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272P Applied Music Instruction: Violoncello Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272Q Applied Music Instruction: Voice Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272R Applied Music Instruction: Bassoon Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272S Applied Music Instruction: Clarinet Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272T Applied Music Instruction: Flute Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272U Applied Music Instruction: Oboe Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272V Applied Music Instruction: Saxophone (Alto) Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 273 Composition Instruction Credits: Var[1-2] (0-0-0)
Course Description:
Prerequisite: MU 118 and MU 131.
Registration Information: One or two half-hour lessons per week.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 274A Applied Jazz Instruction: Piano Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 274B Applied Jazz Instruction: String Bass Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 274C Applied Jazz Instruction: Trombone Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 274D Applied Jazz Instruction: Trumpet Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 274E Applied Jazz Instruction: Percussion Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 274F Applied Jazz Instruction: Saxophone Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 274G Applied Jazz Instruction: Guitar Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 275A Applied Instruction: Euphonium Credits: 3 (0-0-3)
Course Description: One hour lessons for students with performance concentration.
Prerequisite: None.
Registration Information: Music performance majors only. Written consent of instructor. May be taken up to five times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 286 Practicum-Introduction to Music Education Credits: 3 (1-0-4)
Course Description:
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 300 Women's Chorus Credit: 1 (0-3-0)
Course Description: Rehearsal and performance of a variety of types and styles of music for women's voices.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 302 University Orchestra Credit: 1 (0-5-0)
Course Description: Rehearsal and performance of standard orchestral literature.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 304 Symphonic Band Credit: 1 (0-3-0)
Course Description: Preparation for public performance of full symphonic instrumentation of concert band literature.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 305 Colorado State University Concert Choir Credit: 1 (0-5-0)
Course Description: Rehearsal and performance of choral literature emphasizing extended works with orchestral accompaniment.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 309 Jazz Ensemble Credit: 1 (0-3-0)
Course Description: Rehearsal and performance of jazz ensemble literature of standard and experimental types.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 310 Jazz Combo Credit: 1 (0-2-0)
Course Description: Small group jazz performance practice and standard jazz repertoire.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 317 Music Theory V Credits: 2 (1-2-0)
Course Description: Late 19th and 20th century systems of composition and analysis; chromatic, modal, and atonal sight singing, ear training, and keyboard harmony skills.
Prerequisite: MU 218.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 318 Arranging and Orchestration Credits: 2 (2-0-0)
Course Description: Techniques for writing music for the standard orchestral and band instruments; basic arranging skills for various instrumental and choral ensembles.
Prerequisite: MU 218.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 320 Jazz Improvisation Credit: 1 (0-2-0)
Course Description: Jazz improvisation skills through training in jazz theory, ear training, and improvisatory concepts.
Prerequisite: MU 225.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 325 Jazz Composition/Arranging Credits: 2 (2-0-0)
Course Description: Arranging jazz music for a variety of ensembles; composition of music in the jazz idiom.
Prerequisite: MU 225.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 332 History of Jazz Credits: 3 (3-0-0)
Course Description: Jazz since the 1880s emphasizing its various influences and developments.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 333 History of Rock and Roll Credits: 3 (3-0-0)
Course Description: Historical overview of rock and roll with emphasis on listening skills, musical analysis, the artists, and the industry.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 334 Music History I Credits: 3 (3-0-0)
Course Description: Music of the medieval, Renaissance, and baroque periods.
Prerequisite: (MU 118) and (MU 131).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 335 Music History II Credits: 3 (3-0-0)
Course Description: Music of the classical, Romantic, and contemporary periods.
Prerequisite: MU 131 and MU 118.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 338 Opera History and Literature Credits: 2 (2-0-0)
Course Description: Historical and musical development of opera from its roots through the 20th century.
Prerequisite: MU 131.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 342 Psychology of Music Credits: 3 (3-0-0)
Course Description: Psychological aspects of music: perception, psychoacoustics, aesthetics, musical function, communication, measurement, and affective responses.
Prerequisite: PSY 100.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 343 Research Methods in Music Therapy Credits: 3 (3-0-0)
Course Description: Techniques of observing, measuring, and recording behavior. Basic experimental methods and procedures used in music therapy research.
Prerequisite: STAT 201.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 351A String Pedagogy I: Violin/Viola. Credits: 2 (2-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 351B String Pedagogy I: Violoncello Credits: 2 (2-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 351C String Pedagogy I: String Bass Credits: 2 (2-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 352A String Pedagogy II: Violin/Viola Credits: 2 (1-2-0)
Course Description:
Prerequisite: MU 351A.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 352B String Pedagogy II: Violoncello Credits: 2 (1-2-0)
Course Description:
Prerequisite: MU 351B.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 352C String Pedagogy II: String Bass Credits: 2 (1-2-0)
Course Description:
Prerequisite: MU 351C.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 355 Choral Conducting and Literature Credits: 2 (1-2-0)
Course Description: Basic techniques of choral conducting and analysis of selected works as an aid to interpretation.
Prerequisite: MU 254.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 356 Instrumental Conducting and Literature Credits: 2 (1-2-0)
Course Description: Essentials of instrumental conducting and analysis of selected works.
Prerequisite: MU 254.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 365A Advanced Diction: Italian and English Credit: 1 (0-2-0)
Course Description: Practical application of lyric diction through performance of art song and arias.
Prerequisite: MU 172A and MU 172B.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 365B Advanced Diction: French and German Credit: 1 (0-2-0)
Course Description: Practical application of lyric diction through performance of art song and arias.
Prerequisite: MU 172A and MU 172B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 400 Colorado State University Chamber Choir Credit: 1 (0-5-0)
Course Description: Performance of chamber choral literature from all musical periods ranging from madrigals to music in a contemporary idiom.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 401 Opera Theater Credits: Var[1-2] (0-0-0)
Course Description: Performance of opera and/or operatic scenes emphasizing operatic singing and acting techniques.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 402 Theater/Chamber Orchestra Credit: 1 (0-5-0)
Course Description: Performance of selected operas, musicals, oratorio, orchestral accompaniments, and chamber music.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 404 Symphonic Wind Ensemble Credit: 1 (0-5-0)
Course Description: Performance of wind ensemble and band literature emphasizing most challenging of repertoire, using a select ensemble of performers.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 406 New Music Ensemble Credit: 1 (0-2-0)
Course Description: Chamber ensemble rehearsal and performance of contemporary literature. Explores, performs, and studies new concepts of notation, extended performing techniques, group improvisation and group composition, centered around the latest developments in sonic art. The New Music Ensemble may perform on and off campus each semester.
Prerequisite: None.
Registration Information: Junior standing. Written recommendation from applied instructor required. Approximately two formal performances per year, may be on or off campus. Required field trips. May be repeated up to 9 times for credit.
Grade Mode: Traditional.
Special Course Fee: No.

MU 407 Accompanying Credit: 1 (0-3-0)
Course Description: Practical experience in the interpretation and execution of piano accompaniments.
Prerequisite: MU 272I.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 408 Chamber Music Credit: 1 (0-3-0)
Course Description: Performance literature for small instrumental ensembles: duets, trios, quartets, and quintets.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 412 Music Theory Proficiency Credits: 2 (2-0-0)
Course Description: Review of music theory topics to prepare for graduate studies. Tonal, post-tonal, and formal analysis.
Prerequisite: MU 218.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 415 Advanced Jazz Techniques Credits: 2 (1-2-0)
Course Description: Advanced jazz theory and rhythmic concepts, free improvisation and other modern performance techniques.
Prerequisite: MU 320.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 417 Counterpoint Credits: 3 (3-0-0)
Course Description: Contrapuntal techniques from the Middle Ages through the 20th century; development of compositional skills in counterpoint.
Prerequisite: MU 218.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 418 Advanced Orchestration Credits: 2 (2-0-0)
Course Description: Advanced writing for modern orchestra and related ensembles; advanced study of traditional and contemporary writing for the individual instruments.
Prerequisite: MU 318.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 419 Electronic Music Composition Credits: 2 (2-0-0)
Course Description: Fundamentals of electronic music composition, including hardware, software, digital audio, MIDI, and computer music.
Prerequisite: MU 218.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 420 Marching Band Techniques Credits: 2 (2-0-0)
Course Description: Marching band conducting, design, and performance techniques.
Prerequisite: MU 204.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 421 Orchestral Techniques Credits: 2 (1-3-0)
Course Description: Orchestral conducting and rehearsal techniques.
Prerequisite: MU 252C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 425 Jazz Pedagogy Credits: 2 (2-0-0)
Course Description: Jazz ensemble, instrumentation, literature, performance practice and rehearsal techniques.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 430 20th Century Music Credits: 3 (3-0-0)
Course Description: Musical styles from 1900 to present; major 20th-century movements which reflect a changing society.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 431 American Music Credits: 3 (3-0-0)
Course Description: Sacred, patriotic, popular, and cultivated musical developments from the Pilgrims to 1900 including music on the Western frontier.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 432 Hymnology Credits: 2 (2-0-0)
Course Description: Hymns and congregational singing in the Christian tradition.
Prerequisite: MU 100 or MU 131.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 433 Music and Rites of Christian Liturgy Credits: 2 (2-0-0)
Course Description: History of the music and rites of Christian liturgy from its beginnings to the present.
Prerequisite: MU 100 or MU 131.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 434 Psalms in Music and Liturgy Credits: 2 (2-0-0)
Course Description: Musical traditions of the poetry and psalms of the Hebrew Bible, primarily from the perspective of Jewish and Christian liturgy.
Prerequisite: MU 100 or MU 131.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 435 Contemporary Liturgical Music in America Credits: 2 (2-0-0)
Course Description: History and practice of contemporary liturgical music in America.
Prerequisite: MU 100 or MU 131.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 437 History and Structure of the Organ Credits: 2 (1-2-0)
Course Description: Physical structure, tonal disposition, acoustical surroundings, and historical development.
Prerequisite: MU 472H.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 440 Music Therapy Methods I Credits: 3 (3-0-0)
Course Description: Relation of music to the needs of developmental and aging populations; Techniques for formulating objectives, designing and implementing programs, and evaluation.
Prerequisite: MU 241 and MU 250.
Registration Information: Admission to professional curriculum.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 443 Music Therapy Methods II Credits: 3 (3-0-0)
Course Description: Relation of music to health; current and future music therapy scenes; and emphasis on cognitive, affective, and psychomotor approaches to therapy.
Prerequisite: MU 440.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 444 Music Therapy Methods III Credits: 3 (3-0-0)
Course Description: Music therapy techniques: assessment, formulating objectives, designing and implementing programs, evaluation, problem solving, and creativity.
Prerequisite: BMS 300 and MU 443.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 445 Improvisation Techniques in Music Therapy Credits: 2 (2-0-0)
Course Description: Music/movement improvisation techniques with clinical populations.
Prerequisite: None.
Registration Information: Admission to professional curriculum.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 450 Style and Performance Practice in Singing Credits: 2 (2-0-0)
Course Description: An exploration of period-appropriate stylistic guidelines for singers in both art song and operatic repertoire. Involves both lecture components, and in-class performance, critique, and evaluation. Intended primarily for vocalists.
Prerequisite: MU 472 or MU 672.
Registration Information: Sophomore standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 451A String Pedagogy III: Violin Credits: 2 (1-2-0)
Course Description:
Prerequisite: MU 352A.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 451B String Pedagogy III: Violoncello Credits: 2 (1-2-0)
Course Description:
Prerequisite: MU 352B.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 451C String Pedagogy III: String Bass Credits: 2 (1-2-0)
Course Description:
Prerequisite: MU 352C.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 463 String Chamber Music Literature Credits: 2 (2-0-0)
Course Description: Chamber music literature from 1750 to present.
Prerequisite: MU 335.
Grade Mode: Traditional.
Special Course Fee: No.

MU 464A String Literature: Violin/Viola Credits: 2 (2-0-0)
Course Description:
Prerequisite: MU 272N or MU 272O.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 464B String Literature: Violoncello Credits: 2 (2-0-0)
Course Description:
Prerequisite: MU 272P.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 464C String Literature: String Bass Credits: 2 (2-0-0)
Course Description:
Prerequisite: MU 272M.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 465 Keyboard Literature Credits: 2 (1-2-0)
Course Description: Survey of early keyboard literature from pre-piano to early Romantic period; problems in present-day performance.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 466 Song Literature Credits: 2 (1-2-0)
Course Description: Development of song as an art form from monody to German Lieder, French school, and contemporary songs of England and America.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 467 Vocal Pedagogy Credits: 2 (2-0-0)
Course Description: Pedagogical foundations, techniques, resources, methods, and terminology for teaching singing.
Prerequisite: MU 265A and MU 265B.
Registration Information: Must have concurrent registration in MU 472Q.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 468 Organ Literature Credits: 2 (1-2-0)
Course Description: Survey of literature from earliest known works to present; stylistic content and interpretation.
Prerequisite: MU 437.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 469 Instrumental Literature Credits: 2 (1-2-0)
Course Description: Survey of literature for string, woodwind, and brass ensembles.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 471 Recital Credit: 1 (0-0-1)
Course Description: Demonstration of individual musical proficiency through public performance.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472A Applied Music Instruction: Euphonium Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272A.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472B Applied Music Instruction: French Horn Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272B.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472C Applied Music Instruction: Trombone Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272C.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472D Applied Music Instruction: Trumpet Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272D.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472E Applied Music Instruction: Tuba Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272E.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472G Applied Music Instruction: Harpsichord Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272G.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472H Applied Music Instruction: Organ Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272H.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472I Applied Music Instruction: Piano Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272I.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472J Applied Music Instruction: Percussion Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272J.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472K Applied Music Instruction: Guitar Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272K.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472L Applied Music Instruction: Harp Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272L.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472M Applied Music Instruction: String Bass Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272M.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472N Applied Music Instruction: Viola Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272N.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472O Applied Music Instruction: Violin Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272O.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472P Applied Music Instruction: Violoncello Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272P.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472Q Applied Music Instruction: Voice Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272Q.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472R Applied Music Instruction: Bassoon Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272R.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472S Applied Music Instruction: Clarinet Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272S.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472T Applied Music Instruction: Flute Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272T.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472U Applied Music Instruction: Oboe Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272U.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472V Applied Music Instruction: Saxophone (Alto) Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272V.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 473 Composition Instruction Credits: Var[1-2] (0-0-0)
Course Description: One or two-half hour lessons per week; emphasizing pedagogical methods.
Prerequisite: MU 273.
Registration Information: Must have successful completion of upper-division qualifying exam.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 474 Applied Jazz Instruction Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering advanced aspects of jazz improvisation and performance.
Prerequisite: MU 274A to 274G.
Registration Information: MU 274 (any one subtopic); concurrent registration in any jazz ensemble; successful completion of upper division qualifying exam.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 486A Practicum: Music Therapy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Piano proficiency.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 486B Practicum: Music Education Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to teacher licensure.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 487 Internship Credits: Var[1-18] (0-0-0)
Course Description: Six-month field experience that students must complete to become eligible for registration and board certification.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MU 495A Independent Study: Composition and Theory Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 495B Independent Study: Conducting Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 495C Independent Study: Improvisation Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 495D Independent Study: Music History Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 495E Independent Study: Music Literature Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 495F Independent Study: Music Therapy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 495G Independent Study: Pedagogy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 495H Independent Study: Performance Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

MU 496A Group Study: Composition and Theory Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 496B Group Study: Conducting Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 496C Group Study: Improvisation Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 496D Group Study: Music Education Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 496E Group Study: Music History Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 496F Group Study: Music Literature Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 496G Group Study: Music Therapy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 496H Group Study: Pedagogy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 496I Group Study: Performance Credits: Var[1-3] (0-0-0)
Prerequisite: None.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 498 Research in Music Therapy Credits: Var[1-3] (0-0-0)
Course Description: Participation of undergraduate music therapy majors in departmental research projects.
Prerequisite: MU 241 and MU 286.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 499 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Music majors only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MU 510 Foundations of Music Education Credits: 3 (3-0-0)
Course Description: Cultural, philosophical, psychological, and historical applications of music education.
Prerequisite: MU 630 or EDRM 600.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 511 Advanced Arranging for Educational Ensembles Credits: 3 (3-0-0)
Course Description: Arranging and scoring skills related to elementary, choral, wind band, orchestral, and jazz ensembles in K-12 music classrooms. Publishing concerns and intellectual property rights related to both composing and arranging for educational ensembles.
Prerequisite: MU 318.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 512 Pedagogy of Musical Creativity Credits: 3 (3-0-0)
Course Description: Theory and application of creative musical skills as applied in K-12 music classrooms. Includes pedagogy of improvisation and composition, pedagogy of music theory and aural skills, and the application of original creative works in music classrooms.
Prerequisite: MU 317.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 517 Analytic Techniques I Credits: 2 (2-0-0)
Course Description: Appropriate analytic techniques for Middle Ages, Renaissance, and baroque music.
Prerequisite: None.
Registration Information: Satisfactory completion of placement examination.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 518 Analytic Techniques II Credits: 3 (3-0-0)
Course Description: Appropriate analytic techniques for classical, Romantic, and 20th-century music.
Prerequisite: None.
Registration Information: Satisfactory completion of placement examination. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 519 History of Music Theory Credits: 3 (3-0-0)
Course Description: Important authors, treatises, and texts dealing with acoustics, composition, counterpoint, harmony, notation, orchestration, thoroughbass, and tuning.
Prerequisite: MU 317.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 520 Elementary School Music Credits: 3 (3-0-0)
Course Description: Musical concepts and teaching strategies for grades K-6; contemporary influences on music education.
Prerequisite: EDUC 450.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 521 Junior and Senior High School Music Credits: 3 (3-0-0)
Course Description: Music for grades 7-12. General music classes, choral and instrumental organizations, common problems, practices, and new concepts.
Prerequisite: EDUC 450.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 524 Dalcroze Eurhythmics. Level I Credits: 3 (1-4-0)
Course Description: Musicianship, aesthetics, and pedagogy as studied through the body via movement and gesture.
Prerequisite: None.
Registration Information: Admission to the M.M. Music Education specialization.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MU 525A Orff-Schulwerk Training Program: I Credits: 3 (1-0-2)
Course Description:
Prerequisite: MU 590L.
Registration Information: Must register for lecture and recitation.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 525B Orff-Schulwerk Training Program: II Credits: 3 (1-0-2)
Course Description:
Prerequisite: MU 590L.
Registration Information: Must register for lecture and recitation.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 525C Orff-Schulwerk Training Program: III Credits: 3 (1-0-2)
Course Description:
Prerequisite: MU 590L.
Registration Information: Must register for lecture and recitation.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 526A Kodaly Training Program: Level I Credits: 5 (2-2-2)
Course Description:
Prerequisite: None.
Registration Information: Must register for lecture, laboratory and recitation.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 526B Kodaly Training Program: Level II Credits: 5 (2-2-2)
Course Description:
Prerequisite: None.
Registration Information: Must register for lecture, laboratory and recitation.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 526C Kodaly Training Program: Level III Credits: 5 (2-2-2)
Course Description:
Prerequisite: None.
Registration Information: Must register for lecture, laboratory and recitation.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 527A Conducting Seminar: Level I Credits: 4 (0-0-4)
Course Description: Music score analysis, preparation and conducting problems; various conducting projects to sharpen skills and increase gestures.
Prerequisite: None.
Registration Information: Audition and acceptance into the graduate school. Required field trips.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

MU 527B Conducting Seminar: Level 2 Credits: 4 (0-0-4)
Course Description: Furthers techniques learned in MU 527A; focuses on rehearsal techniques, performance practice, and asymmetrical meters.
Prerequisite: MU 527A.
Registration Information: Required field trips.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

MU 527C Conducting Seminar: Level 3 Credits: 4 (0-0-4)
Course Description: Furthers study from MU 527A-B.
Recitative technique through both operatic and choral examples; final project is a group conducted Broadway musical.
Prerequisite: MU 527B.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

MU 530 Music Through the Middle Ages Credits: 3 (3-0-0)
Course Description: Music in Western civilization from its beginnings through Middle Ages.
Prerequisite: MU 334.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 531 Music of the Renaissance Credits: 3 (3-0-0)
Course Description: Music of 15th and 16th centuries.
Prerequisite: MU 334.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 532 Music of the Baroque Credits: 3 (3-0-0)
Course Description: Style and musical language of baroque from Gabriellis through Johann Sebastian Bach.
Prerequisite: MU 334.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 533 Music of the Classical Era Credits: 3 (3-0-0)
Course Description: Vocal and instrumental music of middle and late 18th century.
Prerequisite: MU 335.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 534 Music of the Romantic Era Credits: 3 (3-0-0)
Course Description: Musical works, philosophies, and related arts of 19th century.
Prerequisite: MU 335.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 535 Music of the Twentieth Century Credits: 3 (3-0-0)
Course Description: Twentieth-century music emphasizing cultural, stylistic, and theoretical concepts.
Prerequisite: MU 335.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 543 Advanced Research Methods in Music Therapy Credits: 3 (3-0-0)
Course Description: Research techniques used in measuring and recording behavior. Advanced methods used in music therapy research.
Prerequisite: MU 241 and MU 250.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 544 Advanced Techniques-Neurologic Music Therapy Credits: 3 (3-0-0)
Course Description: Advanced neurologic music therapy techniques used with various clinical populations.
Prerequisite: BMS 300 and MU 443.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 545 Composition for Music Therapy Practitioners Credits: 3 (2-2-0)
Course Description: Music composition techniques for the music therapy clinician.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 550 Social Psychology of Music Learning Credits: 3 (0-0-3)
Course Description: Sociological and psychological theories and issues related to contemporary music education contexts. Apply theory into practice through observation and practicum assignments with public and private education institutions.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Bachelor's degree required. Admission to the Master of Music Education program.
Grade Mode: Traditional.
Special Course Fee: No.

MU 551 Curriculum and Assessment of Music Learning Credits: 3 (0-0-3)
Course Description: Examine and apply research related to curriculum development and assessment of student learning to contemporary music education contexts. Emphasizes tenets related to human intelligence and learning, measurement of student learning, and educational policy from the world (UNESCO) and local perspectives (school districts/state mandates).
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Written consent of instructor.
Grade Mode: Traditional.
Special Course Fee: No.

MU 555 Choral Techniques, Style, and Interpretation Credits: 3 (3-0-0)
Course Description: Techniques for achieving expressive conducting, problems of tone and diction, musical style and interpretation, and rehearsal techniques.
Prerequisite: MU 355.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 556 Advanced Instrumental Conducting and Techniques Credits: 3 (3-0-0)
Course Description: Score reading and analysis, preparation of instrumental scores for performance; expressive baton techniques, rehearsal methods and procedures.
Prerequisite: MU 356.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 557 Advanced Vocal Pedagogy Credits: 2 (2-0-0)
Course Description: Diagnosis of vocal faults and introduction to performance anxiety barriers and peak performance tactics.
Prerequisite: MU 467.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 564 Collaborative Piano Literature Credits: 3 (3-0-0)
Course Description: Literature and historical performance practices of collaborative piano music.
Prerequisite: None.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 565 Piano Literature-1800 to Present Credits: 2 (2-0-0)
Course Description: Keyboard music representing Romantic and Impressionistic periods, nationalism, twelve-tone, and recent developments including aleatory elements.
Prerequisite: MU 465.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 566 Choral Literature-Renaissance and Baroque Credits: 2 (2-0-0)
Course Description: Analytical and comparative survey of choral literature from Renaissance to 1750.
Prerequisite: MU 355.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 567 Choral Literature-1750 to Present Credits: 2 (2-0-0)
Course Description: Analytical and comparative survey of choral literature from 1750 to present.
Prerequisite: MU 356.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 569 Symphonic Literature Credits: 2 (1-2-0)
Course Description: Symphonic development from early classicism through Impressionism; emphasis on formal structure, thematic sources, and social and historical influence.
Prerequisite: MU 469.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 590A Workshop: Choral Music Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590B Workshop: Conducting Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590C Workshop: Beginning Guitar Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590D Workshop: Humanities Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590E Workshop: Music for Exceptional Children Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590F Workshop: Organ Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590G Workshop: Orff Music Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590I Workshop: Kodaly Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590J Workshop: Beginning Handbells Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590K Workshop: Computers in Music Education Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590L Workshop: Advanced Handbells Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590N Workshop: Neurologic Music Therapy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 592A Seminar: Music Theory Credits: Var[1-3] (0-0-0)
Course Description: Special Topics in Music Theory.
Prerequisite: None.
Registration Information: Graduate standing. May be repeated up to three times for credit.
Grade Mode: Traditional.
Special Course Fee: No.

MU 592D Seminar: Music Education Credits: Var[1-3] (0-0-0)
Course Description: Special Topics in Music Education.
Prerequisite: None.
Registration Information: Graduate standing. May be repeated up to three times for credit.
Grade Mode: Traditional.
Special Course Fee: No.

MU 592E Seminar: Music History Credits: Var[1-3] (0-0-0)
Course Description: Special topics in Music History.
Prerequisite: MU 334 and MU 335.
Registration Information: May be repeated up to three times for credit.
Grade Mode: Traditional.
Special Course Fee: No.

MU 608 Graduate Chamber Music Credit: 1 (0-3-0)
Course Description: Graduate-level performance literature for small instrumental ensembles: duets, trios, quartets, and quintets.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing; audition required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 630 Methods of Music Research Credits: 3 (3-0-0)
Course Description: Research, documentation, and bibliography for music history, literature, performance, theory, acoustics, music education, and quantitative testing.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 647 Historical Foundations of Music Therapy Credits: 3 (3-0-0)
Course Description: Historical foundations of music therapy in the United States from 1750 to the present.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 648 Neuroscience/Music Foundations in Therapy Credits: 3 (3-0-0)
Course Description: Historical and scientific foundations of neurologic music therapy.
Prerequisite: MU 544.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 649 Advanced Practice in Music Therapy Credits: 3 (0-0-3)
Course Description: Group study of advanced music therapy techniques.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Graduate School. Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 669 Instrumental Literature Credits: 2 (2-0-0)
Course Description: Solo and small ensemble literature for string, woodwind, and brass instruments.
Prerequisite: MU 469.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 671 Graduate Recital Credit: 1 (0-0-1)
Course Description: Demonstration of graduate-level applied musical proficiency through public performance.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672A Applied Music Instruction: Euphonium Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472A.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672B Applied Music Instruction: French Horn Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472B.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672C Applied Music Instruction: Trombone Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472C.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672D Applied Music Instruction: Trumpet Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472D.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672E Applied Music Instruction: Tuba Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472E.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672G Applied Music Instruction: Harpsichord Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472G.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672H Applied Music Instruction: Organ Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472H.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672I Applied Music Instruction: Piano Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472I.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672J Applied Music Instruction: Percussion Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472J.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672K Applied Music Instruction: Guitar Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472K.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672L Applied Music Instruction: Harp Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472L.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672M Applied Music Instruction: String Bass Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472M.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672N Applied Music Instruction: Viola Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472N.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672O Applied Music Instruction: Violin Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472O.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672P Applied Music Instruction: Violoncello Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472P.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672Q Applied Music Instruction: Voice Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472Q.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672R Applied Music Instruction: Bassoon Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472R.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672S Applied Music Instruction: Clarinet Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472S.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672T Applied Music Instruction: Flute Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472T.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672U Applied Music Instruction: Oboe Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472U.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672V Applied Music Instruction: Saxophone (Alto) Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472V.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 673 Composition Instruction Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week.
Prerequisite: MU 473.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 684 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Supervised assistance in instruction.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 686 Music Therapy Practicum Credits: 3 (0-6-0)
Course Description: Clinical practicum for graduate music therapy students.
Prerequisite: MU 486A - at least 6 credits.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 692 Seminar Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 692G Seminar: Music Therapy Credits: 3 (0-0-3)
Course Description: Seminar on advanced topics in music therapy methods, techniques, and philosophy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 695A Independent Study: Composition and Theory Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695B Independent Study: Conducting Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695C Independent Study: Improvisation Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695D Independent Study: Music Education Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695E Independent Study: Music History Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695F Independent Study: Music Literature Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695G Independent Study: Music Therapy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695H Independent Study: Pedagogy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696A Group Study: Composition and Theory Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696B Group Study: Conducting Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696C Group Study Improvisation Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696D Group Study: Music Education Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696E Group Study: Music History Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696F Group Study: Music Literature Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696G Group Study: Music Therapy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696H Group Study: Pedagogy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696I Group Study: Performance Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 698 Research Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Theatre (TH)

TH 141 Introduction to Theatre (GT-AH1) Credits: 3 (3-0-0)
Course Description: Theatre as an art and one of the humanities, its impact upon society, and its relationship to other art forms.
Prerequisite: None.
Registration Information: Required field trips. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Arts & Humanities 3B, Arts & Expression (GT-AH1).

TH 149 Movement for Actors I Credits: 2 (0-4-0)
Course Description: A broad survey of different movement theories from Asia, Africa, and Europe.
Prerequisite: TH 141 and TH 150, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 150 Introduction to Performance Credits: 3 (1-0-2)
Course Description: Imagination as the actor's primary resource: acting exercises, compositions, improvisations to acquire the basic approach to text through action.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 151 Acting I Credits: 3 (2-2-0)
Course Description: Imagination as an actor's resource. Finding action, objective, the art of memory, improvisation, scene study, from simple scenes in realistic plays.
Prerequisite: TH 150.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 153 Singing for Actors I Credits: 2 (0-0-2)
Course Description: Fusion of acting technique and singing technique for credible performance in the musical genre.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 160 Drawing for the Theatre Credits: 3 (1-4-0)
Course Description: Introduction to drawing, drafting, watercolor, and other graphic techniques used by set, costume, lighting, and media designers.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 161 Technical Theatre: Stagecraft Credits: 3 (2-2-0)
Course Description: Skills and craft of technical theatre. Knowledge of tools, materials, and techniques essential to production realization.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 163 Costume Construction for the Theatre Credits: 3 (1-4-0)
Course Description: Technical side of costuming for live stage performances with an emphasis on all aspects of construction.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 175 Storytelling Credits: 3 (2-0-2)
Course Description: Study and practice of storytelling.
Prerequisite: TH 141, may be taken concurrently.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 186 Theatre Practicum I Credit: 1 (0-2-0)
Course Description: Practical experience in mounting theatrical productions.
Prerequisite: None.
Registration Information: This is a partial-semester course.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

TH 192 Theatre Freshman Seminar Credits: 3 (0-0-3)
Course Description: Collaborative creative processes required to transfer storytelling and self-scripting literature to theatrical performance with faculty artists/scholars.
Prerequisite: None.
Registration Information: Theatre majors only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 240 Reading Shakespeare for the Theatre Credits: 3 (3-0-0)
Course Description: Reading, speaking Shakespeare texts: comedies, sonnets, romances, to develop various approaches to understand and perform his work to modern audiences.
Prerequisite: TH 241, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 241 Text Analysis for the Theatre Credits: 3 (3-0-0)
Course Description: Analyzing plays with an aim toward being better prepared, as theatre artists, to understand the dramatic text, the basis of theatre art and craft.
Prerequisite: TH 150 or TH 160.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 242 Theatre History I Credits: 3 (3-0-0)
Course Description: Theatre from its origins through the Renaissance.
Prerequisite: TH 241, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 243 Theatre History II Credits: 3 (3-0-0)
Course Description: Theatre history from the English Restoration of 1660 through the postwar developments in Europe and the Americas from 1945 to 1960.
Prerequisite: TH 242.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 246 Movement for Actors II Credits: 2 (0-4-0)
Course Description: Intermediate actor movement.
Prerequisite: TH 149 and TH 251, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 250 Voice and Movement for the Stage Credits: 3 (2-2-0)
Course Description: A broad survey of traditional and topical approaches to voice and movement for the theatre actor.
Prerequisite: TH 150.
Restriction: .
Registration Information: Theatre Majors only. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 251 Acting II Credits: 3 (2-2-0)
Course Description: Application of the given circumstances to a text and development of characterization. Selection and preparation of audition material.
Prerequisite: TH 151.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 253 Singing for Actors II Credits: 2 (0-0-2)
Course Description: Advanced singing techniques, sight singing, using more difficult and challenging music. Preparing for a performance in musical theatre.
Prerequisite: TH 153.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 255 Directing Workshop Credits: 3 (2-2-0)
Course Description: Practical directing workshop, short directing exercises, short scenes, techniques, theories, readings, staging prompts.
Prerequisite: TH 151, may be taken concurrently and TH 241, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 260 Computer Assisted Drafting for Theatre Credits: 3 (2-2-0)
Course Description: Computer-aided drafting and conceptual articulation for theatrical design and production using entertainment industry standard: Vectorworks.
Prerequisite: TH 161 and TH 160.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 261 Drawing and Drafting for the Theatre Credits: 3 (1-4-0)
Course Description: Fundamental drawing, drafting, and rendering techniques needed by theatrical designers to effectively communicate their visual ideas.
Prerequisite: TH 160.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 262 Stage Management I Credits: 3 (3-0-0)
Course Description: Duties and responsibilities of stage managers. Communication, rehearsal, performance techniques. Conceptual approaches to theatre.
Prerequisite: TH 150, may be taken concurrently and TH 160, may be taken concurrently and TH 175, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 263 Costume Design I Credits: 3 (1-4-0)
Course Description: Basic theory and technique for visualization of theatrical characters through costume.
Prerequisite: TH 163.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 264 Lighting Design for the Theatre I Credits: 3 (2-2-0)
Course Description: Essential principles and theory for stage lighting including design process, control, equipment, and lighting aesthetics.
Prerequisite: TH 160 and TH 161.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 265 Set Design I Credits: 3 (3-0-0)
Course Description: Theory and techniques for designing scenery for the stage.
Prerequisite: TH 160 and TH 161.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 266 Digital Media Design for Live Performance I Credits: 3 (2-2-0)
Course Description: Sound and projection design fundamentals: control, design and content creation for live performance settings.
Prerequisite: TH 160 and TH 161.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 267 Scenic Painting Credits: 3 (1-6-0)
Course Description: Basic techniques and practical applications in scenic painting for the theatre.
Prerequisite: TH 265, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 269 Theatrical Makeup Credits: 3 (2-3-0)
Course Description: Stage makeup. Individual skill in character analysis, application in pigment, plastic, hair, makeup, and selection and use of theatrical makeup.
Prerequisite: TH 160 or TH 263.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 275 Self-Scripting and Performance Workshop Credits: 3 (1-0-2)
Course Description: Study and practice of the processes of self-scripting (theatrical storytelling from personal experience) as a tool for performers and writers.
Prerequisite: TH 175.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 286 Theatre Practicum II Credit: 1 (0-2-0)
Course Description: Practical experience in mounting theatrical productions.
Prerequisite: TH 186.
Registration Information: This is a partial-semester course.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

TH 292 Design and Technology Seminar Credit: 1 (0-0-1)
Course Description: Weekly examination of the ongoing production processes and strategies for stage managers and designers assigned productions in the mainstage season.
Prerequisite: TH 141, may be taken concurrently or TH 160, may be taken concurrently.
Registration Information: May be taken up to six times for a maximum of 6 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 301 Theatre Design and Production Special Topics Credits: 3 (3-0-0)
Course Description: In-depth study of general interest in design and production. Possible topics may include history of decor, storyboarding, etc.
Prerequisite: TH 260.
Registration Information: Choose any two of the following: TH 262, TH 263, TH 264, TH 265, or TH 266.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 324 Teaching Creative Drama for Children Credits: 3 (1-6-0)
Course Description: Theoretical and practical experience in teaching creative drama.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Required field trips
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 343 Contemporary Plays and Alternative Theatre Credits: 3 (3-0-0)
Course Description: The study of revolutionary movements and alternative staging practices in theatre prompted by plays written from 1960 to the present.
Prerequisite: TH 243.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 344 Dramaturgy Protocol Seminar Credits: 3 (0-0-3)
Course Description: Training in the application of dramaturgical techniques to facilitate the collaborative creative process in contemporary performance practice.
Prerequisite: TH 343.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 350 Classical Text Credits: 3 (3-0-0)
Course Description: The Cicely Berry approach to voice and speech for speaking classical text.
Prerequisite: TH 251, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 351 Acting III Credits: 3 (1-2-1)
Course Description: Acting Methods for challenges presented in plays by Brecht, Moliere, Chekov, Ibsen, Pirandello, O'Neill, and contemporary re-workings of the Greeks.
Prerequisite: TH 251.
Registration Information: Must register for lecture, laboratory, and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 352 Acting for Singers Credits: 2 (1-0-1)
Course Description: Acting class specifically for singers: improv, beginning scene work, harnessing given circumstance and augmenting physical character life onstage.
Prerequisite: MU 401, may be taken concurrently.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 353 Experimental Performance Credits: 3 (2-2-0)
Course Description: Artistic exploration of experimental performance via radical innovations in dance, theatre, music, literature, film, art, and performance art.
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

TH 355 Directing Seminar Credits: 3 (0-0-3)
Course Description: Theatrical, practical, and creative approaches to directing a play: research, analysis, semiotics, identifying visual metaphor, point of view.
Prerequisite: TH 255 and TH 265, may be taken concurrently.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 361 Technical Theatre: Technical Direction Credits: 3 (1-4-0)
Course Description: Advanced training and techniques in construction management and technical production for the theatre.
Prerequisite: TH 161.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

TH 362 Stage Management II Credits: 3 (3-0-0)
Course Description: Problem-solving in the stage manager leadership role: advanced study in production realization, stage management concepts and techniques in practice.
Prerequisite: TH 262.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 363 Costume Design II Credits: 3 (1-4-0)
Course Description: Theory and practice of advanced costume design techniques.
Prerequisite: TH 263.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 364 Lighting Design for the Theatre II Credits: 3 (2-2-0)
Course Description: Principles and theory for stage lighting including advanced programming, tour preparation, and presentation techniques.
Prerequisite: TH 264.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 365 Advanced Scenic Design Credits: 3 (2-2-0)
Course Description: The practice of scenic design from text to idea to realized work. Advanced scenic design techniques in divergent and increasingly complex situations.
Prerequisite: TH 267, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 366 Digital Media Design for Live Performance II Credits: 3 (2-2-0)
Course Description: Advanced sound and projection design techniques (including sound control, microphone arrays, animation and mapping) in live performance settings.
Prerequisite: TH 264 and TH 266.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 369 Advanced Makeup and Hair Design Credits: 3 (1-4-0)
Course Description: Advanced techniques in makeup, hair, and wig design for theatre.
Prerequisite: TH 269.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 370A Theatre Assistant: Design Credits: Var[1-18] (0-0-0)
Course Description: Assist a guest professional or faculty designer in full production locally or offsite.
Prerequisite: TH 365.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

TH 370B Theatre Assistant: Directing Credits: Var[1-18] (0-0-0)
Course Description: Assist a guest professional or faculty director in full production locally or off-site.
Prerequisite: TH 355.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

TH 375 Playwright's Workshop Credits: 3 (1-0-2)
Course Description: Character, conflict, structure, setting, dialogue, and the process of rewriting, resulting in a finished 10-minute play.
Prerequisite: TH 241 and TH 343.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 384 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Junior standing; written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted toward graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 386 Theatre Practicum III Credit: 1 (0-2-0)
Course Description: Practical experience in mounting theatrical productions.
Prerequisite: TH 286.
Registration Information: This is a partial-semester course.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

TH 392 Theatre Seminar Credits: 3 (0-0-3)
Course Description: Various current theatre topics taught by visiting professionals, for example, "The League of Regional Theatres is our National Theatre."
Prerequisite: TH 243, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 400 Theatre Production Workshop Credits: Var[1-3] (0-0-0)
Course Description: Explores both the practical and dramaturgical essences of the production of a play.
Prerequisite: None.
Registration Information: Written consent of instructor. Maximum of 6 credits of TH 400 allowed to be counted toward the major. May not be taken concurrently with TH 471. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 401 Theatrical Design and Prod Advanced Topics Credits: 3 (2-2-0)
Course Description: Intensive study for advanced TD&P students, e.g., property design, advanced costume technology, wigmaking, company management, rigging, pyro, etc.
Prerequisite: (TH 160) and (TH 362, may be taken concurrently or TH 363, may be taken concurrently or TH 364, may be taken concurrently or TH 365, may be taken concurrently or TH 366, may be taken concurrently).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 449 Commedia and Masks Credits: 3 (0-0-3)
Course Description: Playing comedy, including commedia del'arte techniques, clown work, masks, circus techniques, mime, and scene work from comic scripts.
Prerequisite: TH 351, may be taken concurrently or TH 355, may be taken concurrently or TH 375, may be taken concurrently.
Restriction: .
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 450 Professional Actor Preparation Credits: 3 (2-2-0)
Course Description: Portfolios, casting, breakdowns, reels, agents, managers, interviews, cold reading techniques, on-camera work, marketing.
Prerequisite: TH 351.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 451 Advanced Topics in Acting Credits: 3 (2-2-0)
Course Description: Author-specific actor challenges (e.g. Brecht, Beckett, Shakespeare, Chekhov, Moliere, and contemporary writers).
Prerequisite: TH 351.
Registration Information: Must register for lecture and laboratory. May be taken three times for credit.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 455 Advanced Directing Credits: 4 (2-0-2)
Course Description: Intensive practical experience in stage direction, focusing on specific directional challenges posed by various types of texts and multiple collaborative projects.
Prerequisite: TH 344, may be taken concurrently and TH 350, may be taken concurrently and TH 355.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 460 Design Portfolio and Professional Preparation Credits: 3 (2-2-0)
Course Description: Creating effective portfolio and design presentation; digital portfolios, storyboarding, articulating concepts, professional preparation for career.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 471 Capstone in Theatre Practice Credits: 3 (0-0-3)
Course Description: Major production assignment in acting, design, production, or dramatic literature.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 475 Advanced Playwriting Credits: 3 (2-0-1)
Course Description: Development of imaginative capabilities and insights, to articulate an individual voice as a writer of longer and more complex plays for theatre.
Prerequisite: TH 344 and TH 375.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

TH 478 Theatre in London Seminar Credits: 3 (0-0-3)
Course Description: Seminar to prepare for study in London for theatre research as an evolving art form rich in historical and artistic traditions.
Prerequisite: TH 141.
Registration Information: Must have concurrent registration in TH 479.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

TH 479 Theatre in London: Travel Abroad Credits: 3 (0-0-3)
Course Description: To foster theatre research as an evolving art form rich in historical and artistic traditions. Students will attend 13-15 live theatre productions.
Prerequisite: TH 141.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

TH 482 Theatre in London--Travel Abroad Credits: 3 (0-0-3)
Course Description: Study abroad in and around London to foster research into theatre as an evolving art form with rich historical and artistic traditions.
Prerequisite: None.
Registration Information: Must be in good academic and disciplinary standing.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

TH 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: TH 384.
Registration Information: Written consent of instructor; students must have taken the course with which they will be assisting. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

TH 486 Theatre Practicum IV Credits: 2 (0-10-0)
Course Description: Advanced topics in applied theatre production. Challenges in developing and mounting a theatrical performance.
Prerequisite: TH 386.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

TH 487 Theatre Internship Credits: Var[1-12] (0-0-0)
Course Description: Advisor-approved position at a professional regional theatre, a professional training program, or professional summer theatre.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

TH 491 Repertory Theatre Workshop Credits: Var[1-18] (0-0-0)
Course Description: Principles and practice of repertory theatre operation; practical experience offered.
Prerequisite: None.
Registration Information: Audition only.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

TH 492 Theatre Seminar Credits: 3 (0-0-3)
Course Description: Contemporary theatre practice, trends, in-depth study of genres, authors, current theatre research, e.g., "Theatre of Revolt", "Beckett's Theatre".
Prerequisite: TH 343.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

TH 498 Theatre Research Credits: Var[3-6] (0-0-0)
Course Description: Scholarly research paper in theatre. Topic approved by faculty advisor.
Prerequisite: None.
Registration Information: Theatre majors only. Written consent of faculty advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

TH 499 Theatre Thesis Credits: Var[3-6] (0-0-0)
Course Description: Written thesis in theatre. Topic approved by faculty advisor.
Prerequisite: None.
Registration Information: Written consent of faculty advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Major in Dance

Office in University Center for the Arts, Room 120
(970) 491-5529
dance.colostate.edu (http://dance.colostate.edu)

CSU offers a rigorous program in classical and contemporary dance education culminating in a B.A. in Dance. The degree requires a total of 120 credits with the following focus: technical training and foundations, performance, composition, pedagogy, professional preparation, theatrical production and design, and academics. In the Dance major, students explore the many possibilities for movement expression, along with creativity and scholarly examination, in a challenging and supportive environment. Dance major and scholarship auditions for prospective students (high school seniors or transfers) are held during Fall and Spring Visit Days. The audition assesses training background, technical level, and the potential to successfully complete the degree program at an advanced and/or pre-professional level. To be enrolled in the Dance major, students should have professional quality dance training in both ballet and modern technique, be at the intermediate technical level, and have the ability to withstand rigorous daily work throughout the year. Other forms of previous dance training are applicable and highly encouraged.

For pre-Dance students and non-majors, enrollment in dance technique classes depends on space availability, technical level, and suitability, and takes place during the classes of the first week of the semester as 'consent of instructor' is required. All technique classes are accompanied by accomplished musicians in piano, percussion, and a variety of other instruments. Performance, choreographic, and production opportunities take place each semester and students are encouraged to collaborate with other majors in music, theatre, and the visual arts. Visiting guest artists teach master classes and workshops and choreograph for the students on a regular basis. Supervised student teaching experiences are offered with different age groups and in a variety of situations.

Upon graduation, students will have a theoretical and practical foundation in dance. Graduates will achieve an intermediate/advanced level of proficiency in modern and ballet technique and be able to apply this knowledge to the areas of professional performance, choreography, and teaching. They will have a foundation in technical production and design which supports dance and theatrical productions. They will have a working knowledge of anatomy, kinesiology, and various movement theories relating to dance techniques. They will have a solid knowledge and appreciation of the history and philosophy of dance from many cultures and time periods.

Potential Occupations

Dance careers are rigorous and demanding, requiring years of training and discipline. Dance professionals must be versatile with a broad base of experiences in dance or related fields. Dance majors often select a second major such as music, theatre, business, occupational therapy, technical journalism, or exercise and sport science to enhance their career prospects. Experience acquired through extracurricular performances or internships is highly recommended to enhance practical training, development, and career opportunities. Students are encouraged to go on for advanced study at the graduate level in dance in order to secure teaching positions in higher education.

Some examples of the career opportunities in dance include, but are not limited to: professional dancer, professional choreographer, artistic director, university/college faculty, studio owner and faculty, conservatory or school faculty, dance critic, dance therapist, dance somatics specialist, arts manager, lighting designer, costume designer, sound designer, theatre technician, production crew, producer, fashion coordinator, special events coordinator, makeup artist, musical theatre director.

Requirements
Effective Fall 2015

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
D 126	Dance Improvisation		2
D 226	Dance Choreography I		2
D 286	Performance Practicum		2
Dance Repertory (see list below)			0-2
Dance Techniques A and B (see list below)			10-16
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	3
Quantitative Reasoning		1B	3
	Total Credits		32

Sophomore

D 324	Teaching Creative Movement for Children	2
D 326	Dance Choreography II	3
Dance Repertory (see list below)		0-4
Dance Techniques A and B (see list below)		10-16
Select one from the following:		3
TH 163	Costume Construction for the Theatre	
TH 262	Stage Management I	
TH 263	Costume Design I	
TH 264	Lighting Design for the Theatre I	
TH 266	Digital Media Design for Live Performance I	

Advanced Writing		2	3
Biological and Physical Sciences		3A	4
	Total Credits		28-32
Junior			
D 427	Dance History I	4A	3
D 486	Practicum		1
Dance Repertory (see list below)			0-4
Dance Techniques A and B (see list below)			11-16
Dance Electives (see list below)			2
Arts and Humanities		3B	3
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
	Total Credits		28-32
Senior			
D 424	Ballet Technique Pedagogy		3
D 428	Dance History II	4A	3
D 434	Modern Technique Pedagogy		3
D 471	Dance Concert	4B,4C	3
Dance Repertory (see list below)			4
Dance Electives (see list below)			6
Select one of the following courses not taken previously:			3
TH 163	Costume Construction for the Theatre		
TH 262	Stage Management I		
TH 263	Costume Design I		
TH 264	Lighting Design for the Theatre I		
TH 266	Digital Media Design for Live Performance I		
Diversity and Global Awareness		3E	3
	Total Credits		28
	Program Total Credits:		120

Dance Techniques A and B - Required Courses

- Students are required to audition for both modern and ballet dance technique courses and will be placed in the appropriate levels of technique courses.
- Students must take a minimum of 42 credits of dance technique, to include:
  - a minimum of six semesters of modern, and
  - a minimum of five semesters of ballet.
- Dance technique courses may be repeated for credit.
- At least one dance technique course must be taken during the last three semesters either as a requirement or as an elective.

Code	Title	Credits
Select from among the following courses with approval of advisor and written consent of instructors:		
Modern		
D 121A	Dance Techniques II: Modern	2
D 220A	Dance Techniques III: Modern	2
D 221A	Dance Techniques IV: Modern	2
D 320A	Dance Techniques V: Modern	3
D 321A	Dance Techniques VI: Modern	3
Ballet		
D 121B	Dance Techniques II: Ballet	3
D 220B	Dance Techniques III: Ballet	3
D 221B	Dance Techniques IV: Ballet	3
D 320B	Dance Techniques V: Ballet	5
D 321B	Dance Techniques VI: Ballet	5

Dance Repertory Courses

Students must take a minimum of 6 credits of dance repertory courses and may repeat the courses up to nine times.

Code	Title	Credits
Select from the following:		
D 330	Dance Repertory Ensemble	2
D 340	Dance Repertory Outreach	2

Dance Electives

Students must take a minimum of 8 credits of dance elective courses, after having completed the dance technique required courses and the dance repertory courses.

Code	Title	Credits
Select from the following:		
D 330	Dance Repertory Ensemble	2
D 340	Dance Repertory Outreach	2
D 420A	Dance Techniques VII: Modern	2
D 420B	Dance Techniques VII: Ballet	2
D 421A	Dance Techniques VIII: Modern	2
D 421B	Dance Techniques VIII: Ballet	2

Major Completion Map

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
CO 150	College Composition (GT-CO2)	X		1A	3
D 126	Dance Improvisation				2
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
Dance Techniques A and B (See Department List on Program Requirements Tab)			X		5
	Total Credits				16

Semester 2		Critical	Recommended	AUCC	Credits
D 226	Dance Choreography I				2
D 286	Performance Practicum				2
Quantitative Reasoning		X		1B	3
Dance Repertory (See Department List on Program Requirements Tab)					0-2
Dance Techniques A and B (See Department List on Program Requirements Tab)		X			5-11
	Total Credits				16

Sophomore

Semester 3		Critical	Recommended	AUCC	Credits
Select one course from the following:					3
TH 163	Costume Construction for the Theatre				
TH 262	Stage Management I				
TH 263	Costume Design I				
TH 264	Lighting Design for the Theatre I				
TH 266	Digital Media Design for Live Performance I				
Biological and Physical Sciences				3A	4
Dance Repertory (See Department List on Program Requirements Tab)					0-2
Dance Techniques A and B (See Department List on Program Requirements Tab)		X			7-10
	Total Credits				14-17

Semester 4		Critical	Recommended	AUCC	Credits
D 324	Teaching Creative Movement for Children				2
D 326	Dance Choreography II				3
Advanced Writing				2	3
Dance Repertory (See Department List on Program Requirements Tab)					0-2
Dance Techniques A and B (See Department List on Program Requirements Tab)		X			3-6
	Total Credits				14-15

Junior

Semester 5	Critical	Recommended	AUCC	Credits
Arts and Humanities			3B	3
Historical Perspectives			3D	3
Social and Behavioral Sciences			3C	3
Dance Repertory (See Department List on Program Requirements Tab)				0-2

Dance Techniques A and B (See Department List on Program Requirements Tab)		X			5-7
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
D 427	Dance History I			4A	3
D 486	Practicum				1
Dance Elective (See Department List on Program Requirements Tab)					2
Dance Repertory (See Department List on Program Requirements Tab)		X			0-2
Dance Techniques A and B (See Department List on Program Requirements Tab)		X			6-9
	Total Credits				13-17
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
D 424	Ballet Technique Pedagogy	X			3
D 434	Modern Technique Pedagogy				3
Select one course from the following:					3
TH 163	Costume Construction for the Theatre				
TH 262	Stage Management I				
TH 263	Costume Design I				
TH 264	Lighting Design for the Theatre I				
TH 266	Digital Media Design for Live Performance I				
Dance Elective (See Department List on Program Requirements Tab)					3
Dance Repertory (See Department List on Program Requirements Tab)		X			0-2
	Total Credits				14
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
D 428	Dance History II	X		4A	3
D 471	Dance Concert	X		4B,4C	3
Diversity and Global Awareness		X		3E	3
Dance Elective (See Department List on Program Requirements Tab)		X			3
Dance Repertory (See Department List on Program Requirements Tab)		X			0-2
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				14
	Program Total Credits:				120

Major in Music (B.M.)

Our primary goal is to prepare students to become highly skilled music educators, music therapists, performers, and composers. Program goals encourage and develop high standards of teaching, scholarship, performance, and research in music. We are pleased to offer small academic classes, applied study with highly qualified faculty, and careful attention to advising. Courses in music appreciation, music theory fundamentals, and ensembles are open to all students regardless of major.

A successful audition is required prior to entrance into any B.M. Music degree program. Please refer to the admissions office of the School of Music, Theatre, and Dance (https://music.colostate.edu/admissions/undergrad-apply) for information regarding auditions and specific application requirements.

Learning Outcomes

Students will demonstrate:

- Ability to perform music from a variety of historical/ style periods, and exhibit the appropriate skills for musical self-expression in juried performances. These skills include: technique, musicianship, tone, diction/articulation, style, interpretation, sight-reading, rhythm, and artistry.
- Keyboard skills.
- The capacity to create original or derivative music.
- Understanding of the common elements and organizational patterns of music, including musical forms, processes, and structures.
- Knowledge of music history and repertory, including representative composers and works according to the area of specialization, as well as study and experiences with music in addition to that of the primary culture encompassing the area of specialization.

Students are also expected to learn music literature from all periods through aural and score analysis. Performance skills are tested at the end of the sophomore year and in a graduation recital if required by the degree option. Some programs require satisfactory completion of supervised student teaching, an internship, or a senior project.

Potential Occupations

The professional undergraduate music curricula at CSU can lead to personally fulfilling careers as music educators, music therapists, performers, composers, private teachers, and entrepreneurs. Music graduates from CSU have successfully gained employment in public and private schools, hospitals and institutions, and as professional performers and composers.

Concentrations and Options

- Composition Concentration
- Music Education Concentration
  - Choral Option
  - Instrumental Option
- Music Therapy Concentration
- Performance Concentration
  - Jazz Studies Option
  - Orchestral Instrument Option
  - Organ Option
  - Piano Option
  - Piano Pedagogy Option
  - String Pedagogy Option
  - Voice Option

Major in Music (B.M.), Composition Concentration

The Composition concentration prepares students to compose original music for a wide variety of venues including live concerts, music to accompany film, video, dance, and theatre. Course work emphasizes comprehensive musicianship throughout the curriculum, with particular emphasis on individualized study in music composition.

Requirements
Effective Fall 2017

A minimum grade of C is required in all music courses used to satisfy the requirements of the BM in Music, Composition Concentration.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
MU 117	Music Theory I		3
MU 118	Music Theory II		3
MU 127	Aural Skills I		1
MU 128	Aural Skills II		1
MU 131	Introduction to Music History and Literature (GT-AH1)	3B	3
MU 150[1]	Piano Class I		1
MU 151B[1]	Piano Class II: Performance, Composition, and General Studies		1
Select one group from the following:[2]			2-4
Group A:			
MU 172A	Freshman Voice Studio: English/Italian		
MU 172B	Freshman Voice Studio: German, French		
Group B:			
Applied Music Instruction - Lower-Division (see list below)[2]			
Ensemble (see list below)[3]			2
Historical Perspectives		3D	3
Quantitative Reasoning		1B	3
Electives[4]			2-4
	Total Credits		30

Sophomore

MU 217	Music Theory III		3
MU 218	Music Theory IV		3
MU 227	Aural Skills III		1
MU 228	Aural Skills IV		1
Applied Music Instruction - Lower-Division (see list below)[2]			2
MU 273	Composition Instruction		2
Ensemble (see list below)[3]			2
PSY 100	General Psychology (GT-SS3)	3C	3
Advanced Writing		2	3

Electives			11
	Total Credits		31
Junior			
MU 254	Beginning Conducting		2
MU 317	Music Theory V		2
MU 318	Arranging and Orchestration		2
MU 334	Music History I	4A,4B	3
MU 335	Music History II	4A,4B	3
Select one from the following:			2
MU 355	Choral Conducting and Literature		
MU 356	Instrumental Conducting and Literature		
MU 473	Composition Instruction		4
MU 499	Thesis		1
Ensemble (see list below)[3]			2
Arts and Humanities		3B	3
Music Electives			3
Electives			2
	Total Credits		29
Senior			
MU 417	Counterpoint		3
MU 418	Advanced Orchestration		2
MU 419	Electronic Music Composition		2
MU 471	Recital	4C	1
MU 473	Composition Instruction		4
Ensemble (see list below)[3]			2
Biological and Physical Sciences		3A	7
Diversity and Global Awareness		3E	3
Electives[5]			6
	Total Credits		30
	Program Total Credits:		120

Applied Music Instruction - Lower-Division

Code	Title	Credits
MU 272A	Applied Music Instruction: Euphonium	1-2
MU 272B	Applied Music Instruction: French Horn	1-2
MU 272C	Applied Music Instruction: Trombone	1-2
MU 272D	Applied Music Instruction: Trumpet	1-2
MU 272E	Applied Music Instruction: Tuba	1-2
MU 272G	Applied Music Instruction: Harpsichord	1-2
MU 272H	Applied Music Instruction: Organ	1-2
MU 272I	Applied Music Instruction: Piano	1-2
MU 272J	Applied Music Instruction: Percussion	1-2
MU 272K	Applied Music Instruction: Guitar	1-2
MU 272L	Applied Music Instruction: Harp	1-2
MU 272M	Applied Music Instruction: String Bass	1-2
MU 272N	Applied Music Instruction: Viola	1-2
MU 272O	Applied Music Instruction: Violin	1-2
MU 272P	Applied Music Instruction: Violoncello	1-2
MU 272Q	Applied Music Instruction: Voice	1-2
MU 272R	Applied Music Instruction: Bassoon	1-2
MU 272S	Applied Music Instruction: Clarinet	1-2
MU 272T	Applied Music Instruction: Flute	1-2
MU 272U	Applied Music Instruction: Oboe	1-2
MU 272V	Applied Music Instruction: Saxophone (Alto)	1-2

Ensemble Courses

Code	Title	Credits
MU 201	Men's Chorus	1
MU 202	University Chorus	1
MU 204	Marching Band	1
MU 205	Concert Band	1
MU 206	Colorado State University Concert Orchestra	1
MU 300	Women's Chorus	1
MU 302	University Orchestra	1
MU 304	Symphonic Band	1
MU 305	Colorado State University Concert Choir	1
MU 309	Jazz Ensemble	1
MU 310	Jazz Combo	1

MU 400	Colorado State University Chamber Choir	1
MU 401	Opera Theater	1-2
MU 402	Theater/Chamber Orchestra	1
MU 404	Symphonic Wind Ensemble	1
MU 407	Accompanying	1
MU 408	Chamber Music	1

[1] Students with previous keyboard experience may test out of MU 150 and/or MU 151B and replace with the same number of elective credit(s).

[2] First-year voice students take MU 172A and MU 172B, then MU 272Q the second year for 2 semesters. Instrumentalists take MU 272A-MU 272P or MU 272R-MU 272V on a major instrument for 2 semesters each of the first 2 years.

[3] Students must participate in an ensemble during each semester in which they are enrolled in MU 172A-MU 172B or MU 272A-MU 272V. An additional four credits of ensembles are to be completed in semesters of the student's choosing for a total of eight credits. At least one semester during the program of study, this must be achieved by taking MU 408 or another small ensemble.

[4] Voice students take two credits of electives. Instrumentalists take four credits of electives.

[5] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
A grade of C or better is required in all music courses used to satisfy the requirements of the BM in Music, Composition Concentration.
To Declare this Major: Audition with department.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 117	Music Theory I	X			3
MU 127	Aural Skills I	X			1
MU 131	Introduction to Music History and Literature (GT-AH1)	X		3B	3
MU 150	Piano Class I		X		1
Select one course from the following:					1-2
MU 172A	Freshman Voice Studio: English/Italian	X			
MU 272* Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)					
Ensemble (See Ensemble List on Concentration Requirements Tab)		X			1
Historical Perspectives			X	3D	3
Elective					1-2
	Total Credits				15

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)	X		1A	3
MU 118	Music Theory II	X			3
MU 128	Aural Skills II	X			1
MU 151B	Piano Class II: Performance, Composition, and General Studies	X			1
Select one course from the following:					1-2
MU 172B	Freshman Voice Studio: German, French	X			
MU 272* Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)		X			
Ensemble (See List on Concentration Requirements Tab)		X			1
Quantitative Reasoning		X		1B	3
Elective					1-2
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 217	Music Theory III	X			3
MU 227	Aural Skills III	X			1
MU 272* Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)		X			1
MU 273	Composition Instruction	X			1
Ensemble (See List on Concentration Requirements Tab)		X			1

Advanced Writing			X	2	3
Electives					6
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 218	Music Theory IV	X			3
MU 228	Aural Skills IV	X			1
MU 272* Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)		X			1
MU 273	Composition Instruction	X			1
Ensemble (See List on Concentration Requirements Tab)		X			1
PSY 100	General Psychology (GT-SS3)		X	3C	3
Electives					5
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 254	Beginning Conducting		X		2
MU 317	Music Theory V	X			2
MU 334	Music History I		X	4A,4B	3
MU 473	Composition Instruction	X			2
MU 499	Thesis		X		1
Ensemble (See List on Concentration Requirements Tab)		X			1
Music Electives					3
	Total Credits				14
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 318	Arranging and Orchestration	X			2
MU 335	Music History II		X	4A,4B	3
Select one course from the following:					2
MU 355	Choral Conducting and Literature	X			
MU 356	Instrumental Conducting and Literature	X			
MU 473	Composition Instruction	X			2
Ensemble (See List on Concentration Requirements Tab)		X			1
Arts and Humanities			X	3B	3
Elective					2
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 417	Counterpoint	X			3
MU 473	Composition Instruction	X			2
Ensemble (See List on Concentration Requirements Tab)		X			1
Biological and Physical Sciences		X		3A	7
Elective					3
	Total Credits				16
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 418	Advanced Orchestration	X			2
MU 419	Electronic Music Composition	X			2
MU 471	Recital	X		4C	1
MU 473	Composition Instruction	X			2
Ensemble (See List on Concentration Requirements Tab)		X			1
Diversity and Global Awareness		X		3E	3
Elective		X			3

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X	
	Total Credits	14
	Program Total Credits:	120

Major in Music (B.M.), Music Education Concentration

The Music Education concentration prepares students for teaching choral, instrumental, and general music in elementary and secondary schools. This degree prepares students to apply for music teaching licensure (grades K-12) in the state of Colorado. CSU's outstanding music education faculty members are in demand as clinicians, guest lecturers, conductors, and researchers. A feature unique to the accredited music education curriculum is extensive field experience that students receive throughout their coursework, culminating in a semester of student teaching at the end of the program. Students must select one of two options: instrumental or choral.

A successful audition is required prior to entrance into the B.M. in Music.

Options

- Choral Option
- Instrumental Option

Major in Music (B.M.), Music Education Concentration, Choral Option

Requirements
Effective Fall 2017

A minimum grade of C (2.000) is required in all music courses used to satisfy the requirements of the BM in Music, Music Education Concentration, Choral Option. Required EDUC courses must be completed with a minimum grade of C (2.000).

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
MU 117	Music Theory I		3
MU 118	Music Theory II		3
MU 127	Aural Skills I		1
MU 128	Aural Skills II		1
MU 131	Introduction to Music History and Literature (GT-AH1)	3B	3
MU 150[1]	Piano Class I		1
MU 151A	Piano Class II: Music Educators		1
MU 172A	Freshman Voice Studio: English/Italian		2
MU 172B	Freshman Voice Studio: German, French		2
MU 286	Practicum-Introduction to Music Education		3
MU *** Ensemble (see list below)[2]			2
Arts and Humanties		3B	3
Mathematics		1B	3
	Total Credits		31

Sophomore

EDUC 275	Schooling in the United States (GT-SS3)	3C	3
EDUC 340	Literacy and the Learner		3
MU 152	Piano Skills for Choral Directors		1
MU 217	Music Theory III		3
MU 218	Music Theory IV		3
MU 227	Aural Skills III		1
MU 228	Aural Skills IV		1
Select one from the following:			2
MU 252A	Instrumental Techniques: Brass		
MU 252B	Instrumental Techniques: Woodwinds		
MU 252C	Instrumental Techniques: Strings		1
MU 272Q	Applied Music Instruction: Voice		2

MU *** Ensemble (see list below)[2]			2
Advanced Writing		2	3
Biological and Physical Sciences		3A	4
Historical Perspectives		3D	3
	Total Credits		32
Junior			
EDUC 331	Educational Technology and Assessment		2
EDUC 350	Instruction I-Individualization/Management		3
EDUC 386	Practicum-Instruction I		1
EDUC 474	Elementary Music Methods I		2
EDUC 475	Elementary Music Methods II		2
MU 254	Beginning Conducting		2
MU 317	Music Theory V		2
MU 318	Arranging and Orchestration		2
MU 334	Music History I	4A,4B	3
MU 335	Music History II	4A,4B	3
MU 355	Choral Conducting and Literature		2
MU 466	Song Literature		2
MU 472Q	Applied Music Instruction: Voice		2
MU *** Ensemble (see list below)[2]			2
Biological and Physical Sciences		3A	3
	Total Credits		33
Senior			
EDUC 450	Instruction II-Standards and Assessment		4
EDUC 476	Choral Methods for Secondary Schools		2
EDUC 485A	Student Teaching: Elementary		6
EDUC 485B	Student Teaching: Secondary		6
EDUC 486E	Practicum: Instruction II		1
EDUC 493A	Seminar: Professional Relations		1
MU 425	Jazz Pedagogy		2
MU 467	Vocal Pedagogy		2
MU 471	Recital	4C	1
MU 472Q	Applied Music Instruction: Voice		1
MU *** Ensemble (see list below)[2]			1
Global and Cultural Awareness		3E	3
	Total Credits		30
	Program Total Credits:		126

Ensemble Courses

Code	Title	Credits
MU 201	Men's Chorus	1
MU 202	University Chorus	1
MU 204	Marching Band	1
MU 205	Concert Band	1
MU 206	Colorado State University Concert Orchestra	1
MU 300	Women's Chorus	1
MU 302	University Orchestra	1
MU 304	Symphonic Band	1
MU 305	Colorado State University Concert Choir	1
MU 309	Jazz Ensemble	1
MU 310	Jazz Combo	1
MU 400	Colorado State University Chamber Choir	1
MU 401	Opera Theater	1-2
MU 402	Theater/Chamber Orchestra	1
MU 404	Symphonic Wind Ensemble	1
MU 407	Accompanying	1
MU 408	Chamber Music	1

[1] Students with previous keyboard experience may test out of MU 150 and use the one credit for an elective

[2] Students must participate in an ensemble during each semester in which they are enrolled in MU 172A-MU 172B, MU 272Q, and MU 472Q. At least once during the program of study this must be achieved by taking MU 408 or through another small ensemble experience.

Major Completion Map

Distinctive Requirements for Degree Program: A minimum grade of C **(2.000)** is required in all music courses used to satisfy the requirements of the BM in Music, Music Education Concentration, Choral Option. Music majors concentrating in music education must also complete all required education courses with a minimum grade of C **(2.000)**.
To Declare this Major: Audition with department.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 117	Music Theory I	X			3
MU 127	Aural Skills I	X			1
MU 131	Introduction to Music History and Literature (GT-AH1)	X		3B	3
MU 150	Piano Class I	X			1
MU 172A	Freshman Voice Studio: English/Italian	X			2
MU 286	Practicum-Introduction to Music Education				3
Ensemble (See List on Concentration Requirements Tab)		X			1
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)	X		1A	3
MU 118	Music Theory II	X			3
MU 128	Aural Skills II	X			1
MU 151A	Piano Class II: Music Educators	X			1
MU 172B	Freshman Voice Studio: German, French	X			2
Ensemble (See List on Concentration Requirements Tab)		X			1
Arts and Humanities				3B	3
Mathematics		X		1B	3
	Total Credits				17

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 275	Schooling in the United States (GT-SS3)	X		3C	3
MU 217	Music Theory III	X			3
MU 227	Aural Skills III	X			1
MU 252C	Instrumental Techniques: Strings				1
MU 272Q	Applied Music Instruction: Voice				1
Ensemble (See List on Concentration Requirements Tab)		X			1
Advanced Writing				2	3
Historical Perspectives				3D	3
MU 151A must be completed by the end of Semester 3.		X			
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 340	Literacy and the Learner	X			3
MU 152	Piano Skills for Choral Directors	X			1
MU 218	Music Theory IV	X			3
MU 228	Aural Skills IV	X			1
Select one course from the following:					2
MU 252A	Instrumental Techniques: Brass	X			
MU 252B	Instrumental Techniques: Woodwinds	X			
MU 272Q	Applied Music Instruction: Voice				1
Ensemble (See List on Concentration Requirements Tab)		X			1
Biological and Physical Sciences				3A	4
	Total Credits				16

Junior

Semester 5		Critical	Recommended	AUCC	Credits
EDUC 331	Educational Technology and Assessment	X			2
EDUC 474	Elementary Music Methods I	X			2
MU 254	Beginning Conducting				2
MU 317	Music Theory V	X			2
MU 334	Music History I	X		4A,4B	3
MU 472Q	Applied Music Instruction: Voice				1
Ensemble (See List on Concentration Requirements Tab)		X			1
Biological and Physical Sciences				3A	3
	Total Credits				16

Semester 6		Critical	Recommended	AUCC	Credits
EDUC 350	Instruction I-Individualization/Management	X			3
EDUC 386	Practicum-Instruction I	X			1
EDUC 475	Elementary Music Methods II	X			2
MU 318	Arranging and Orchestration	X			2
MU 335	Music History II	X		4A,4B	3
MU 355	Choral Conducting and Literature	X			2
MU 466	Song Literature	X			2
MU 472Q	Applied Music Instruction: Voice				1
Ensemble (See List on Concentration Requirements Tab)					1
	Total Credits				17

Senior

Semester 7		Critical	Recommended	AUCC	Credits
EDUC 450	Instruction II-Standards and Assessment	X			4
EDUC 476	Choral Methods for Secondary Schools	X			2
EDUC 486E	Practicum: Instruction II	X			1
MU 425	Jazz Pedagogy	X			2
MU 467	Vocal Pedagogy	X			2
MU 471	Recital	X		4C	1
MU 472Q	Applied Music Instruction: Voice				1
Ensemble (See List on Concentration Requirements Tab)		X			1
Global and Cultural Awareness				3E	3
	Total Credits				17

Semester 8		Critical	Recommended	AUCC	Credits
EDUC 485A	Student Teaching: Elementary	X			6
EDUC 485B	Student Teaching: Secondary	X			6
EDUC 493A	Seminar: Professional Relations	X			1
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				13
	Program Total Credits:				126

Major in Music (B.M.), Music Education Concentration, Instrumental Option

Requirements
Effective Fall 2017

A minimum grade of C is required in all music courses used to satisfy the requirements of the BM in Music, Music Education Concentration, Instrumental option. Required EDUC courses must be completed with a minimum grade of C.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
MU 117	Music Theory I		3
MU 118	Music Theory II		3
MU 127	Aural Skills I		1
MU 128	Aural Skills II		1
MU 131	Introduction to Music History and Literature (GT-AH1)	3B	3
MU 150[1]	Piano Class I		1
MU 151A	Piano Class II: Music Educators		1
MU 251	Voice Techniques		1
MU 252B	Instrumental Techniques: Woodwinds		2
Applied Music Instruction – Lower-Division (see list below)[2]			2
MU 286	Practicum-Introduction to Music Education		3
MU *** Ensemble (see list below)[3]			2
Arts and Humanties		3B	3
Mathematics		1B	3
	Total Credits		32

Sophomore

EDUC 275	Schooling in the United States (GT-SS3)	3C	3
EDUC 340	Literacy and the Learner		3
MU 217	Music Theory III		3
MU 218	Music Theory IV		3
MU 227	Aural Skills III		1
MU 228	Aural Skills IV		1
MU 252A	Instrumental Techniques: Brass		2
MU 252C	Instrumental Techniques: Strings		1
Applied Music Instruction – Lower-Division (see list below)[2]			2
MU *** Ensemble (see list below)[3]			2
Advanced Writing		2	3
Biological and Physical Sciences		3A	4
Historical Perspectives		3D	3
	Total Credits		31

Junior

EDUC 331	Educational Technology and Assessment		2
EDUC 350	Instruction I-Individualization/Management		3
EDUC 386	Practicum-Instruction I		1
EDUC 474	Elementary Music Methods I		2
EDUC 475	Elementary Music Methods II		2
MU 254	Beginning Conducting		2
MU 317	Music Theory V		2
MU 318	Arranging and Orchestration		2
MU 334	Music History I	4A,4B	3
MU 335	Music History II	4A,4B	3
MU 356	Instrumental Conducting and Literature		2
Select one from the following:[4]			2
MU 420	Marching Band Techniques		
MU 421	Orchestral Techniques		
Applied Music Instruction – Upper-Division (see list below)[2]			2

MU *** Ensemble (see list below)[3]			2
Biological and Physical Sciences		3A	3
	Total Credits		33
Senior			
EDUC 450	Instruction II-Standards and Assessment		4
EDUC 477	Instrumental Methods for Secondary Schools		2
EDUC 485A	Student Teaching: Elementary		6
EDUC 485B	Student Teaching: Secondary		6
EDUC 486E	Practicum: Instruction II		1
EDUC 493A	Seminar: Professional Relations		1
MU 252D	Instrumental Techniques: Percussion		1
MU 425	Jazz Pedagogy		2
MU 471	Recital	4C	1
Applied Music Instruction – Upper-Division (see list below)[2]			1
MU *** Ensemble (see list below)[3]			1
Global and Cultural Awareness		3E	3
Elective[5]			1
	Total Credits		30
	Program Total Credits:		126

Applied Music Instruction - Lower-Division

Code	Title	Credits
MU 272A	Applied Music Instruction: Euphonium	1-2
MU 272B	Applied Music Instruction: French Horn	1-2
MU 272C	Applied Music Instruction: Trombone	1-2
MU 272D	Applied Music Instruction: Trumpet	1-2
MU 272E	Applied Music Instruction: Tuba	1-2
MU 272G	Applied Music Instruction: Harpsichord	1-2
MU 272H	Applied Music Instruction: Organ	1-2
MU 272I	Applied Music Instruction: Piano	1-2
MU 272J	Applied Music Instruction: Percussion	1-2
MU 272K	Applied Music Instruction: Guitar	1-2
MU 272L	Applied Music Instruction: Harp	1-2
MU 272M	Applied Music Instruction: String Bass	1-2
MU 272N	Applied Music Instruction: Viola	1-2
MU 272O	Applied Music Instruction: Violin	1-2
MU 272P	Applied Music Instruction: Violoncello	1-2
MU 272R	Applied Music Instruction: Bassoon	1-2
MU 272S	Applied Music Instruction: Clarinet	1-2
MU 272T	Applied Music Instruction: Flute	1-2
MU 272U	Applied Music Instruction: Oboe	1-2
MU 272V	Applied Music Instruction: Saxophone (Alto)	1-2

Applied Music Instruction - Upper-Division

Code	Title	Credits
MU 472A	Applied Music Instruction: Euphonium	1-2
MU 472B	Applied Music Instruction: French Horn	1-2
MU 472C	Applied Music Instruction: Trombone	1-2
MU 472D	Applied Music Instruction: Trumpet	1-2
MU 472E	Applied Music Instruction: Tuba	1-2
MU 472G	Applied Music Instruction: Harpsichord	1-2
MU 472H	Applied Music Instruction: Organ	1-2
MU 472I	Applied Music Instruction: Piano	1-2
MU 472J	Applied Music Instruction: Percussion	1-2
MU 472K	Applied Music Instruction: Guitar	1-2
MU 472L	Applied Music Instruction: Harp	1-2
MU 472M	Applied Music Instruction: String Bass	1-2
MU 472N	Applied Music Instruction: Viola	1-2
MU 472O	Applied Music Instruction: Violin	1-2
MU 472P	Applied Music Instruction: Violoncello	1-2
MU 472R	Applied Music Instruction: Bassoon	1-2
MU 472S	Applied Music Instruction: Clarinet	1-2
MU 472T	Applied Music Instruction: Flute	1-2
MU 472U	Applied Music Instruction: Oboe	1-2
MU 472V	Applied Music Instruction: Saxophone (Alto)	1-2

Ensemble Courses

Code	Title	Credits
MU 201	Men's Chorus	1
MU 202	University Chorus	1
MU 204	Marching Band	1
MU 205	Concert Band	1
MU 206	Colorado State University Concert Orchestra	1
MU 300	Women's Chorus	1
MU 302	University Orchestra	1
MU 304	Symphonic Band	1
MU 305	Colorado State University Concert Choir	1
MU 309	Jazz Ensemble	1
MU 310	Jazz Combo	1
MU 400	Colorado State University Chamber Choir	1
MU 401	Opera Theater	1-2

MU 402	Theater/Chamber Orchestra	1
MU 404	Symphonic Wind Ensemble	1
MU 407	Accompanying	1
MU 408	Chamber Music	1

1 Students with previous keyboard experience may test out of MU 150 and use the one credit for an elective

2 Major instrument; two semesters each year, except Senior year only take one semester.

3 Students must participate in an ensemble during each semester in which they are enrolled in MU 272A-MU 272V, and MU 472A-MU 472V. At least once during the program of study, this must be achieved by taking MU 408 or through another small ensemble experience. Wind and percussion majors must take MU 204 twice during their four year program.

4 Wind and percussion majors take MU 420; string majors take MU 421.

5 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program: A minimum grade of C is required in all music courses used to satisfy the requirements of the BM in Music, Music Education Concentration, Instrumental Option. Music majors concentrating in music education must also complete all required education courses with a minimum grade of C.
To Declare this Major: Audition with department.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
MU 117	Music Theory I	X			3
MU 127	Aural Skills I	X			1
MU 131	Introduction to Music History and Literature (GT-AH1)	X		3B	3
MU 150	Piano Class I	X			1
MU 251	Voice Techniques	X			1
MU 272* Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)		X			1
MU 286	Practicum-Introduction to Music Education	X			3
Ensemble (See List on Concentration Requirements Tab)					1
	Total Credits				17
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 118	Music Theory II	X			3
MU 128	Aural Skills II	X			1
MU 151A	Piano Class II: Music Educators		X		1
MU 252B	Instrumental Techniques: Woodwinds				2
MU 272* Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)		X			1
Ensemble (See List on Concentration Requirements Tab)		X			1
Arts and Humanities				3B	3
Mathematics		X		1B	3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 275	Schooling in the United States (GT-SS3)	X		3C	3
MU 217	Music Theory III	X			3
MU 227	Aural Skills III	X			1
MU 252C	Instrumental Techniques: Strings				1
MU 272* Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)		X			1
Ensemble (See List on Concentration Requirements Tab)					1
Advanced Writing				2	3
Historical Perspectives				3D	3
MU 151A must be completed by the end of Semester 3.		X			
	Total Credits				16

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 340	Literacy and the Learner	X			3
MU 218	Music Theory IV	X			3
MU 228	Aural Skills IV	X			1
MU 252A	Instrumental Techniques: Brass	X			2
MU 272* Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)		X			1
Ensemble (See List on Concentration Requirements Tab)		X			1
Biological and Physical Sciences				3A	4
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 331	Educational Technology and Assessment	X			2
EDUC 474	Elementary Music Methods I	X			2
MU 254	Beginning Conducting	X			2
MU 317	Music Theory V	X			2
MU 334	Music History I	X		4A,4B	3
MU 472* Applied Music Instruction Upper-Division (See List on Concentration Requirements Tab)		X			1
Ensemble (See List on Concentration Requirements Tab)		X			1
Biological and Physical Sciences				3A	3
	Total Credits				16

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 350	Instruction I-Individualization/Management	X			3
EDUC 386	Practicum-Instruction I	X			1
EDUC 475	Elementary Music Methods II	X			2
MU 318	Arranging and Orchestration	X			2
MU 335	Music History II	X		4A,4B	3
MU 356	Instrumental Conducting and Literature	X			2
Select one course from the following:					2
MU 420	Marching Band Techniques	X			
MU 421	Orchestral Techniques	X			
MU 472* Applied Music Instruction Upper-Division (See List on Concentration Requirements Tab)		X			1
Ensemble (See List on Concentration Requirements Tab)		X			1
	Total Credits				17

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 450	Instruction II-Standards and Assessment	X			4
EDUC 477	Instrumental Methods for Secondary Schools	X			2
EDUC 486E	Practicum: Instruction II	X			1
MU 252D	Instrumental Techniques: Percussion	X			1
MU 425	Jazz Pedagogy	X			2
MU 471	Recital	X		4C	1
MU 472* Applied Music Instruction Upper-Division (See List on Concentration Requirements Tab)		X			1
Ensemble (See List on Concentration Requirements Tab)		X			1
Global and Cultural Awareness				3E	3
	Total Credits				16

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 485A	Student Teaching: Elementary	X			6
EDUC 485B	Student Teaching: Secondary	X			6
EDUC 493A	Seminar: Professional Relations	X			1

Elective		X	1
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X	
	Total Credits		14
	Program Total Credits:		126

Major in Music (B.M.), Music Therapy Concentration

The Music Therapy concentration is designed to prepare students for careers in music therapy, an allied health profession whose members generally work as part of interdisciplinary teams in hospitals, clinics, rehabilitation facilities, assisted living centers, and special education settings. Some music therapists maintain private practices or serve as consultants. Music therapists use music to facilitate motor skills, cognitive abilities, communication, and social outcomes for individuals with disease or disability. The Music Therapy concentration at CSU is internationally recognized for its leadership in clinical training and research. The curriculum includes a strong emphasis in music, the neurosciences, psychology, and music therapy methods.

Requirements Effective Fall 2017

A minimum grade of C (2.000) is required in all music courses used to satisfy the requirements of the BM in Music, Music Therapy Concentration.

Freshman

		AUCC	Credits
CHEM 103	Chemistry in Context (GT-SC2)	3A	3
CO 150	College Composition (GT-CO2)	1A	3
MU 117	Music Theory I		3
MU 118	Music Theory II		3
MU 127	Aural Skills I		1
MU 128	Aural Skills II		1
MU 131	Introduction to Music History and Literature (GT-AH1)	3B	3
MU 150[1]	Piano Class I		1
MU 153	Piano Skills for Music Therapists		1
MU 155	Guitar Class I		2
MU 241	Introduction to Music Therapy		3
Select one group from the following:[2]			2-4
Group A (Voice students):			
MU 172A	Freshman Voice Studio: English/Italian		
MU 172B	Freshman Voice Studio: German, French		
Group B (Instrumentalists):			
Applied Music Instruction - Lower-Division (see list below)			
Ensemble (see list below)[3]			2
Mathematics		1B	3
	Total Credits		31-33

Sophomore

BZ 110	Principles of Animal Biology (GT-SC2)	3A	3
BZ 111	Animal Biology Laboratory (GT-SC1)	3A	1
MU 217	Music Theory III		3
MU 218	Music Theory IV		3
MU 227	Aural Skills III		1
MU 228	Aural Skills IV		1
MU 250	Music Therapy Practice		3
MU 254	Beginning Conducting		2
MU 440	Music Therapy Methods I		3
OT 215	Medical Terminology		1
PHIL 100	Appreciation of Philosophy (GT-AH3)	3B	3

PSY 100	General Psychology (GT-SS3)	3C	3
Applied Music Instruction - Lower-Division (see list below)[2]			2
Ensemble (see list below)[3]			2
	Total Credits		31

Junior

BMS 300	Principles of Human Physiology		4
BMS 345	Functional Neuroanatomy		4
MU 342	Psychology of Music		3
MU 443	Music Therapy Methods II		3
MU 444	Music Therapy Methods III		3
MU 486A	Practicum: Music Therapy	4C	2
PSY 252	Mind, Brain, and Behavior		3
PSY 320	Abnormal Psychology		3
Instrumentalists must take MU 157; Voice students do not.			0-2
MU 157	Voice Class I		
Select one of the following:			3
MU 334	Music History I	4A,4B	
MU 335	Music History II	4A,4B	
Applied Music Instruction - Upper-Division (see list below)			1
Ensemble (see list below)[3]			1
	Total Credits		30-32

Senior

MU 252D	Instrumental Techniques: Percussion		1
MU 343	Research Methods in Music Therapy		3
MU 445	Improvisation Techniques in Music Therapy		2
MU 486A	Practicum: Music Therapy	4C	1
MU 487	Internship		1
STAT 201	General Statistics		3
Select one from the following:			3
PSY 452	Cognitive Psychology		
PSY 454	Biological Psychology		
PSY 458	Cognitive Neuroscience		
Advanced Writing		2	3
Global and Cultural Awareness		3E	3
Historical Perspectives		3D	3
Music Electives			3
	Total Credits		26
	Program Total Credits:		120

Applied Music Instruction - Lower-Division

Code	Title	Credits
MU 272A	Applied Music Instruction: Euphonium	1-2
MU 272B	Applied Music Instruction: French Horn	1-2
MU 272C	Applied Music Instruction: Trombone	1-2
MU 272D	Applied Music Instruction: Trumpet	1-2
MU 272E	Applied Music Instruction: Tuba	1-2
MU 272G	Applied Music Instruction: Harpsichord	1-2
MU 272H	Applied Music Instruction: Organ	1-2
MU 272I	Applied Music Instruction: Piano	1-2
MU 272J	Applied Music Instruction: Percussion	1-2
MU 272K	Applied Music Instruction: Guitar	1-2
MU 272L	Applied Music Instruction: Harp	1-2
MU 272M	Applied Music Instruction: String Bass	1-2
MU 272N	Applied Music Instruction: Viola	1-2
MU 272O	Applied Music Instruction: Violin	1-2
MU 272P	Applied Music Instruction: Violoncello	1-2
MU 272Q	Applied Music Instruction: Voice	1-2
MU 272R	Applied Music Instruction: Bassoon	1-2
MU 272S	Applied Music Instruction: Clarinet	1-2
MU 272T	Applied Music Instruction: Flute	1-2
MU 272U	Applied Music Instruction: Oboe	1-2

MU 272V	Applied Music Instruction: Saxophone (Alto)	1-2

Applied Music Instruction - Upper-Division

Code	Title	Credits
MU 472A	Applied Music Instruction: Euphonium	1-2
MU 472B	Applied Music Instruction: French Horn	1-2
MU 472C	Applied Music Instruction: Trombone	1-2
MU 472D	Applied Music Instruction: Trumpet	1-2
MU 472E	Applied Music Instruction: Tuba	1-2
MU 472G	Applied Music Instruction: Harpsichord	1-2
MU 472H	Applied Music Instruction: Organ	1-2
MU 472I	Applied Music Instruction: Piano	1-2
MU 472J	Applied Music Instruction: Percussion	1-2
MU 472K	Applied Music Instruction: Guitar	1-2
MU 472L	Applied Music Instruction: Harp	1-2
MU 472M	Applied Music Instruction: String Bass	1-2
MU 472N	Applied Music Instruction: Viola	1-2
MU 472O	Applied Music Instruction: Violin	1-2
MU 472P	Applied Music Instruction: Violoncello	1-2
MU 472Q	Applied Music Instruction: Voice	1-2
MU 472R	Applied Music Instruction: Bassoon	1-2
MU 472S	Applied Music Instruction: Clarinet	1-2
MU 472T	Applied Music Instruction: Flute	1-2
MU 472U	Applied Music Instruction: Oboe	1-2
MU 472V	Applied Music Instruction: Saxophone (Alto)	1-2

Ensemble Courses

Code	Title	Credits
MU 201	Men's Chorus	1
MU 202	University Chorus	1
MU 204	Marching Band	1
MU 205	Concert Band	1
MU 206	Colorado State University Concert Orchestra	1
MU 300	Women's Chorus	1
MU 302	University Orchestra	1
MU 304	Symphonic Band	1
MU 305	Colorado State University Concert Choir	1
MU 309	Jazz Ensemble	1
MU 310	Jazz Combo	1
MU 400	Colorado State University Chamber Choir	1
MU 401	Opera Theater	1-2
MU 402	Theater/Chamber Orchestra	1
MU 404	Symphonic Wind Ensemble	1
MU 407	Accompanying	1
MU 408	Chamber Music	1

1 Students with previous keyboard experience may test out of MU 150 and use the one credit for an elective.

2 First-year voice students must take MU 172A and MU 172B, then MU 272Q the second year for two semesters; instrumentalists take MU 272A-MU 272P or MU 272R-MU 272V on a major instrument for 2 semesters each of the first two years.

3 Students must participate in an ensemble during each semester in which they are enrolled in MU 172A-MU 172B, MU 272A-MU 272V, and MU 472A-MU 472V. At least once during the program of study, this must be achieved by taking MU 408 or through another small ensemble experience.

Major Completion Map

Distinctive Requirements for Degree Program: A minimum grade of C (2.000) is required in all music courses used to satisfy the requirements of the BM in Music, Music Therapy Concentration.
To Declare this Major: Audition with department.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
CO 150	College Composition (GT-CO2)			1A	3
MU 117	Music Theory I	X			3
MU 127	Aural Skills I	X			1
MU 131	Introduction to Music History and Literature (GT-AH1)			3B	3
MU 150	Piano Class I	X			1
Select one course from the following:					1-2
MU 172A	Freshman Voice Studio: English/Italian	X			
MU 272*	Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)	X			
MU 241	Introduction to Music Therapy	X			3
Ensemble (See List on Concentration Requirements Tab)					1
	Total Credits				16-17

Semester 2		Critical	Recommended	AUCC	Credits
CHEM 103	Chemistry in Context (GT-SC2)		X	3A	3
MU 118	Music Theory II	X			3
MU 128	Aural Skills II	X			1
MU 153	Piano Skills for Music Therapists	X			1

MU 155	Guitar Class I	X			2
Select one course from the following:					1-2
MU 172B	Freshman Voice Studio: German, French	X			
MU 272*	Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)	X			
Ensemble (See List on Concentration Requirements Tab)					1
Mathematics		X		1B	3
CO 150 and MU 131 must be completed by the end of Semester 2.		X			
	Total Credits				15-16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 110	Principles of Animal Biology (GT-SC2)		X	3A	3
BZ 111	Animal Biology Laboratory (GT-SC1)		X	3A	1
MU 217	Music Theory III	X			3
MU 227	Aural Skills III	X			1
MU 250	Music Therapy Practice		X		3
MU 254	Beginning Conducting		X		2
MU 272*	Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)	X			1
Ensemble (See List on Concentration Requirements Tab)					1
	Total Credits				15

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 218	Music Theory IV	X			3
MU 228	Aural Skills IV	X			1
MU 272*	Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)	X			1
MU 440	Music Therapy Methods I	X			3
OT 215	Medical Terminology				1
PHIL 100	Appreciation of Philosophy (GT-AH3)			3B	3
PSY 100	General Psychology (GT-SS3)	X		3C	3
Ensemble (See List on Concentration Requirements Tab)					1
BZ 110, BZ 111, CHEM 103, and MU 153 must be completed by the end of Semester 4.		X			
	Total Credits				16

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BMS 300	Principles of Human Physiology	X			4
MU 157	Voice Class I		X		0-2
MU 342	Psychology of Music	X			3
MU 443	Music Therapy Methods II	X			3
MU 472*	Applied Music Instruction Upper-Division (See List on Concentration Requirements Tab)	X			1
MU 486A	Practicum: Music Therapy		X	4C	1
PSY 320	Abnormal Psychology				3
Ensemble (See List on Concentration Requirements Tab)					1
	Total Credits				16-18

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
BMS 345	Functional Neuroanatomy				4
Select one of the following (MU 334 is only offered in Fall, so if chosen, student would need to take AUCC 3D Course in Semester 6 and MU 334 in Semester 7 instead):					3
MU 334	Music History I	X		4A,4B	
MU 335	Music History II	X		4A,4B	

MU 444	Music Therapy Methods III	X			3
MU 486A	Practicum: Music Therapy	X		4C	1
PSY 252	Mind, Brain, and Behavior	X			3
	Total Credits				14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 486A	Practicum: Music Therapy	X		4C	1
STAT 201	General Statistics	X			3
Select one course from the following:					3
PSY 452	Cognitive Psychology				
PSY 454	Biological Psychology				
PSY 458	Cognitive Neuroscience				
Advanced Writing				2	3
Historical Perspectives				3D	3
MU 254 must be completed by the end of Semester 7.					
	Total Credits				13
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 252D	Instrumental Techniques: Percussion	X			1
MU 343	Research Methods in Music Therapy	X			3
MU 445	Improvisation Techniques in Music Therapy	X			2
Global and Cultural Awareness		X		3E	3
Music Elective		X			3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12
Semester 9		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 487	Internship	X			1
	Total Credits				1
	Program Total Credits:				120

Major in Music (B.M.), Performance Concentration

The Performance concentration prepares students for potential professional careers in the music and creative industries as performers, entrepreneurs, and private music teachers. It also prepares students for continued study at the graduate level. The curriculum provides a strong foundation in music history, music theory, and performance, with many opportunities for performance, including large and small ensemble participation as well as solo recitals. The concentration features private, applied instruction by faculty. Graduation from this program indicates a high degree of musical proficiency.

In order to complete the Performance concentration, students must select from one of the following options: jazz studies, orchestral instrument, organ, piano, piano pedagogy, string pedagogy, and voice.

Options

- Jazz Studies Option
- Orchestral Instrument Option
- Organ Option
- Piano Option
- Piano Pedagogy Option
- String Pedagogy Option
- Voice Option

Major in Music (B.M.), Performance Concentration, Jazz Studies Option

Requirements
Effective Fall 2017

A minimum grade of C is required in all music courses used to satisfy the requirements of the BM in Music, Performance Concentration, Jazz Studies Option.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
MU 117	Music Theory I		3
MU 118	Music Theory II		3
MU 127	Aural Skills I		1
MU 128	Aural Skills II		1
MU 131	Introduction to Music History and Literature (GT-AH1)	3B	3
MU 150[1]	Piano Class I		1
Select two semesters from the following:			2
MU 205	Concert Band		
MU 304	Symphonic Band		
MU 404	Symphonic Wind Ensemble		
Select two semesters from the following:			2
MU 309	Jazz Ensemble		
MU 310	Jazz Combo		
Applied Jazz Instruction (select two semesters from the following in your major instrument):			2
MU 274A	Applied Jazz Instruction: Piano		
MU 274B	Applied Jazz Instruction: String Bass		
MU 274C	Applied Jazz Instruction: Trombone		
MU 274D	Applied Jazz Instruction: Trumpet		
MU 274E	Applied Jazz Instruction: Percussion		
MU 274F	Applied Jazz Instruction: Saxophone		
MU 274G	Applied Jazz Instruction: Guitar		
Applied Music Instruction – Lower-Division (see list below – select two semesters in your major instrument)			2
Quantitative Reasoning		1B	3
Electives			3
	Total Credits		29

Sophomore

ETST 250/HIST 250	African American History (GT-HI1)	3D	3
MU 154	Jazz Piano Class		1
MU 217	Music Theory III		3
MU 218	Music Theory IV		3
MU 227	Aural Skills III		1
MU 228	Aural Skills IV		1
MU 225	Jazz Theory		2
PSY 100	General Psychology (GT-SS3)	3C	3
Select two semesters from the following:			2
MU 205	Concert Band		
MU 304	Symphonic Band		
MU 404	Symphonic Wind Ensemble		
Select two semesters from the following:			2
MU 309	Jazz Ensemble		
MU 310	Jazz Combo		
Applied Jazz Instruction (select two semesters from the following in your major instrument):			2
MU 274A	Applied Jazz Instruction: Piano		
MU 274B	Applied Jazz Instruction: String Bass		
MU 274C	Applied Jazz Instruction: Trombone		
MU 274D	Applied Jazz Instruction: Trumpet		

MU 274E	Applied Jazz Instruction: Percussion		
MU 274F	Applied Jazz Instruction: Saxophone		
MU 274G	Applied Jazz Instruction: Guitar		
Applied Music Instruction – Lower-Division (see list below – select two semesters in your major instrument)			2
Advanced Writing		2	3
Biological and Physical Sciences		3A	3
	Total Credits		31

Junior

MU 317	Music Theory V		2
MU 320	Jazz Improvisation		1
MU 325	Jazz Composition/Arranging		2
MU 334	Music History I	4A,4B	3
MU 335	Music History II	4A,4B	3
MU 471	Recital	4C	1
MU 474	Applied Jazz Instruction		4
Select two semesters from the following:			2
MU 309	Jazz Ensemble		
MU 310	Jazz Combo		
MU *** Music Electives			6
Arts and Humanities		3B	3
Elective			3
	Total Credits		30

Senior

MU 332	History of Jazz		3
MU 415	Advanced Jazz Techniques		2
MU 425	Jazz Pedagogy		2
MU 471	Recital	4C	1
MU 474	Applied Jazz Instruction		4
Select two semesters from the following:			2
MU 309	Jazz Ensemble		
MU 310	Jazz Combo		
Biological and Physical Sciences		3A	4
Diversity and Global Awareness		3E	3
Electives[2]			9
	Total Credits		30
	Program Total Credits:		120

Applied Music Instruction - Lower-Division

Code	Title	Credits
MU 272A	Applied Music Instruction: Euphonium	1-2
MU 272B	Applied Music Instruction: French Horn	1-2
MU 272C	Applied Music Instruction: Trombone	1-2
MU 272D	Applied Music Instruction: Trumpet	1-2
MU 272E	Applied Music Instruction: Tuba	1-2
MU 272G	Applied Music Instruction: Harpsichord	1-2
MU 272H	Applied Music Instruction: Organ	1-2
MU 272I	Applied Music Instruction: Piano	1-2
MU 272J	Applied Music Instruction: Percussion	1-2
MU 272K	Applied Music Instruction: Guitar	1-2
MU 272L	Applied Music Instruction: Harp	1-2
MU 272M	Applied Music Instruction: String Bass	1-2
MU 272N	Applied Music Instruction: Viola	1-2
MU 272O	Applied Music Instruction: Violin	1-2
MU 272P	Applied Music Instruction: Violoncello	1-2
MU 272Q	Applied Music Instruction: Voice	1-2
MU 272R	Applied Music Instruction: Bassoon	1-2
MU 272S	Applied Music Instruction: Clarinet	1-2
MU 272T	Applied Music Instruction: Flute	1-2
MU 272U	Applied Music Instruction: Oboe	1-2
MU 272V	Applied Music Instruction: Saxophone (Alto)	1-2

[1] B.M. Majors with prior keyboard experience may test out of MU 150 and use the credit toward electives

[2] Select enough elective credits to bring program total to 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
MU 117	Music Theory I	X			3
MU 127	Aural Skills I	X			1
MU 131	Introduction to Music History and Literature (GT-AH1)	X		3B	3
MU 150	Piano Class I				1
Select one from the following:					1
MU 205	Concert Band				
MU 304	Symphonic Band				
MU 404	Symphonic Wind Ensemble				
Select one of the following:					1
MU 309	Jazz Ensemble				
MU 310	Jazz Combo				
MU 272* Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)		X			1
MU 274* Applied Jazz Instruction (See List on Concentration Requirements Tab)		X			1
Elective					3
	Total Credits				15

Semester 2		Critical	Recommended	AUCC	Credits
CO 150	College Composition (GT-CO2)	X		1A	3
MU 118	Music Theory II	X			3
MU 128	Aural Skills II	X			1
Select one from the following:					1
MU 205	Concert Band				
MU 304	Symphonic Band				
MU 404	Symphonic Wind Ensemble				
Select one of the following:					1
MU 309	Jazz Ensemble				
MU 310	Jazz Combo				
MU 272* Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)		X			1
MU 274* Applied Jazz Instruction (See List on Concentration Requirements Tab)		X			1
Quantitative Reasoning		X		1B	3
MU 150 must be completed by the end of Semester 2.		X			
	Total Credits				14

Sophomore

Semester 3		Critical	Recommended	AUCC	Credits
ETST 250/ HIST 250	African American History (GT-HI1)			3D	3
MU 217	Music Theory III	X			3
MU 225	Jazz Theory	X			2
MU 227	Aural Skills III	X			1
Select one from the following:					1
MU 205	Concert Band				
MU 304	Symphonic Band				
MU 404	Symphonic Wind Ensemble				

Select one of the following:					1
MU 309	Jazz Ensemble				
MU 310	Jazz Combo				
MU 272* Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)		X			1
MU 274* Applied Jazz Instruction (See List on Concentration Requirements Tab)		X			1
Advanced Writing				2	3
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 154	Jazz Piano Class		X		1
MU 218	Music Theory IV	X			3
MU 228	Aural Skills IV	X			1
Select one from the following:					1
MU 205	Concert Band				
MU 304	Symphonic Band				
MU 404	Symphonic Wind Ensemble				
Select one of the following:					1
MU 309	Jazz Ensemble				
MU 310	Jazz Combo				
MU 272* Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)		X			1
MU 274* Applied Jazz Instruction (See List on Concentration Requirements Tab)		X			1
PSY 100	General Psychology (GT-SS3)			3C	3
Biological and Physical Sciences				3A	3
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 317	Music Theory V	X			2
MU 320	Jazz Improvisation				1
MU 334	Music History I	X		4A,4B	3
MU 474	Applied Jazz Instruction	X			2
Select one of the following:					1
MU 309	Jazz Ensemble				
MU 310	Jazz Combo				
Arts and Humanities				3B	3
Elective					3
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 325	Jazz Composition/Arranging	X			2
MU 335	Music History II	X		4A,4B	3
MU 471	Recital		X	4C	1
MU 474	Applied Jazz Instruction	X			2
Select one of the following:					1
MU 309	Jazz Ensemble				
MU 310	Jazz Combo				
Music Electives					6
MU 335 must be completed by the end of Semester 6.		X			
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 332	History of Jazz	X			3

MU 474	Applied Jazz Instruction	X			2
Select one of the following:					1
MU 309	Jazz Ensemble				
MU 310	Jazz Combo				
Diversity and Global Awareness				3E	3
Electives					6
	Total Credits				15

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 415	Advanced Jazz Techniques	X			2
MU 425	Jazz Pedagogy	X			2
MU 471	Recital	X		4C	1
MU 474	Applied Jazz Instruction	X			2
Select one of the following:		X			1
MU 309	Jazz Ensemble				
MU 310	Jazz Combo				
Biological and Physical Sciences		X		3A	4
Elective		X			3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Music (B.M.), Performance Concentration, Orchestral Instrument Option

Requirements
Effective Fall 2017

A minimum grade of C is required in all music courses used to satisfy the requirements of the BM in Music, Performance Concentration, Orchestral Instrument Option.

Freshman

		AUCC	**Credits**
CO 150	College Composition (GT-CO2)	1A	3
MU 117	Music Theory I		3
MU 118	Music Theory II		3
MU 127	Aural Skills I		1
MU 128	Aural Skills II		1
MU 131	Introduction to Music History and Literature (GT-AH1)	3B	3
MU 150[1]	Piano Class I		1
MU 151B[1]	Piano Class II: Performance, Composition, and General Studies		1
Applied Music Instruction – Lower-Division (see list below)[2]			4
MU *** Ensemble (see list below)[3]			2
Historical Perspectives		3D	3
Mathematics		1B	3
	Total Credits		28

Sophomore

MU 217	Music Theory III		3

MU 218	Music Theory IV		3
MU 227	Aural Skills III		1
MU 228	Aural Skills IV		1
Applied Music Instruction – Lower-Division (see list below)[2]			4
MU *** Ensemble (see list below)[3]			2
PSY 100	General Psychology (GT-SS3)	3C	3
Advanced Writing		2	3
Electives			11
	Total Credits		31

Junior

MU 254	Beginning Conducting		2
MU 317	Music Theory V		2
MU 318	Arranging and Orchestration		2
MU 334	Music History I	4A,4B	3
MU 335	Music History II	4A,4B	3
MU 417	Counterpoint		3
MU 471	Recital		1
Applied Music Instruction – Upper-Division (see list below)[4]			4
MU *** Ensemble (see list below)[3]			2
Arts and Humanities		3B	3
Electives			6
	Total Credits		31

Senior

MU 471	Recital	4C	1
Applied Music Instruction – Upper-Division (see list below)[4]			4
MU *** Ensemble (see list below)[3]			2
MU *** Electives			3
Biological and Physical Sciences		3A	7
Global and Cultural Awareness		3E	3
Electives[5]			10
	Total Credits		30
	Program Total Credits:		120

Applied Music Instruction - Lower-Division

Code	Title	Credits
MU 272A	Applied Music Instruction: Euphonium	1-2
MU 272B	Applied Music Instruction: French Horn	1-2
MU 272C	Applied Music Instruction: Trombone	1-2
MU 272D	Applied Music Instruction: Trumpet	1-2
MU 272E	Applied Music Instruction: Tuba	1-2
MU 272G	Applied Music Instruction: Harpsichord	1-2
MU 272H	Applied Music Instruction: Organ	1-2
MU 272I	Applied Music Instruction: Piano	1-2
MU 272J	Applied Music Instruction: Percussion	1-2
MU 272K	Applied Music Instruction: Guitar	1-2
MU 272L	Applied Music Instruction: Harp	1-2
MU 272M	Applied Music Instruction: String Bass	1-2
MU 272N	Applied Music Instruction: Viola	1-2
MU 272O	Applied Music Instruction: Violin	1-2
MU 272P	Applied Music Instruction: Violoncello	1-2
MU 272R	Applied Music Instruction: Bassoon	1-2
MU 272S	Applied Music Instruction: Clarinet	1-2
MU 272T	Applied Music Instruction: Flute	1-2
MU 272U	Applied Music Instruction: Oboe	1-2
MU 272V	Applied Music Instruction: Saxophone (Alto)	1-2

Applied Music Instruction - Upper-Division

Code	Title	Credits
MU 472A	Applied Music Instruction: Euphonium	1-2
MU 472B	Applied Music Instruction: French Horn	1-2
MU 472C	Applied Music Instruction: Trombone	1-2
MU 472D	Applied Music Instruction: Trumpet	1-2
MU 472E	Applied Music Instruction: Tuba	1-2
MU 472G	Applied Music Instruction: Harpsichord	1-2
MU 472H	Applied Music Instruction: Organ	1-2
MU 472I	Applied Music Instruction: Piano	1-2
MU 472J	Applied Music Instruction: Percussion	1-2

MU 472K	Applied Music Instruction: Guitar	1-2
MU 472L	Applied Music Instruction: Harp	1-2
MU 472M	Applied Music Instruction: String Bass	1-2
MU 472N	Applied Music Instruction: Viola	1-2
MU 472O	Applied Music Instruction: Violin	1-2
MU 472P	Applied Music Instruction: Violoncello	1-2
MU 472R	Applied Music Instruction: Bassoon	1-2
MU 472S	Applied Music Instruction: Clarinet	1-2
MU 472T	Applied Music Instruction: Flute	1-2
MU 472U	Applied Music Instruction: Oboe	1-2
MU 472V	Applied Music Instruction: Saxophone (Alto)	1-2

Ensemble Courses

Code	Title	Credits
MU 201	Men's Chorus	1
MU 202	University Chorus	1
MU 204	Marching Band	1
MU 205	Concert Band	1
MU 206	Colorado State University Concert Orchestra	1
MU 300	Women's Chorus	1
MU 302	University Orchestra	1
MU 304	Symphonic Band	1
MU 305	Colorado State University Concert Choir	1
MU 309	Jazz Ensemble	1
MU 310	Jazz Combo	1
MU 400	Colorado State University Chamber Choir	1
MU 401	Opera Theater	1-2
MU 402	Theater/Chamber Orchestra	1
MU 404	Symphonic Wind Ensemble	1
MU 407	Accompanying	1
MU 408	Chamber Music	1

1 Students with previous keyboard experience may test out of MU 150 and/or MU 151B and replace with the same number of elective credit(s)

2 Major instrument. Take two semesters each during the freshman and sophomore years.

3 Students must participate in an ensemble during each semester in which they are enrolled in MU 272A-MU 272V, and MU 472A-MU 472V. At least once during the program of study, this must be achieved by taking MU 408 or through another small ensemble experience.

4 Major instrument. Take two semesters each during the junior and senior years.

5 Select enough elective credits to bring the program total to 120, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program: A minimum grade of C is required in all music courses used to satisfy the requirements of the BM in Music, Performance Concentration, Orchestral Instrument Option.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
CO 150	College Composition (GT-CO2)			1A	3
MU 117	Music Theory I	X			3
MU 127	Aural Skills I	X			1
MU 150	Piano Class I	X			1
MU 272* Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)		X			2
Ensemble (See List on Concentration Requirements Tab)		X			1
Mathematics				1B	3
	Total Credits				14

Semester 2		Critical	Recommended	AUCC	Credits
MU 118	Music Theory II	X			3
MU 128	Aural Skills II	X			1
MU 131	Introduction to Music History and Literature (GT-AH1)	X		3B	3
MU 151B	Piano Class II: Performance, Composition, and General Studies	X			1
MU 272* Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)		X			2
Ensemble (See List on Concentration Requirements Tab)					1
Historical Perspectives				3D	3
CO 150 and AUCC 1B (MATH) must be completed by the end of Semester 2.		X			
	Total Credits				14

Sophomore

Semester 3		Critical	Recommended	AUCC	Credits
MU 217	Music Theory III	X			3

MU 227	Aural Skills III	X			1
MU 272* Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)		X			2
Ensemble (See List on Concentration Requirements Tab)		X			1
PSY 100	General Psychology (GT-SS3)			3C	3
Electives					5
	Total Credits				15

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 218	Music Theory IV	X			3
MU 228	Aural Skills IV	X			1
MU 272* Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)		X			2
Ensemble (See List on Concentration Requirements Tab)		X			1
Advanced Writing				2	3
Electives					6
	Total Credits				16

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 254	Beginning Conducting	X			2
MU 317	Music Theory V	X			2
MU 334	Music History I	X		4A,4B	3
MU 417	Counterpoint				3
MU 472* Applied Music Instruction Upper-Division (See List on Concentration Requirements Tab)		X			2
Ensemble (See List on Concentration Requirements Tab)		X			1
Elective					2
	Total Credits				15

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 318	Arranging and Orchestration	X			2
MU 335	Music History II	X		4A,4B	3
MU 471	Recital	X			1
MU 472* Applied Music Instruction Upper-Division (See List on Concentration Requirements Tab)		X			2
Ensemble (See List on Concentration Requirements Tab)		X			1
Arts and Humanities				3B	3
Electives					4
MU 335 must be completed by the end of Semester 6.		X			
	Total Credits				16

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 472* Applied Music Instruction Upper-Division (See List on Concentration Requirements Tab)		X			2
Ensemble (See List on Concentration Requirements Tab)		X			1
Biological and Physical Sciences				3A	3
Global and Cultural Awareness				3E	3
Music Elective					3
Elective					3
MU 417 must be completed by the end of Semester 7.		X			
	Total Credits				15

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 471	Recital	X		4C	1
MU 472* Applied Music Instruction Upper-Division (See List on Concentration Requirements Tab)		X			2

Ensemble (See List on Concentration Requirements Tab)	X		1
Biological and Physical Sciences	X	3A	4
Electives	X		7
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X		
Total Credits			15
Program Total Credits:			120

Major in Music (B.M.), Performance Concentration, Organ Option

Effective Fall 2017

Requirements

A minimum grade of C is required in all music courses used to satisfy the requirements of the major programs (B.A. and B.M.) in music.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
MU 117	Music Theory I		3
MU 118	Music Theory II		3
MU 127	Aural Skills I		1
MU 128	Aural Skills II		1
MU 131	Introduction to Music History and Literature (GT-AH1)	3B	3
MU 272H[1]	Applied Music Instruction: Organ		4
MU *** Ensemble (see list below)[2]			2
Historical Perspectives		3D	3
Quantitative Reasoning		1B	3
Electives			4
	Total Credits		30

Sophomore

L*** *** Foreign language[3]			10
MU 217	Music Theory III		3
MU 218	Music Theory IV		3
MU 227	Aural Skills III		1
MU 228	Aural Skills IV		1
MU 272H[1]	Applied Music Instruction: Organ		4
MU *** Ensemble (see list below)[2]			2
PSY 100	General Psychology (GT-SS3)	3C	3
Advanced Writing		2	3
Electives			4
	Total Credits		34

Junior

MU 254	Beginning Conducting		2
MU 317	Music Theory V		2
MU 318	Arranging and Orchestration		2
MU 334	Music History I	4A,4B	3
MU 335	Music History II	4A,4B	3
MU 417	Counterpoint		3
MU 471	Recital		1

MU 472H[4]	Applied Music Instruction: Organ		4
MU *** Ensemble (see list below)[2]			2
Arts and Humanities		3B	3
Electives			5
	Total Credits		30

Senior

MU 437	History and Structure of the Organ		2
MU 468	Organ Literature		2
MU 471	Recital	4C	1
MU 472H[4]	Applied Music Instruction: Organ		4
MU *** Ensemble (see list below)[2]			2
MU *** Music Electives			3
Biological and Physical Sciences		3A	7
Diversity and Global Awareness		3E	3
Electives[5]			2
	Total Credits		26
	Program Total Credits:		120

Ensemble Courses

Code	Title	Credits
MU 201	Men's Chorus	1
MU 202	University Chorus	1
MU 204	Marching Band	1
MU 205	Concert Band	1
MU 206	Colorado State University Concert Orchestra	1
MU 300	Women's Chorus	1
MU 302	University Orchestra	1
MU 304	Symphonic Band	1
MU 305	Colorado State University Concert Choir	1
MU 309	Jazz Ensemble	1
MU 310	Jazz Combo	1
MU 400	Colorado State University Chamber Choir	1
MU 401	Opera Theater	1-2
MU 402	Theater/Chamber Orchestra	1
MU 404	Symphonic Wind Ensemble	1
MU 407	Accompanying	1
MU 408	Chamber Music	1

1 Take two semesters each in the freshman and sophomore years.

2 Students must participate in an ensemble during each semester in which they are enrolled in MU 272H or MU 472H. At least once during the program of study, this must be achieved by taking MU 408 or through another small ensemble experience.

3 Take two semesters of a foreign language during the sophomore year.

4 Take two semesters each in the junior and senior years.

5 Select enough elective credits to bring the program total to 120, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
A grade of C or better is required in all music courses used to satisfy major requirements.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
CO 150	College Composition (GT-CO2)			1A	3
MU 117	Music Theory I	X			3
MU 127	Aural Skills I	X			1
MU 131	Introduction to Music History and Literature (GT-AH1)	X		3B	3
MU 272H	Applied Music Instruction: Organ	X			2
MU*** Ensemble (See List on Concentration Requirements Tab)		X			1
Historical Perspectives				3D	3
	Total Credits				16

Semester 2		Critical	Recommended	AUCC	Credits
MU 118	Music Theory II	X			3
MU 128	Aural Skills II	X			1
MU 272H	Applied Music Instruction: Organ	X			2

MU*** Ensemble (See List on Concentration Requirements Tab)					1
Quantitative Reasoning			X	1B	3
Electives					4
CO 150 must be completed by the end of Semester 2.			X		
	Total Credits				14
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 217	Music Theory III		X		3
MU 227	Aural Skills III		X		1
MU 272H	Applied Music Instruction: Organ		X		2
PSY 100	General Psychology (GT-SS3)			3C	3
Advanced Writing				2	3
L*** *** Foreign Language					5
MU*** Ensemble (See List on Concentration Requirements Tab)			X		1
	Total Credits				18
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 218	Music Theory IV		X		3
MU 228	Aural Skills IV		X		1
MU 272H	Applied Music Instruction: Organ		X		2
L*** *** Foreign Language					5
MU*** Ensemble (See List on Concentration Requirements Tab)			X		1
Electives					4
	Total Credits				16
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 254	Beginning Conducting				2
MU 317	Music Theory V		X		2
MU 334	Music History I		X	4A,4B	3
MU 417	Counterpoint				3
MU 472H	Applied Music Instruction: Organ				2
MU*** Ensemble (See List on Concentration Requirements Tab)					1
Arts and Humanities				3B	3
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 318	Arranging and Orchestration		X		2
MU 335	Music History II		X	4A,4B	3
MU 471	Recital		X		1
MU 472H	Applied Music Instruction: Organ				2
MU*** Ensemble (See List on Concentration Requirements Tab)			X		1
Electives					5
	Total Credits				14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 437	History and Structure of the Organ		X		2
MU 472H	Applied Music Instruction: Organ				2
MU*** Ensemble (See List on Concentration Requirements Tab)			X		1
MU*** Music Electives					3
Biological and Physical Sciences				3A	4
MU 417 must be completed by the end of Semester 7.			X		
	Total Credits				12
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 468	Organ Literature		X		2

MU 471	Recital	X	4C	1
Diversity and Global Awareness		X	3E	3
MU 472H	Applied Music Instruction: Organ	X		2
MU*** Ensemble (See List on Concentration Requirements Tab)		X		1
Biological and Physical Sciences		X	3A	3
Elective		X		2
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X		
	Total Credits			14
	Program Total Credits:			120

Major in Music (B.M.), Performance Concentration, Piano Option

Effective Fall 2017

Requirements

A minimum grade of C is required in all music courses used to satisfy the requirements of the major programs (B.A. and B.M.) in music.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
MU 117	Music Theory I		3
MU 118	Music Theory II		3
MU 127	Aural Skills I		1
MU 128	Aural Skills II		1
MU 131	Introduction to Music History and Literature (GT-AH1)	3B	3
MU 272I[1]	Applied Music Instruction: Piano		4
MU *** Ensemble (see list below)[2]			2
Historical Perspectives		3D	3
Quantitative Reasoning		1B	3
Electives			4
	Total Credits		30

Sophomore

L*** *** Foreign language[3]			10
MU 217	Music Theory III		3
MU 218	Music Theory IV		3
MU 227	Aural Skills III		1
MU 228	Aural Skills IV		1
MU 272I[1]	Applied Music Instruction: Piano		4
MU *** Ensemble (see list below)[2]			2
PSY 100	General Psychology (GT-SS3)	3C	3
Advanced Writing		2	3
Electives			4
	Total Credits		34

Junior

MU 254	Beginning Conducting		2
MU 317	Music Theory V		2
MU 318	Arranging and Orchestration		2
MU 334	Music History I	4A,4B	3

MU 335	Music History II	4A,4B	3
MU 417	Counterpoint		3
MU 471	Recital		1
MU 472I[4]	Applied Music Instruction: Piano		4
MU *** Ensemble (see list below)[2]			2
Arts and Humanities		3B	3
Electives			4
	Total Credits		29

Senior

MU 407	Accompanying		2
MU 465	Keyboard Literature		2
MU 471	Recital	4C	1
MU 472I[4]	Applied Music Instruction: Piano		4
MU *** Music Electives			3
Biological and Physical Sciences		3A	7
Diversity and Global Awareness		3E	3
Electives[5]			5
	Total Credits		27
	Program Total Credits:		120

Ensemble Courses

Code	Title	Credits
MU 201	Men's Chorus	1
MU 202	University Chorus	1
MU 204	Marching Band	1
MU 205	Concert Band	1
MU 206	Colorado State University Concert Orchestra	1
MU 300	Women's Chorus	1
MU 302	University Orchestra	1
MU 304	Symphonic Band	1
MU 305	Colorado State University Concert Choir	1
MU 309	Jazz Ensemble	1
MU 310	Jazz Combo	1
MU 400	Colorado State University Chamber Choir	1
MU 401	Opera Theater	1-2
MU 402	Theater/Chamber Orchestra	1
MU 404	Symphonic Wind Ensemble	1
MU 407	Accompanying	1
MU 408	Chamber Music	1

1 Take two semesters each in the freshman and sophomore years.

2 Students must participate in an ensemble during each semester in which they are enrolled in MU 272I or MU 472I. At least once during the program of study, this must be achieved by taking MU 408 or through another small ensemble experience.

3 Take two semesters of a foreign language in the sophomore year.

4 Take two semesters each in the junior and senior years.

5 Select enough elective credits to bring the program total to 120, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
A grade of C or better is required in all music courses used to satisfy major requirements.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
CO 150	College Composition (GT-CO2)			1A	3
MU 117	Music Theory I	X			3
MU 127	Aural Skills I	X			1
MU 272I	Applied Music Instruction: Piano	X			2
MU*** Ensemble (See List on Concentration Requirements Tab)		X			1
Quantitative Reasoning				1B	3
Elective					2
	Total Credits				15

Semester 2		Critical	Recommended	AUCC	Credits
MU 118	Music Theory II	X			3
MU 128	Aural Skills II	X			1

MU 131	Introduction to Music History and Literature (GT-AH1)	X		3B	3
MU 272I	Applied Music Instruction: Piano	X			2
MU*** Ensemble (See List on Concentration Requirements Tab)					1
Historical Perspectives				3D	3
Elective					2
AUCC 1B (Quantitative Reasoning) and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 217	Music Theory III	X			3
MU 227	Aural Skills III	X			1
MU 272I	Applied Music Instruction: Piano	X			2
PSY 100	General Psychology (GT-SS3)			3C	3
L*** *** Foreign Language					5
MU*** Ensemble (See List on Concentration Requirements Tab)		X			1
Advanced Writing				2	3
	Total Credits				18

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 218	Music Theory IV	X			3
MU 228	Aural Skills IV	X			1
MU 272I	Applied Music Instruction: Piano	X			2
L*** *** Foreign Language					5
MU*** Ensemble (See List on Concentration Requirements Tab)		X			1
Electives					4
	Total Credits				16

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 254	Beginning Conducting	X			2
MU 317	Music Theory V	X			2
MU 334	Music History I		X	4A,4B	3
MU 417	Counterpoint				3
MU 472I	Applied Music Instruction: Piano				2
MU*** Ensemble (See List on Concentration Requirements Tab)		X			1
Arts and Humanities				3B	3
	Total Credits				16

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 318	Arranging and Orchestration	X			2
MU 335	Music History II	X		4A,4B	3
MU 471	Recital	X			1
MU 472I	Applied Music Instruction: Piano				2
MU*** Ensemble (See List on Concentration Requirements Tab)		X			1
Electives					4
MU 335 must be completed by the end of Semester 6.		X			
	Total Credits				13

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 407	Accompanying	X			1
MU 465	Keyboard Literature	X			2
MU 472I	Applied Music Instruction: Piano				2
MU*** Music Elective					3
Biological and Physical Sciences				3A	3

Diversity and Global Awareness				3E	3
MU 417 must be completed by the end of Semester 7.		X			
	Total Credits				14
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 407	Accompanying	X			1
MU 471	Recital	X		4C	1
MU 472I	Applied Music Instruction: Piano	X			2
Biological and Physical Sciences		X		3A	4
Electives		X			5
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				13
	Program Total Credits:				120

Major in Music (B.M.), Performance Concentration, Piano Pedagogy Option

Effective Fall 2017

Requirements

A minimum grade of C is required in all music courses used to satisfy the requirements of the major programs (B.A. and B.M.) in music.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
MU 117	Music Theory I		3
MU 118	Music Theory II		3
MU 127	Aural Skills I		1
MU 128	Aural Skills II		1
MU 131	Introduction to Music History and Literature (GT-AH1)	3B	3
MU 272I[1]	Applied Music Instruction: Piano		2
MU *** Ensemble (see list below)[2]			2
Historical Perspectives		3D	3
Quantitative Reasoning		1B	3
Electives			6
	Total Credits		30

Sophomore

L*** *** Foreign language[3]			10
MU 217	Music Theory III		3
MU 218	Music Theory IV		3
MU 227	Aural Skills III		1
MU 228	Aural Skills IV		1
MU 272I[1]	Applied Music Instruction: Piano		4
MU *** Ensemble (see list below)[2]			2
PSY 100	General Psychology (GT-SS3)	3C	3
Advanced Writing		2	3
Electives			4
	Total Credits		34

Junior

MU 317	Music Theory V		2
MU 318	Arranging and Orchestration		2
MU 334	Music History I	4A,4B	3
MU 335	Music History II	4A,4B	3
MU 417	Counterpoint		3
MU 472I[4]	Applied Music Instruction: Piano		4
MU 495G	Independent Study: Pedagogy		3
Select one from the following:			3
PSY 260	Child Psychology		
PSY 465	Adolescent Psychology		
MU *** Ensemble (see list below)[2]			2
Arts and Humanities		3B	3
	Total Credits		28

Senior

MU 465	Keyboard Literature		2
MU 471	Recital	4C	1
MU 472I[4]	Applied Music Instruction: Piano		4
MU 495G	Independent Study: Pedagogy		3
MU *** Ensemble (see list below)[2]			2
MU *** Music Electives			3
Biological and Physical Sciences		3A	7
Diversity and Global Awareness		3E	3
Elective[5]			3
	Total Credits		28
	Program Total Credits:		120

Ensemble Courses

Code	Title	Credits
MU 201	Men's Chorus	1
MU 202	University Chorus	1
MU 204	Marching Band	1
MU 205	Concert Band	1
MU 206	Colorado State University Concert Orchestra	1
MU 300	Women's Chorus	1
MU 302	University Orchestra	1
MU 304	Symphonic Band	1
MU 305	Colorado State University Concert Choir	1
MU 309	Jazz Ensemble	1
MU 310	Jazz Combo	1
MU 400	Colorado State University Chamber Choir	1
MU 401	Opera Theater	1-2
MU 402	Theater/Chamber Orchestra	1
MU 404	Symphonic Wind Ensemble	1
MU 407	Accompanying	1
MU 408	Chamber Music	1

1 Take two semesters each in the freshman and sophomore years.

2 Students must participate in an ensemble during each semester in which they are enrolled in MU 272I or MU 472I. At least once during the program of study, this must be achieved by taking MU 408 or through another small ensemble experience.

3 Take two semesters of a foreign language in the sophomore year.

4 Take two semesters each in the junior and senior years.

5 Select enough elective credits to bring the program total to 120, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
A grade of C or better is required in all music courses used to satisfy major requirements.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
CO 150	College Composition (GT-CO2)			1A	3
MU 117	Music Theory I	X			3
MU 127	Aural Skills I	X			1

MU 272I	Applied Music Instruction: Piano	X			1
MU*** Ensemble (See List on Concentration Requirements Tab)		X			1
Quantitative Reasoning				1B	3
Elective					3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 118	Music Theory II	X			3
MU 128	Aural Skills II	X			1
MU 131	Introduction to Music History and Literature (GT-AH1)	X		3B	3
MU 272I	Applied Music Instruction: Piano	X			1
MU*** Ensemble (See List on Concentration Requirements Tab)					1
Historical Perspectives				3D	3
Elective					3
AUCC 1B (Quantitative Reasoning) and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 217	Music Theory III	X			3
MU 227	Aural Skills III				1
MU 272I	Applied Music Instruction: Piano	X			2
PSY 100	General Psychology (GT-SS3)			3C	3
L*** *** Foreign Langauge					5
MU*** Ensemble (See List on Concentration Requirements Tab)		X			1
Advanced Writing				2	3
	Total Credits				18
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 218	Music Theory IV	X			3
MU 228	Aural Skills IV				1
MU 272I	Applied Music Instruction: Piano	X			2
L*** *** Foreign Language					5
MU*** Ensemble (See List on Concentration Requirements Tab)		X			1
Electives					4
	Total Credits				16
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 317	Music Theory V	X			2
MU 334	Music History I		X	4A,4B	3
MU 417	Counterpoint	X			3
MU 472I	Applied Music Instruction: Piano				2
MU 495G	Independent Study: Pedagogy	X			1
MU*** Ensemble (See List on Concentration Requirements Tab)					1
PSY 100 must be completed by the end of Semester 5.		X			
	Total Credits				12
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 318	Arranging and Orchestration	X			2
MU 335	Music History II	X		4A,4B	3
MU 472I	Applied Music Instruction: Piano				2
MU 495G	Independent Study: Pedagogy	X			2
Select one course from the following:					3
PSY 260	Child Psychology				
PSY 465	Adolescent Psychology				

MU*** Ensemble (See List on Concentration Requirements Tab)		X			1
Arts and Humanities				3B	3
MU 335 must be completed by the end of Semester 6.		X			
	Total Credits				16
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 465	Keyboard Literature	X			2
MU 472I	Applied Music Instruction: Piano				2
MU 495G	Independent Study: Pedagogy	X			1
MU*** Ensemble (See List on Concentration Requirements Tab)		X			1
MU*** Music Elective					3
Biological and Physical Sciences				3A	4
	Total Credits				13
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 471	Recital	X		4C	1
MU 472I	Applied Music Instruction: Piano				2
MU 495G	Independent Study: Pedagogy	X			2
MU*** Ensemble (See List on Concentration Requirements Tab)		X			1
Biological and Physical Sciences		X		3A	3
Diversity and Global Awareness		X		3E	3
Elective		X			3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Music (B.M.), Performance Concentration, String Pedagogy Option

Requirements
Effective Fall 2017

A minimum grade of C is required in all music courses used to satisfy the requirements of the BM in Music, Performance Concentration, String Pedagogy Option.

Freshman

		AUCC	**Credits**
CO 150	College Composition (GT-CO2)	1A	3
MU 117	Music Theory I		3
MU 118	Music Theory II		3
MU 127	Aural Skills I		1
MU 128	Aural Skills II		1
MU 131	Introduction to Music History and Literature (GT-AH1)	3B	3
MU 150[1]	Piano Class I		1
MU 151B[1]	Piano Class II: Performance, Composition, and General Studies		1
Select two semesters from the following in your major instrument:			2
MU 272M	Applied Music Instruction: String Bass		
MU 272N	Applied Music Instruction: Viola		
MU 272O	Applied Music Instruction: Violin		

MU 272P	Applied Music Instruction: Violoncello		
MU *** Ensemble (see list below)[2]			2
Historical Perspectives		3D	3
Quantitative Reasoning		1B	3
Electives			5
	Total Credits		31

Sophomore

MU 217	Music Theory III		3
MU 218	Music Theory IV		3
MU 227	Aural Skills III		1
MU 228	Aural Skills IV		1
Select two semesters from the following in your major instrument:			2-4
MU 272M	Applied Music Instruction: String Bass		
MU 272N	Applied Music Instruction: Viola		
MU 272O	Applied Music Instruction: Violin		
MU 272P	Applied Music Instruction: Violoncello		
MU *** Ensemble (see list below)[2]			2
PSY 100	General Psychology (GT-SS3)	3C	3
Advanced Writing		2	3
Elective			11-13
	Total Credits		31

Junior

MU 254	Beginning Conducting		2
MU 317	Music Theory V		2
MU 318	Arranging and Orchestration		2
MU 334	Music History I	4A,4B	3
MU 335	Music History II	4A,4B	3
MU 417	Counterpoint		3
Select two credits from the following:			2
MU 351A	String Pedagogy I: Violin/Viola.		
MU 351B	String Pedagogy I: Violoncello		
MU 351C	String Pedagogy I: String Bass		
Select two credits from the following:			2
MU 352A	String Pedagogy II: Violin/Viola		
MU 352B	String Pedagogy II: Violoncello		
MU 352C	String Pedagogy II: String Bass		
Take two semesters from the following in your major instrument:			4
MU 472M	Applied Music Instruction: String Bass		
MU 472N	Applied Music Instruction: Viola		
MU 472O	Applied Music Instruction: Violin		
MU 472P	Applied Music Instruction: Violoncello		
Select one from the following:			3
PSY 260	Child Psychology		
PSY 465	Adolescent Psychology		
MU *** Ensemble (see list below)[2]			2
Arts and Humanities		3B	3
	Total Credits		31

Senior

MU 471	Recital	4C	1

Select two credits from the following:			2
MU 451A	String Pedagogy III: Violin		
MU 451B	String Pedagogy III: Violoncello		
MU 451C	String Pedagogy III: String Bass		
Select two credits from the following:			2
MU 464A	String Literature: Violin/Viola		
MU 464B	String Literature: Violoncello		
MU 464C	String Literature: String Bass		
Take two semesters from the following in your major instrument:			4
MU 472M	Applied Music Instruction: String Bass		
MU 472N	Applied Music Instruction: Viola		
MU 472O	Applied Music Instruction: Violin		
MU 472P	Applied Music Instruction: Violoncello		
MU *** Ensemble (see list below)[2]			2
MU *** Music Electives			3
Biological and Physical Sciences		3A	7
Diversity and Global Awareness		3E	3
Electives[3]			3
	Total Credits		27
	Program Total Credits:		120

Ensemble Courses

Code	Title	Credits
MU 201	Men's Chorus	1
MU 202	University Chorus	1
MU 204	Marching Band	1
MU 205	Concert Band	1
MU 206	Colorado State University Concert Orchestra	1
MU 300	Women's Chorus	1
MU 302	University Orchestra	1
MU 304	Symphonic Band	1
MU 305	Colorado State University Concert Choir	1
MU 309	Jazz Ensemble	1
MU 310	Jazz Combo	1
MU 400	Colorado State University Chamber Choir	1
MU 401	Opera Theater	1-2
MU 402	Theater/Chamber Orchestra	1
MU 404	Symphonic Wind Ensemble	1
MU 407	Accompanying	1
MU 408	Chamber Music	1

1 Students with previous keyboard experience may test out of MU 150 and/or MU 151B and replace with the same number of elective credit(s).

2 Students must participate in an ensemble during each semester in which they are enrolled in MU 272M-MU 272P and MU 472M-MU 472P. At least once during the program of study, this must be achieved by taking MU 408 or through another small ensemble experience.

3 Select enough elective credits to bring the program total to 120, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program: A minimum grade of C is required in all music courses used to satisfy the requirements of the BM in Music, Performance Concentration, String Pedagogy Option.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
CO 150	College Composition (GT-CO2)			1A	3
MU 117	Music Theory I	X			3
MU 127	Aural Skills I	X			1
MU 131	Introduction to Music History and Literature (GT-AH1)	X		3B	3
MU 150	Piano Class I	X			1
Select one course from the following:					1
MU 272M	Applied Music Instruction: String Bass	X			
MU 272N	Applied Music Instruction: Viola	X			
MU 272O	Applied Music Instruction: Violin	X			
MU 272P	Applied Music Instruction: Violoncello	X			

Ensemble (See List on Concentration Requirements Tab)		X			1
Quantitative Reasoning				1B	3
	Total Credits				16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 118	Music Theory II	X			3
MU 128	Aural Skills II	X			1
MU 151B	Piano Class II: Performance, Composition, and General Studies	X			1
Select one course from the following:					1
MU 272M	Applied Music Instruction: String Bass	X			
MU 272N	Applied Music Instruction: Viola	X			
MU 272O	Applied Music Instruction: Violin	X			
MU 272P	Applied Music Instruction: Violoncello	X			
Ensemble (See List on Concentration Requirements Tab)					1
Historical Perspectives				3D	3
Electives					5
CO 150 and AUCC 1B (Quantitative Reasoning) requirement must be completed by the end of Semester 2.		X			
	Total Credits				15
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 217	Music Theory III	X			3
MU 227	Aural Skills III	X			1
Select one course from the following:					1-2
MU 272M	Applied Music Instruction: String Bass	X			
MU 272N	Applied Music Instruction: Viola	X			
MU 272O	Applied Music Instruction: Violin	X			
MU 272P	Applied Music Instruction: Violoncello	X			
Ensemble (See List on Concentration Requirements Tab)		X			1
PSY 100	General Psychology (GT-SS3)			3C	3
Advanced Writing				2	3
Elective					3-4
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 218	Music Theory IV	X			3
MU 228	Aural Skills IV	X			1
Select one course from the following:					1-2
MU 272M	Applied Music Instruction: String Bass	X			
MU 272N	Applied Music Instruction: Viola	X			
MU 272O	Applied Music Instruction: Violin	X			
MU 272P	Applied Music Instruction: Violoncello	X			
Ensemble (See List on Concentration Requirements Tab		X			1
Electives					8-9
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 254	Beginning Conducting				2
MU 317	Music Theory V	X			2
MU 334	Music History I	X		4A,4B	3
Select one course from the following:					2
MU 351A	String Pedagogy I: Violin/Viola.	X			
MU 351B	String Pedagogy I: Violoncello	X			

MU 351C	String Pedagogy I: String Bass	X			
MU 417	Counterpoint		X		3
Select one course from the following in your major instrument:					2
MU 472M	Applied Music Instruction: String Bass				
MU 472N	Applied Music Instruction: Viola				
MU 472O	Applied Music Instruction: Violin				
MU 472P	Applied Music Instruction: Violoncello				
Ensemble (See List on Concentration Requirements Tab)					1
PSY 100 must be completed by the end of Semester 5.		X			
	Total Credits				15

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 318	Arranging and Orchestration	X			2
MU 335	Music History II	X		4A,4B	3
Select one course from the following:					2
MU 352A	String Pedagogy II: Violin/Viola	X			
MU 352B	String Pedagogy II: Violoncello	X			
MU 352C	String Pedagogy II: String Bass	X			
Select one course from the following in your major instrument:					2
MU 472M	Applied Music Instruction: String Bass				
MU 472N	Applied Music Instruction: Viola				
MU 472O	Applied Music Instruction: Violin				
MU 472P	Applied Music Instruction: Violoncello				
Select one course from the following:					3
PSY 260	Child Psychology				
PSY 465	Adolescent Psychology				
Ensemble (See List on Concentration Requirements Tab)		X			1
Arts and Humanities				3B	3
	Total Credits				16

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					2
MU 451A	String Pedagogy III: Violin	X			
MU 451B	String Pedagogy III: Violoncello	X			
MU 451C	String Pedagogy III: String Bass	X			
Select one course from the following in your major instrument:					2
MU 472M	Applied Music Instruction: String Bass				
MU 472N	Applied Music Instruction: Viola				
MU 472O	Applied Music Instruction: Violin				
MU 472P	Applied Music Instruction: Violoncello				
Ensemble (See List on Concentration Requirements Tab)		X			1
Biological and Physical Sciences				3A	4
Music Elective					3
	Total Credits				12

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					2
MU 464A	String Literature: Violin/Viola	X			
MU 464B	String Literature: Violoncello	X			
MU 464C	String Literature: String Bass	X			
MU 471	Recital	X		4C	1
Select one course from the following in your major instrument:		X			2
MU 472M	Applied Music Instruction: String Bass				
MU 472N	Applied Music Instruction: Viola				

MU 472O	Applied Music Instruction: Violin			
MU 472P	Applied Music Instruction: Violoncello			
Ensemble (See List on Concentration Requirements Tab)		X		1
Biological and Physical Sciences		X	3A	3
Diversity and Global Awareness		X	3E	3
Elective		X		3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X		
	Total Credits			15
	Program Total Credits:			120

Major in Music (B.M.), Performance Concentration, Voice Option

Requirements
Effective Fall 2017

A minimum grade of C is required in all music courses used to satisfy the requirements of the BM in Music, Performance Concentration, Voice Option.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
MU 117	Music Theory I		3
MU 118	Music Theory II		3
MU 127	Aural Skills I		1
MU 128	Aural Skills II		1
MU 131	Introduction to Music History and Literature (GT-AH1)	3B	3
MU 150[1]	Piano Class I		1
MU 151B[1]	Piano Class II: Performance, Composition, and General Studies		1
MU 172A	Freshman Voice Studio: English/Italian		2
MU 172B	Freshman Voice Studio: German, French		2
MU *** Ensemble[2]			2
Biological and Physical Sciences		3A	4
Mathematics		1B	3
	Total Credits		29

Sophomore

LITA *** Foreign Language (Italian)			5
MU 217	Music Theory III		3
MU 218	Music Theory IV		3
MU 227	Aural Skills III		1
MU 228	Aural Skills IV		1
MU 272Q[3]	Applied Music Instruction: Voice		4
MU 365A	Advanced Diction: Italian and English		1
MU 365B	Advanced Diction: French and German		1
MU *** Ensemble[2]			2
PSY 100	General Psychology (GT-SS3)	3C	3
TH 352	Acting for Singers		2
Advanced Writing		2	3
	Total Credits		29

Junior

LFRE *** Foreign Language (French)			5
LGER *** Foreign Language (German)			5
MU 254	Beginning Conducting		2
MU 317	Music Theory V		2
MU 334	Music History I	4A,4B	3
MU 335	Music History II	4A,4B	3
MU 417	Counterpoint		3
MU 471	Recital		1
MU 472Q[3]	Applied Music Instruction: Voice		4
MU *** Ensemble[2]			2
Arts and Humanities		3B	3
	Total Credits		33

Senior

MU 338	Opera History and Literature		2
MU 466	Song Literature		2
MU 467	Vocal Pedagogy		2
MU 471	Recital	4C	1
MU 472Q[3]	Applied Music Instruction: Voice		4
MU *** Ensemble[2]			2
Music Electives			3
Biological and Physical Sciences		3A	3
Global and Cultural Awareness		3E	3
Historical Perspectives		3D	3
Electives[4]			4
	Total Credits		29
	Program Total Credits:		120

Ensemble Courses

Code	Title	Credits
MU 201	Men's Chorus	1
MU 202	University Chorus	1
MU 204	Marching Band	1
MU 205	Concert Band	1
MU 206	Colorado State University Concert Orchestra	1
MU 300	Women's Chorus	1
MU 302	University Orchestra	1
MU 304	Symphonic Band	1
MU 305	Colorado State University Concert Choir	1
MU 309	Jazz Ensemble	1
MU 310	Jazz Combo	1
MU 400	Colorado State University Chamber Choir	1
MU 401	Opera Theater	1-2
MU 402	Theater/Chamber Orchestra	1
MU 404	Symphonic Wind Ensemble	1
MU 407	Accompanying	1
MU 408	Chamber Music	1

1 Students with previous keyboard experience may test out of MU 150 and/or MU 151B and use the credit(s) for an elective.

2 Students must participate in an ensemble during each semester in which they are enrolled in MU 172A-MU 172B, MU 272Q, and MU 472Q. At least once during the program of study, this must be achieved by taking MU 408 or through another small ensemble experience. MU 401 must be taken prior to or concurrently with TH 352 in the Sophomore year.

3 Take two semesters each during the sophomore, junior, and senior years.

4 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program: A minimum grade of C is required in all music courses used to satisfy the requirements of the BM in Music, Performance Concentration, Voice Option.
To Declare this Major: Audition with department.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
CO 150	College Composition (GT-CO2)			1A	3
MU 117	Music Theory I	X			3
MU 127	Aural Skills I	X			1
MU 150	Piano Class I				1
MU 172A	Freshman Voice Studio: English/Italian	X			2
Ensemble (See List on Concentration Requirements Tab		X			1
Mathematics				1B	3
	Total Credits				14

Semester 2		Critical	Recommended	AUCC	Credits
MU 118	Music Theory II	X			3
MU 128	Aural Skills II	X			1
MU 131	Introduction to Music History and Literature (GT-AH1)	X		3B	3
MU 151B	Piano Class II: Performance, Composition, and General Studies	X			1
MU 172B	Freshman Voice Studio: German, French	X			2
Ensemble (See List on Concentration Requirements Tab)					1
Biological and Physical Sciences				3A	4
CO 150 and AUCC 1B (MATH) requirement must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		Critical	Recommended	AUCC	Credits
MU 217	Music Theory III	X			3
MU 227	Aural Skills III	X			1
MU 272Q	Applied Music Instruction: Voice	X			2
MU 365A	Advanced Diction: Italian and English	X			1
PSY 100	General Psychology (GT-SS3)			3C,3C	3
LITA*** Foreign Language: Italian					5
Ensemble (See List on Concentration Requirements Tab)		X			1
	Total Credits				16

Semester 4		Critical	Recommended	AUCC	Credits
MU 218	Music Theory IV	X			3
MU 228	Aural Skills IV	X			1
MU 272Q	Applied Music Instruction: Voice	X			2
MU 365B	Advanced Diction: French and German	X			1
TH 352	Acting for Singers				2
Ensemble (See List on Concentration Requirements Tab)		X			1
Advanced Writing				2	3
MU 401 must be taken under the Ensemble requirement by the end of semester 4 in order to register for TH 352.		X			
	Total Credits				13

Junior

Semester 5		Critical	Recommended	AUCC	Credits
MU 254	Beginning Conducting	X			2
MU 317	Music Theory V	X			2
MU 334	Music History I	X		4A,4B	3
MU 417	Counterpoint	X			3
MU 472Q	Applied Music Instruction: Voice	X			2
LFRE*** Foreign Language: French					5

Ensemble (See List on Concentration Requirements Tab)		X			1
	Total Credits				18
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 335	Music History II	X		4A,4B	3
MU 471	Recital	X			1
MU 472Q	Applied Music Instruction: Voice	X			2
LGER*** Foreign Language: German					5
Ensemble (See List on Concentration Requirements Tab)		X			1
Arts and Humanities				3B	3
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 467	Vocal Pedagogy	X			2
MU 472Q	Applied Music Instruction: Voice	X			2
Ensemble (See List on Concentration Requirements Tab)		X			1
Music Elective					3
Biological and Physical Sciences				3A	3
Historical Perspectives				3D	3
	Total Credits				14
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 338	Opera History and Literature	X			2
MU 466	Song Literature	X			2
MU 471	Recital	X		4C	1
MU 472Q	Applied Music Instruction: Voice	X			2
Ensemble (See List on Concentration Requirements Tab)		X			1
Global and Cultural Awareness		X		3E	3
Electives		X			4
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Music (B.A.)

The Bachelor of Arts (B.A.) in Music allows students to study music within a larger context of a liberal education. In comparison to the curriculum leading to the Bachelor of Music (B.M.), less emphasis is placed on studies specifically in music, with greater flexibility for studies in a field outside of music. In lieu of a larger number of credits in music as required for the B.M, the B.A. student completes a 21-credit option in an area outside of music. In addition, completion of a major paper or capstone recital (half recital) is required during the senior year.

A successful audition is required prior to entrance into the B.A. in Music.

Requirements

A minimum grade of C is required in all music courses used to satisfy the requirements of the major programs (B.A. and B.M.) in music.

Effective Fall 2017

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
MU 117	Music Theory I		3
MU 118	Music Theory II		3
MU 127	Aural Skills I		1
MU 128	Aural Skills II		1
MU 131	Introduction to Music History and Literature (GT-AH1)	3B	3
MU 150[1]	Piano Class I		1
MU 151B[1]	Piano Class II: Performance, Composition, and General Studies		1

Select one group from the following:[2]			2-4
Group A:			
MU 172A	Freshman Voice Studio: English/Italian		
MU 172B	Freshman Voice Studio: German, French		
Group B:			
Applied Music Instruction (see list below)[2]			
MU *** Ensemble (see list below)[3]			2
Mathematics		1B	3
Electives			5-7
	Total Credits		30

Sophomore

MU 217	Music Theory III		3
MU 218	Music Theory IV		3
MU 227	Aural Skills III		1
MU 228	Aural Skills IV		1
Applied Music Instruction (see list below)[2]			2
MU *** Ensemble (see list below)[3]			2
Advanced Writing		2	3
Arts and Humanities		3B	3
Foreign language			6
Second Field[4]			6
	Total Credits		30

Junior

MU 334	Music History I	4A,4B	3
MU 335	Music History II	4A,4B	3
MU XXX[5]			3
Biological and Physical Sciences		3A	3
Historical Perspectives		3D	3
Second Field[4]			6
Upper-Division Music Theory (see list below)			2-3
Electives			7-8
	Total Credits		31

Senior

Select one from the following:			1
MU 471	Recital	4C	
MU 499	Thesis	4C	
MU XXX[5]			6
Biological and Physical Sciences		3A	4
Global and Cultural Awareness		3E	3
Social and Behavioral Sciences		3C	3
Second Field[4]			9
Elective[6]			3
	Total Credits		29
	Program Total Credits:		120

Applied Music Instruction - Lower-Division

Code	Title	Credits
MU 272A	Applied Music Instruction: Euphonium	1-2
MU 272B	Applied Music Instruction: French Horn	1-2
MU 272C	Applied Music Instruction: Trombone	1-2
MU 272D	Applied Music Instruction: Trumpet	1-2
MU 272E	Applied Music Instruction: Tuba	1-2
MU 272G	Applied Music Instruction: Harpsichord	1-2

MU 272H	Applied Music Instruction: Organ	1-2
MU 272I	Applied Music Instruction: Piano	1-2
MU 272J	Applied Music Instruction: Percussion	1-2
MU 272K	Applied Music Instruction: Guitar	1-2
MU 272L	Applied Music Instruction: Harp	1-2
MU 272M	Applied Music Instruction: String Bass	1-2
MU 272N	Applied Music Instruction: Viola	1-2
MU 272O	Applied Music Instruction: Violin	1-2
MU 272P	Applied Music Instruction: Violoncello	1-2
MU 272Q	Applied Music Instruction: Voice	1-2
MU 272R	Applied Music Instruction: Bassoon	1-2
MU 272S	Applied Music Instruction: Clarinet	1-2
MU 272T	Applied Music Instruction: Flute	1-2
MU 272U	Applied Music Instruction: Oboe	1-2
MU 272V	Applied Music Instruction: Saxophone (Alto)	1-2

Ensemble Courses

Code	Title	Credits
MU 201	Men's Chorus	1
MU 202	University Chorus	1
MU 204	Marching Band	1
MU 205	Concert Band	1
MU 206	Colorado State University Concert Orchestra	1
MU 300	Women's Chorus	1
MU 302	University Orchestra	1
MU 304	Symphonic Band	1
MU 305	Colorado State University Concert Choir	1
MU 309	Jazz Ensemble	1
MU 310	Jazz Combo	1
MU 400	Colorado State University Chamber Choir	1
MU 401	Opera Theater	1-2
MU 402	Theater/Chamber Orchestra	1
MU 404	Symphonic Wind Ensemble	1
MU 407	Accompanying	1
MU 408	Chamber Music	1

Upper-Division Music Theory

Code	Title	Credits
MU 317	Music Theory V	2
MU 318	Arranging and Orchestration	2
MU 417	Counterpoint	3
MU 418	Advanced Orchestration	2
MU 419	Electronic Music Composition	2

1 Students with previous keyboard experience can test out of MU 150 and/or MU 151B and use the extra credit(s) toward electives.

2 First-year voice students must take MU 172A and MU 172B (total of four credits), and then take MU 272Q for one credit each semester of the second year (a total of two credits); instrumentalists take MU 272A-MU 272P or MU 272R-MU 272V on major instrument for one credit each semester of the first 2 years (total of four credits).

3 Students must participate in an ensemble during each semester in which they are enrolled in MU 172A, MU 172B, MU 272A-MU 272V, MU 472A-MU 472V. At least once during the program of study, this must be achieved by taking MU 408 or through another small ensemble experience.

4 A Second Field of study outside the field of music, including at least 12 upper-division (300- to 400-level) credits.

5 Excludes MU 472A-MU 472V; maximum 4 credits of ensemble.

6 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
To declare this major, must audition with department. A grade of C or better is required in all music courses used to satisfy major requirements.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
CO 150	College Composition (GT-CO2)		X	1A	3
MU 117	Music Theory I	X			3
MU 127	Aural Skills I	X			1
MU 150	Piano Class I	X			1
Select one course from the following:					1-2
MU 172A	Freshman Voice Studio: English/Italian	X			
MU 272* Applied Music Instruction		X			
Mathematics			X	1B	3
MU*** Ensemble (See List on Concentration Requirements Tab)		X			1
Elective					2-3
	Total Credits				16

Semester 2		Critical	Recommended	AUCC	Credits
MU 118	Music Theory II	X			3
MU 128	Aural Skills II	X			1
MU 131	Introduction to Music History and Literature (GT-AH1)	X		3B	3

MU 151B	Piano Class II: Performance, Composition, and General Studies	X			1
Select one course from the following:					1-2
MU 172B	Freshman Voice Studio: German, French	X			
MU 272*	Applied Music Instruction	X			
MU*** Ensemble (See List on Concentration Requirements Tab)					1
Electives					3-4
AUCC 1B (MATH) and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				14

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 217	Music Theory III	X			3
MU 227	Aural Skills III	X			1
Advanced Writing				2	3
L*** *** Foreign Language					3
MU 272* Applied Music Instruction		X			1
MU*** Ensemble (See List on Concentration Requirements Tab)		X			1
Second Field					3
	Total Credits				15

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 218	Music Theory IV	X			3
MU 228	Aural Skills IV	X			1
MU 272* Applied Music Instruction		X			1
MU*** Ensemble (See List on Concentration Requirements Tab)		X			1
L*** *** Foreign Language					3
Arts and Humanities				3B	3
Second Field					3
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 334	Music History I	X		4A,4B	3
Biological and Physical Sciences				3A	3
Second Field					3
Upper-Division Music Theory (See List on Concentration Requirements Tab)					3
Elective					3
	Total Credits				15

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
MU 335	Music History II	X		4A,4B	3
Historical Perspectives				3D	3
Music XXX					3
Second Field					3
Electives					4
MU 335 must be completed by the end of Semester 6.		X			
	Total Credits				16

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Music XXX					3
Biological and Physical Sciences				3A	4
Social and Behavioral Sciences				3C	3
Second Field					3
Elective					3
	Total Credits				16

Semester 8		Critical	Recommended	AUCC	Credits
Select one course from the following:					1
MU 471	Recital	X		4C	
MU 499	Thesis	X		4C	
Music XXX		X			3
Global and Cultural Awareness		X		3E	3
Second Field		X			6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				13
	Program Total Credits:				120

Minor in Music

A performance-based minor in Music enables a student to broaden career opportunities in disciplines outside of music, or to continue pursuing music studies within the structure of a minor program. The minor in Music requires a successful audition prior to entrance, and includes eight semesters of ensemble participation.

Requirements Effective Fall 2007

A successful audition is required for acceptance into this program.

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	AUCC	Credits
Lower Division			
MU 100	Music Appreciation (GT-AH1)	3B	3
MU 111	Music Theory Fundamentals (GT-AH1) [1]	3B	3
Select four semesters from the following:			4
MU 272A	Applied Music Instruction: Euphonium		
MU 272B	Applied Music Instruction: French Horn		
MU 272C	Applied Music Instruction: Trombone		
MU 272D	Applied Music Instruction: Trumpet		
MU 272E	Applied Music Instruction: Tuba		
MU 272G	Applied Music Instruction: Harpsichord		
MU 272H	Applied Music Instruction: Organ		
MU 272I	Applied Music Instruction: Piano		
MU 272J	Applied Music Instruction: Percussion		
MU 272K	Applied Music Instruction: Guitar		
MU 272L	Applied Music Instruction: Harp		
MU 272M	Applied Music Instruction: String Bass		
MU 272N	Applied Music Instruction: Viola		
MU 272O	Applied Music Instruction: Violin		
MU 272P	Applied Music Instruction: Violoncello		
MU 272Q	Applied Music Instruction: Voice		
MU 272R	Applied Music Instruction: Bassoon		
MU 272S	Applied Music Instruction: Clarinet		
MU 272T	Applied Music Instruction: Flute		

MU 272U	Applied Music Instruction: Oboe	
MU 272V	Applied Music Instruction: Saxophone (Alto)	
Upper Division		
MU ***	Music Ensembles (see list below)	8
MU ***	Music Electives	4
Program Total Credits:		22

Ensemble Courses

Code	Title	Credits
MU 201	Men's Chorus	1
MU 202	University Chorus	1
MU 204	Marching Band	1
MU 205	Concert Band	1
MU 206	Colorado State University Concert Orchestra	1
MU 300	Women's Chorus	1
MU 302	University Orchestra	1
MU 304	Symphonic Band	1
MU 305	Colorado State University Concert Choir	1
MU 309	Jazz Ensemble	1
MU 310	Jazz Combo	1
MU 400	Colorado State University Chamber Choir	1
MU 401	Opera Theater	1-2
MU 402	Theater/Chamber Orchestra	1
MU 404	Symphonic Wind Ensemble	1
MU 407	Accompanying	1
MU 408	Chamber Music	1

[1] Students may opt to test out of MU 111 by successfully passing a waiver examination. In this case, three additional MU elective credits must be taken.

Minor in Theatre-Acting/Directing

Please contact the School of Music, Theatre, and Dance for availability.

School of Music, Theatre, and Dance
University Center for the Arts (UCA)
Main Office, UCA 120
Email: MTDinfo@colostate.edu (mtdinfo@colostate.edu)
Phone: 970-491-5529

Minor in Theatre-Design/Technical Theatre

Please contact the School of Music, Theatre, and Dance for availability.

School of Music, Theatre, and Dance
University Center for the Arts (UCA)
Main Office, UCA 120
Email: MTDinfo@colostate.edu (mtdinfo@colostate.edu)
Phone: 970-491-5529

Requirements Effective Fall 2017

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
LOWER DIVISION		
TH 141	Introduction to Theatre (GT-AH1)	3
TH 160	Drawing for the Theatre	3
TH 161	Technical Theatre: Stagecraft	3
TH 263	Costume Design I	3
TH 265	Set Design I	3
UPPER DIVISION		
TH 242	Theatre History I	3
TH 243	Theatre History II	3
Select two courses from the following:		6
TH 361	Technical Theatre: Technical Direction	
TH 363	Costume Design II	
TH 365	Advanced Scenic Design	
Program Total Credits:		27

Master of Music, Choral Conducting Specialization

The program is committed to musical excellence with a curriculum designed to build a well-rounded conductor/teacher, using the musical and personal strengths of the graduate choral conducting student.

By the completion of the program, students will have developed advanced conducting and rehearsal techniques that are appropriate to a variety of musical genres. Students learn effective rehearsal techniques, score preparation, and become knowledgeable scholars of important choral scores representing repertoire of various music periods and secular and sacred styles.

The choral conducting specialization accepts a limited number of students who pursue a variety of professional goals, including public school music education and directors of church-based choral ensembles. Students who are full-time music educators at the middle/high school levels will be considered if they have three years prior teaching experience, and are presently conducting an ensemble(s). Students who are not public school educators must show a minimum of three years of full-time music/conducting employment, and be presently conducting a high school, religious or community ensemble. To develop the musicianship and skills that will be important for the student's future professional success, graduate courses are organized in the areas of

music literature and theory, the choral/vocal instrument, conducting, and teaching.

Requirements Effective Spring 2012

Code	Title	Credits
MU 517	Analytic Techniques I	2
MU 518	Analytic Techniques II	3
MU 555	Choral Techniques, Style, and Interpretation	3
MU 556	Advanced Instrumental Conducting and Techniques	3
MU 566	Choral Literature-Renaissance and Baroque	2
MU 567	Choral Literature-1750 to Present	2
MU 630	Methods of Music Research	3
MU 671	Graduate Recital	1
MU 696I	Group Study: Performance [1]	2
MU ***	Music History [1]	6
Electives [1,2]		5
Program Total Credits:		32

A minimum of 32 credits are required to complete this program.

1. Specific courses will be approved by the student's graduate committee. Students may be required to take additional course work as determined by diagnostic examinations and/or their graduate committee.
2. Students are encouraged to take a minimum of 2 credits in their applied area (MU 672A-V)

Master of Music, Collaborative Piano Specialization

Requirements Effective Spring 2012

Code	Title	Credits
MU 518	Analytic Techniques II [1]	3
MU 564	Collaborative Piano Literature [1]	3
MU 630	Methods of Music Research	3
MU 671	Graduate Recital [2]	1
MU 672I	Applied Music Instruction: Piano	12
MU 696I	Group Study: Performance [3]	2
MU ***	Music History [1]	3
Electives		5
Program Total Credits:		32

A minimum of 32 credits are required to complete this program.

1. Students may be advised or required to take additional course work as determined by diagnostic examinations and/or by the student's graduate committee.
2. Will include both collaborative and solo piano performance.
3. One semester each of chamber music ensemble and choral accompanying.

Master of Music, Instrumental Conducting Specialization

The program is committed to musical excellence with a curriculum designed to build a well-rounded conductor/teacher, using the musical and personal strengths of the graduate conducting student. The program offers two options: the M.M., Choral Conducting Specialization, and the M.M., Instrumental Conducting Specialization, both of which require a two-year residency.

By the completion of the program, students will have developed advanced, personal conducting skills and techniques that are appropriate to a variety of musical needs. The student will learn effective rehearsal techniques, score preparation, and become knowledgeable scholars of important instrumental and choral scores representing repertoire of various music periods and secular and sacred styles.

The conducting degrees accept a limited number of students who pursue a variety of professional goals, including education and directors of choral/instrumental ensembles. Students who are full-time music educators at the middle/high school levels will be considered if they have three years prior teaching experience, and are presently conducting an ensemble(s). Students who are not public school educators must show a minimum of three years of full-time music/conducting employment, and be presently conducting a high school, religious or community ensemble. To develop the musicianship and skills that will be important for the student's future professional success, graduate courses are organized in the areas of music literature and theory, the choral/vocal instrument, conducting, and teaching.

Requirements Effective Spring 2012

Code	Title	Credits
Select 10-13 credits from the following: [1]		10-13
MU 517	Analytic Techniques I	
MU 518	Analytic Techniques II	
MU 569	Symphonic Literature	
Music History		
Select 9 credits from the following: [1]		9
MU 521	Junior and Senior High School Music	
MU 556	Advanced Instrumental Conducting and Techniques	
MU 695B	Independent Study: Conducting	
MU 696B	Group Study: Conducting	
MU 630	Methods of Music Research	3
MU 671	Graduate Recital	1
Select 0-7 credits from the following: [1]		0-7
MU 672A	Applied Music Instruction: Euphonium	
MU 672B	Applied Music Instruction: French Horn	
MU 672C	Applied Music Instruction: Trombone	
MU 672D	Applied Music Instruction: Trumpet	
MU 672E	Applied Music Instruction: Tuba	
MU 672G	Applied Music Instruction: Harpsichord	
MU 672H	Applied Music Instruction: Organ	
MU 672I	Applied Music Instruction: Piano	
MU 672J	Applied Music Instruction: Percussion	

MU 672K	Applied Music Instruction: Guitar	
MU 672L	Applied Music Instruction: Harp	
MU 672M	Applied Music Instruction: String Bass	
MU 672N	Applied Music Instruction: Viola	
MU 672O	Applied Music Instruction: Violin	
MU 672P	Applied Music Instruction: Violoncello	
MU 672Q	Applied Music Instruction: Voice	
MU 672R	Applied Music Instruction: Bassoon	
MU 672S	Applied Music Instruction: Clarinet	
MU 672T	Applied Music Instruction: Flute	
MU 672U	Applied Music Instruction: Oboe	
MU 672V	Applied Music Instruction: Saxophone (Alto)	
MU 696I	Group Study: Performance [1]	0-2
Electives [1]		0-5
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

1 Specific courses will be approved by the student's graduate committee. Students may be required to take additional course work as determined by diagnostic examinations and/or their graduate committee.

Master of Music, Music Education Specialization

This program is designed for elementaryand secondary music teachers who already hold a K–12 state music-teaching license or the international equivalent. Specifically, this program is designed to inspire and develop the next generation of leaders in the field of music education by developing and applying scholarly research skills in the field of music education, the in-depth study of advanced pedagogical expertise, and the impact of contemporary learning theory on K–12 music education.

In this program, successful students will have the opportunity to gain content knowledge regarding the history and philosophy of music education, an understanding of how quantitative, qualitative, and historical music research is conducted, advanced skills in music analysis and interpretation, and a contemporary understanding of the pedagogy of music teaching and learning. Students will also have the opportunity to participate in CSU music ensembles to continue to develop as musical artists. Additionally, students are expected to be full-time students in residence and will likely be given the opportunity to teach or assist with undergraduate music education coursework depending upon level of expertise and program demands. The degree coursework is designed to be completed over a time span of two years, and includes both on-campus and online coursework. Students in this program are expected to be in residence full-time during the school year and are encouraged to take advantage of the diverse summer and/or online elective offerings.

Requirements Effective Spring 2012

Code	Title	Credits
MU 342	Psychology of Music	3
MU 510	Foundations of Music Education	3
MU 517	Analytic Techniques I [1]	2-3
or MU 518	Analytic Techniques II	
MU 520	Elementary School Music [1]	3
or MU 521	Junior and Senior High School Music	
MU 555	Choral Techniques, Style, and Interpretation [1]	3
or MU 556	Advanced Instrumental Conducting and Techniques	
MU 630	Methods of Music Research [1]	3
MU 696I	Group Study: Performance [1]	2
Music history [1]		3
Music literature [1]		2
Electives [2]		5-6
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

1 Specific courses will be approved by the candidate's graduate committee. Students may be required to take additional course work as determined by diagnostic examinations and/or their graduate committee.

2 Select enough elective credits to bring program total to a minimum of 30 credits.

Master of Music, Music Education—Composition Specialization

This new, multi-disciplinary degree is designed for students who hold either a bachelor's degree in music education or music composition. The purpose of the program is to produce professional composers and music educators that can create original compositions and arrangements that align with contemporary K–12 music curricula. Further, this program is intended to aid current educators in the incorporation of composition and related activities (such as improvisation and analysis) into their classrooms. Students will receive training in the areas of music education research and pedagogy, applied music composition, arranging/scoring for educational ensembles, and music composition, improvisation, and analysis as related to music education/pedagogy. This program intends to produce graduates that demonstrate competencies as professional composers and music educators related directly to work in the field of music composition for educational ensembles at the K–12 levels. Graduates will also demonstrate competencies in the application of music composition and related creative musical activities within K-12 music education curricula.

Requirements Effective Fall 2017

First Year		Credits
MU 510	Foundations of Music Education	3
MU 511	Advanced Arranging for Educational Ensembles	3
MU 518	Analytic Techniques II	3
MU 630	Methods of Music Research	3
MU 673[1]	Composition Instruction	4
	Total Credits	16

Second Year		
MU 512	Pedagogy of Musical Creativity	3
MU 673	Composition Instruction	2
MU 699	Thesis	2
Select one course from the following:		3
MU 520	Elementary School Music	
MU 521	Junior and Senior High School Music	
Select one course from the following:		3
MU 531	Music of the Renaissance	
MU 532	Music of the Baroque	
MU 533	Music of the Classical Era	
MU 534	Music of the Romantic Era	
MU 535	Music of the Twentieth Century	
Select one course from the following:		3
MU 555	Choral Techniques, Style, and Interpretation	
MU 556	Advanced Instrumental Conducting and Techniques	
	Total Credits	16
	Program Total Credits:	32

A minimum of 32 credits are required to complete this program.

[1] Select 2 credits each semester during the first year.

Master of Music, Music Education—Conducting Specialization

Requirements
Effective Summer 2011

Code	Title	Credits
MU 510	Foundations of Music Education	3
MU 518	Analytic Techniques II	3
MU 527A	Conducting Seminar: Level I	4
MU 527B	Conducting Seminar: Level 2	4
MU 527C	Conducting Seminar: Level 3	4
MU 534	Music of the Romantic Era	3
MU 630	Methods of Music Research	3
MU 695B	Independent Study: Conducting	2
Electives		3
MU 671	Graduate Recital	1
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

Master of Music, Music Education—Kodaly Emphasis Option

Requirements
Effective Fall 2011

Code	Title	Credits
MU 510	Foundations of Music Education	3
MU 518	Analytic Techniques II [1]	3
MU 526A	Kodaly Training Program: Level I	5
MU 526B	Kodaly Training Program: Level II	5
MU 526C	Kodaly Training Program: Level III	5
MU 630	Methods of Music Research [1]	3
Music History [1]		3
Electives [2]		3
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

[1] Specific courses will be approved by the student's graduate committee. Students may be required to take additional course work as determined by diagnostic examinations and/or by their graduate committee.

[2] Electives must be approved in advance by the student's graduate committee. Workshops will not count as elective credits toward the degree program.

Master of Music, Performance Option

The Master of Music, Performance Option provides students with a comprehensive approach to the study and performance of a diverse array of literature appropriate to the student's area of specialization. The curriculum is designed to develop breadth of competence in musicianship, history and repertory, technical proficiency, pedagogy as well as areas of study specific to the student's specialization. Regardless of degree concentration, graduate students are expected to display a high level of competence on their instrument, attained through rigorous applied study and ensemble participation. Graduates of the program have established careers as performers in professional large and chamber ensembles, university and college professors, entrepreneurs, and private music teachers, or have continued on to doctoral study at outstanding institutions throughout the United States.

Requirements
Effective Fall 2005

Code	Title	Credits
MU 518	Analytic Techniques II	3
MU 630	Methods of Music Research	3
MU 671	Graduate Recital	1
Select 12 credits from the following: [1,2]		12
MU 672A	Applied Music Instruction: Euphonium	
MU 672B	Applied Music Instruction: French Horn	
MU 672C	Applied Music Instruction: Trombone	
MU 672D	Applied Music Instruction: Trumpet	
MU 672E	Applied Music Instruction: Tuba	

MU 672G	Applied Music Instruction: Harpsichord	
MU 672H	Applied Music Instruction: Organ	
MU 672I	Applied Music Instruction: Piano	
MU 672J	Applied Music Instruction: Percussion	
MU 672K	Applied Music Instruction: Guitar	
MU 672L	Applied Music Instruction: Harp	
MU 672M	Applied Music Instruction: String Bass	
MU 672N	Applied Music Instruction: Viola	
MU 672O	Applied Music Instruction: Violin	
MU 672P	Applied Music Instruction: Violoncello	
MU 672Q	Applied Music Instruction: Voice	
MU 672R	Applied Music Instruction: Bassoon	
MU 672S	Applied Music Instruction: Clarinet	
MU 672T	Applied Music Instruction: Flute	
MU 672U	Applied Music Instruction: Oboe	
MU 672V	Applied Music Instruction: Saxophone (Alto)	
MU 696I	Group Study: Performance	2
MU ***	Music History [1]	3
MU ***	Music Literature [1,3]	2
Electives [1]		6
Program Total Credits:		32

A minimum of 32 credits are required to complete this program.

1. Select course(s) with approval of advisor and graduate committee.
2. Majors in vocal performance are required to be proficient in Italian, German, and French singing diction as well as the use of International Phonetic Alphabet upon entering the program, or to take the appropriate coursework to make up deficiency as soon as possible. In addition, they should have academic proficiency in two of the following languages other than English: French, Italian, and German. The level of proficiency for each language must be equal to a grade of "B" or better.
3. Music literature course(s) will be in the student's major instrument or voice. Course requirements include a paper, copies of which will be distributed to the graduate committee as a sample of the student's scholarship.

Master of Music, Plan A, Music Therapy Specialization

The degree is intended to provide Board Certified music therapists with advanced training in clinical skills and research. Our curriculum specializes in neuroscience and evidence-based music therapy to improve sensorimotor, speech and language and cognitive function in children and adults who have disabilities. Specifically, the study of music therapy is designed to prepare music therapists for advanced clinical work in music therapy, as music therapy supervisors and administrators and for teaching positions at the college or university level.

Two master's curriculum tracks are offered: the first is a thesis program of 30 credit hours designed to provide students with the opportunity to complete a substantial research project. The second track is a 32-hour program that requires, in lieu of a thesis, additional course work in music therapy, a final project, and a common final exam. Either program prepares the student to pursue doctoral study. Our academic curricula meet the standards of the American Music Therapy Association and the National Association of Schools of Music. Applicants are expected to be Board-Certified Music Therapists (or eligible to sit for the exam) and demonstrate excellent musicianship and interpersonal skills.

The Master of Music, Music Therapy Specialization is offered on-campus or online.

Requirements
Effective Spring 2016

Code	Title	Credits
MU 543	Advanced Research Methods in Music Therapy	3
MU 545	Composition for Music Therapy Practitioners	3
MU 648	Neuroscience/Music Foundations in Therapy	3
MU 686	Music Therapy Practicum	3
BMS/EDCO/EDRM/PSY/NB Electives [1]		9
Music Electives [1]		6
MU 699	Thesis	3
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

1. Specific courses will be approved by the student's graduate committee. Students may be required to take additional course work as determined by diagnostic examinations and/or their graduate committee.

Master of Music, Plan B, Music Therapy Specialization

The degree is intended to provide Board Certified music therapists with advanced training in clinical skills and research. Our curriculum specializes in neuroscience and evidence-based music therapy to improve sensorimotor, speech and language and cognitive function in children and adults who have disabilities. Specifically, the study of music therapy is designed to prepare music therapists for advanced clinical work in music therapy, as music therapy supervisors and administrators and for teaching positions at the college or university level.

Two master's curriculum tracks are offered: the first is a thesis program of 30 credit hours designed to provide students with the opportunity to complete a substantial research project. The second track is a 32-hour program that requires, in lieu of a thesis, additional course work in music therapy, a final project, and a common final exam. Either program prepares the student to pursue doctoral study. Our academic curricula meet the standards of the American Music Therapy Association and the National Association of Schools of Music. Applicants are expected to be Board-Certified Music Therapists (or eligible to sit for the exam) and demonstrate excellent musicianship and interpersonal skills.

The Master of Music, Music Therapy Specialization is offered on-campus or online.

Requirements Effective Spring 2016

Code	Title	Credits
MU 543	Advanced Research Methods in Music Therapy	3
MU 545	Composition for Music Therapy Practitioners	3
MU 648	Neuroscience/Music Foundations in Therapy	3
MU 686	Music Therapy Practicum	3
MU 695G	Independent Study: Music Therapy	3
BMS/EDCO/EDRM/PSY/NB Electives [1]		11
Music Electives [1]		6
Program Total Credits:		32

A minimum of 32 credits are required to complete this program.

[1] Specific courses will be approved by the student's graduate committee. Students may be required to take additional course work as determined by diagnostic examination and/or their graduate committee.

Major in Theatre

Office in University Center for the Arts, Room 120
(970) 491-5529
theatre.colostate.edu (http://theatre.colostate.edu)

Professor Price Johnston, Director

During their first two years in the 120-credit Bachelor of Arts (B.A.) in Theatre, theatre students enroll in a core of courses that provide a solid foundation as they pursue excellence in their discipline. Upon admission to CSU and the declaration of theatre as their major, students are directed into one of three concentrations: Performance, Design and Technology, and General Theatre. No matter which concentration is selected, students are equally prepared for graduate school or potential entry-level positions in the theatrical professions or creative industries.

Comprehensive training, both on and off stage, occurs in the classroom, in rehearsal studios, as well as during theatrical productions, produced by a company of student actors, directors, designers, and technicians. Each season includes classics, contemporary plays, and musicals.

Striving to always maintain the quality of a regional theatre, four main-stage productions — including one musical — are annually produced in the University Theatre (a 300-seat thrust theatre) and the Studio Theatre (a flexible black box seating 100), two opera-theatre productions in the 550-seat Griffin Concert Hall, and four dance concerts in the 200-seat University Dance Theatre round out the production schedule.

Concentrations

- Design and Technology Concentration
- General Theatre Concentration
- Performance Concentration

Major in Theatre, Design and Technology Concentration

Students entering the Design and Technology Concentration are exposed to multiple disciplines and design areas within the performing arts, including scenic design and stage management, and courses chosen from theatrical construction, lighting design and electrics, digital media design, and costume design and construction. This program is geared towards creative and imaginative, open-minded individuals with a drive for excellence.

Students in this concentration explore creative concepts on a theoretical level in the classroom and studio, while reinforcing their training through practical application in main-stage productions of music, theatre, and dance. In addition to coursework, as they travel through the program, students take on roles as production technicians and assistants, stepping into leadership roles as designers or production stage managers. This fully collaborative and interdisciplinary program supports pre-professional development.

Design and Technology students have a multitude of facilities available for their use, including a design lab with 28 drafting and rendering stations, CAD Lab with 22 student workstations, scene shop, paint shop, costume shop, sound/video editing lab, lighting lab, and acting labs. Professional-quality venues include the University Theatre, the Studio Theatre, the University Dance Theatre, Organ Recital Hall, and Griffin Concert Hall.

Requirements Effective Fall 2016

Freshman

		AUCC	Credits
Select one course from the following:			3
ART 100	Introduction to the Visual Arts (GT-AH1)	3B	
D 110	Understanding Dance (GT-AH1)	3B	
MU 100	Music Appreciation (GT-AH1)	3B	
CO 150	College Composition (GT-CO2)	1A	3
TH 150	Introduction to Performance		3
TH 160	Drawing for the Theatre		3
TH 161	Technical Theatre: Stagecraft		3
TH 186	Theatre Practicum I		1
TH 192	Theatre Freshman Seminar		3

Quantitative Reasoning		1B	3
Electives			9
	Total Credits		31

Sophomore

Select one course from the following:			3
ART 100	Introduction to the Visual Arts (GT-AH1)	3B	
D 110	Understanding Dance (GT-AH1)	3B	
MU 100	Music Appreciation (GT-AH1)	3B	
TH 241	Text Analysis for the Theatre		3
TH 242	Theatre History I		3
TH 243	Theatre History II		3
TH 260	Computer Assisted Drafting for Theatre		3
Select one course from the following:			3
TH 262	Stage Management I		
TH 263	Costume Design I		
TH 264	Lighting Design for the Theatre I		
TH 265	Set Design I		
TH 266	Digital Media Design for Live Performance I		
TH 286	Theatre Practicum II		1
TH 292[1]	Design and Technology Seminar		2
Biological and Physical Sciences		3A	3
Historical Perspectives		3D	3
Elective			3
	Total Credits		30

Junior

CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)	2	3
Select one course from the following:			3
TH 362	Stage Management II	4A	
TH 363	Costume Design II	4A	
TH 364	Lighting Design for the Theatre II	4A	
TH 365	Advanced Scenic Design	4A	
TH 366	Digital Media Design for Live Performance II	4A	
TH 386	Theatre Practicum III		1
TH 400[2]	Theatre Production Workshop		1
Select one course from the following:			3
TH 262	Stage Management I		
TH 263	Costume Design I		
TH 264	Lighting Design for the Theatre I		
TH 265	Set Design I		
TH 266	Digital Media Design for Live Performance I		
TH *** Upper-Division TH Elective			3
Biological and Physical Sciences		3A	4
Diversity and Global Awareness		3E	3
Elective			7
	Total Credits		28

Senior

TH 370A	Theatre Assistant: Design		3
TH 400[2]	Theatre Production Workshop		2
TH 401	Theatrical Design and Prod Advanced Topics		3

Select one course from the following:		3
TH 460	Design Portfolio and Professional Preparation	4B,4C
TH 471	Capstone in Theatre Practice	4B,4C
TH 486	Theatre Practicum IV	2
Social and Behavioral Sciences		3C 3
Electives[3]		15
	Total Credits	31
	Program Total Credits:	120

[1] TH 292 should be taken for 1 credit, two semesters total.

[2] TH 400 should be taken 3 times, 1 credit each semester taken.

[3] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)	X		1A	3
TH 150	Introduction to Performance	X			3
TH 192	Theatre Freshman Seminar				3
Electives					6
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
TH 160	Drawing for the Theatre	X			3
TH 161	Technical Theatre: Stagecraft	X			3
TH 186	Theatre Practicum I				1
Select one course from the following:					3
ART 100	Introduction to the Visual Arts (GT-AH1)			3B	
D 110	Understanding Dance (GT-AH1)			3B	
MU 100	Music Appreciation (GT-AH1)			3B	
Quantitative Reasoning		X		1B	3
Elective					3
CO 150 and AUCC 1B (Quantitative Reasoning) must be completed by the end of Semester 2.		X			
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
TH 241	Text Analysis for the Theatre	X			3
TH 242	Theatre History I	X			3
TH 260	Computer Assisted Drafting for Theatre	X			3
TH 292	Design and Technology Seminar				1
Select one course from the following:					3
ART 100	Introduction to the Visual Arts (GT-AH1)			3B	
D 110	Understanding Dance (GT-AH1)			3B	
MU 100	Music Appreciation (GT-AH1)			3B	
Biological and Physical Sciences				3A	3
TH 186 must be completed by the end of Semester 3.		X			
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
TH 243	Theatre History II	X			3
TH 286	Theatre Practicum II	X			1
TH 292	Design and Technology Seminar				1

Select one course from the following:					3
TH 262	Stage Management I				
TH 263	Costume Design I				
TH 264	Lighting Design for the Theatre I				
TH 265	Set Design I				
TH 266	Digital Media Design for Live Performance I				
Historical Perspectives				3D	3
Elective					3
	Total Credits				14

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)	X		2	3
Select one course from the following:					3
TH 262	Stage Management I				
TH 263	Costume Design I				
TH 264	Lighting Design for the Theatre I				
TH 265	Set Design I				
TH 266	Digital Media Design for Live Performance I				
TH 386	Theatre Practicum III	X			1
Diversity and Global Awareness				3E	3
Upper-Division Theatre Elective					3
	Total Credits				13

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
TH 400	Theatre Production Workshop				1
Select one course from the following:		X		4A	3
TH 362	Stage Management II			4A	
TH 363	Costume Design II			4A	
TH 364	Lighting Design for the Theatre II			4A	
TH 365	Advanced Scenic Design			4A	
TH 366	Digital Media Design for Live Performance II			4A	
Biological and Physical Sciences				3A	4
Electives					7
	Total Credits				15

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
TH 370A	Theatre Assistant: Design				3
TH 400	Theatre Production Workshop				1
TH 401	Theatrical Design and Prod Advanced Topics	X			3
Social and Behavioral Sciences				3C	3
Electives					6
Upper-Division Theatre Design and Production Electives (6 credits) must be completed by the end of Semester 7.		X			
	Total Credits				16

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
TH 400	Theatre Production Workshop	X			1
Select one course from the following:		X		4B,4C	3
TH 460	Design Portfolio and Professional Preparation			4B,4C	
TH 471	Capstone in Theatre Practice			4B,4C	
TH 486	Theatre Practicum IV	X			2
Electives		X			9

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X	
	Total Credits	15
	Program Total Credits:	120

Major in Theatre, General Theatre Concentration

Requirements
Effective Fall 2016

Freshman

		AUCC	Credits
Select two courses from the following:			6
ART 100	Introduction to the Visual Arts (GT-AH1)	3B	
D 110	Understanding Dance (GT-AH1)	3B	
MU 100	Music Appreciation (GT-AH1)	3B	
CO 150	College Composition (GT-CO2)	1A	3
TH 150	Introduction to Performance		3
TH 160	Drawing for the Theatre		3
TH 161	Technical Theatre: Stagecraft		3
TH 186	Theatre Practicum I		1
TH 192	Theatre Freshman Seminar		3
Biological and Physical Sciences		3A	3
Quantitative Reasoning		1B	3
Elective			3
	Total Credits		31

Sophomore

TH 151	Acting I		3
TH 241	Text Analysis for the Theatre		3
TH 242	Theatre History I		3
TH 255	Directing Workshop		3
TH 260	Computer Assisted Drafting for Theatre		3
Select one course from the following:			3
TH 262	Stage Management I		
TH 263	Costume Design I		
TH 264	Lighting Design for the Theatre I		
TH 265	Set Design I		
TH 266	Digital Media Design for Live Performance I		
TH 286	Theatre Practicum II		1
Advanced Writing		2	3
Biological and Physical Sciences		3A	4
Diversity and Global Awareness		3E	3
Social and Behavioral Sciences		3C	3
	Total Credits		32

Junior

TH 243	Theatre History II		3
Select one course from the following:[1]			3
TH 355	Directing Seminar	4A	

TH 375	Playwright's Workshop	4A	
Select one course from the following not already taken:[1]			3
TH 251	Acting II		
TH 344	Dramaturgy Protocol Seminar		
TH 355	Directing Seminar	4A	
TH 375	Playwright's Workshop	4A	
TH 386	Theatre Practicum III		1
TH 400[2]	Theatre Production Workshop		2
Historical Perspectives		3D	3
Electives			15
	Total Credits		30

Senior

TH 400[2]	Theatre Production Workshop		1
Select one course from the following:			3
TH 450	Professional Actor Preparation	4B	
TH 460	Design Portfolio and Professional Preparation	4B	
TH 471	Capstone in Theatre Practice	4C	3
Select one course from the following:			3
TH 401	Theatrical Design and Prod Advanced Topics		
TH 451	Advanced Topics in Acting		
Electives[3]			17
	Total Credits		27
	Program Total Credits:		120

1 Depending on which course is selected, additional coursework may be required due to prerequisites.

2 TH 400 should be taken 3 times for 1 credit each.

3 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
ART 100	Introduction to the Visual Arts (GT-AH1)			3B	
D 110	Understanding Dance (GT-AH1)			3B	
MU 100	Music Appreciation (GT-AH1)			3B	
TH 150	Introduction to Performance	X			3
TH 161	Technical Theatre: Stagecraft	X			3
TH 186	Theatre Practicum I	X			1
TH 192	Theatre Freshman Seminar	X			3
Elective					3
	Total Credits				16

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
ART 100	Introduction to the Visual Arts (GT-AH1)			3B	
D 110	Understanding Dance (GT-AH1)			3B	
MU 100	Music Appreciation (GT-AH1)			3B	
CO 150	College Composition (GT-CO2)	X		1A	3
TH 160	Drawing for the Theatre				3
Quantitative Reasoning		X		1B	3

Biological and Physical Sciences				3A	3
	Total Credits				15
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
TH 151	Acting I	X			3
TH 241	Text Analysis for the Theatre	X			3
TH 242	Theatre History I	X			3
Diversity and Global Awareness				3E	3
Social and Behavioral Sciences				3c	3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
TH 255	Directing Workshop				3
TH 260	Computer Assisted Drafting for Theatre				3
Select one course from the following:					3
TH 262	Stage Management I				
TH 263	Costume Design I				
TH 264	Lighting Design for the Theatre I				
TH 265	Set Design I				
TH 266	Digital Media Design for Live Performance I				
TH 286	Theatre Practicum II	X			1
Advanced Writing				2	3
Biological and Physical Sciences				3A	4
	Total Credits				17
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
TH 243	Theatre History II				3
Select one course from the following:					3
TH 355	Directing Seminar			4A	
TH 375	Playwright's Workshop			4A	
TH 400	Theatre Production Workshop				1
Historical Perspectives				3D	3
Upper-Division Electives					6
AUCC 2 (ADVANCED WRITING) must be completed by the end of Semester 5.					
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
TH 251	Acting II				
TH 344	Dramaturgy Protocol Seminar				
TH 355	Directing Seminar			4A	
TH 375	Playwright's Workshop			4A	
TH 386	Theatre Practicum III				1
TH 400	Theatre Production Workshop				1
Upper-Division Elective					3
Electives					6
	Total Credits				14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
TH 450	Professional Actor Preparation			4B	
TH 460	Design Portfolio and Professional Preparation			4B	
TH 471	Capstone in Theatre Practice			4C	3
Upper-Division Electives					5

Elective					3
TH 386 and six (6) credits Upper-Division Theatre Design and Production Electives must be completed by the end of Semester 7.		X			
	Total Credits				14
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
TH 400	Theatre Production Workshop	X			1
Select one course from the following:		X			3
TH 401	Theatrical Design and Prod Advanced Topics				
TH 451	Advanced Topics in Acting				
Upper-Division Electives		X			9
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				13
	Program Total Credits:				120

Major in Theatre, Performance Concentration

Students entering the Performance Concentration will have the ability, aptitude, and stamina to pursue a program of study intended to provide rigorous training as a theatrical performing artist within the context of a liberal arts education. Either as an actor or a creative collaborator with strong interpersonal communication and group problem-solving skills, the concentration provides a path for success in the public and private sectors of the creative industries. This course of study provides student actors with a technical foundation and a variety of approaches to the acting process from which they may glean their own approach to character building.

The concentration emphasizes both theoretical and practical aspects of theatre, both as an art form and as a commercial industry, and focuses on developing well-rounded, responsible theatre artists who value ensemble and collaboration within an artistic community.

Requirements Effective Fall 2016

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
Select two courses from the following:			6
ART 100	Introduction to the Visual Arts (GT-AH1)	3B	
D 110	Understanding Dance (GT-AH1)	3B	
MU 100	Music Appreciation (GT-AH1)	3B	
TH 150	Introduction to Performance		3
TH 151	Acting I		3
TH 161	Technical Theatre: Stagecraft		3
TH 186	Theatre Practicum I		1
TH 192	Theatre Freshman Seminar		3
Quantitative Reasoning		1B	3
Electives			6
	Total Credits		31

Sophomore

CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)	2	3
TH 241	Text Analysis for the Theatre		3
TH 242	Theatre History I		3
TH 243	Theatre History II		3
TH 250	Voice and Movement for the Stage		3
TH 251	Acting II		3
TH 286	Theatre Practicum II		1
TH 255	Directing Workshop		3
Biological and Physical Sciences		3A	7

Elective			3
	Total Credits		32
Junior			
TH 350	Classical Text		3
Select one course from the following:[1]			3
TH 344	Dramaturgy Protocol Seminar		
TH 375	Playwright's Workshop	4A	
Select one course from the following:			3
TH 351	Acting III	4A	
TH 355	Directing Seminar	4A	
TH 386	Theatre Practicum III		1
TH 400[2]	Theatre Production Workshop		1
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Elective			12
	Total Credits		29
Senior			
TH 400[2]	Theatre Production Workshop		2
TH 450[1]	Professional Actor Preparation	4B	3
TH 451[1]	Advanced Topics in Acting		3
TH 471	Capstone in Theatre Practice	4C	3
Social and Behavioral Sciences		3C	3
Electives[3]			14
	Total Credits		28
	Program Total Credits:		120

1 Additional coursework may be required due to prerequisite.

2 TH 400 should be taken 3 times, 1 credit each course taken.

3 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)	X		1A	3
TH 150	Introduction to Performance	X			3
TH 186	Theatre Practicum I	X			1
TH 192	Theatre Freshman Seminar	X			3
Select one course from the following:					3
ART 100	Introduction to the Visual Arts (GT-AH1)			3B	
D 110	Understanding Dance (GT-AH1)			3B	
MU 100	Music Appreciation (GT-AH1)			3B	
Elective					3
	Total Credits				16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
TH 151	Acting I	X			3
TH 161	Technical Theatre: Stagecraft	X			3
Select one course from the following:					3
ART 100	Introduction to the Visual Arts (GT-AH1)			3B	
D 110	Understanding Dance (GT-AH1)			3B	

MU 100	Music Appreciation (GT-AH1)			3B	
Quantitative Reasoning			X	1B	3
Elective					3
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)			2	3
TH 241	Text Analysis for the Theatre		X		3
TH 242	Theatre History I		X		3
TH 251	Acting II		X		3
Biological and Physical Sciences				3A	4
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
TH 243	Theatre History II		X		3
TH 250	Voice and Movement for the Stage				3
TH 255	Directing Workshop				3
TH 286	Theatre Practicum II		X		1
Biological and Physical Sciences				3A	3
Elective					3
	Total Credits				16

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
TH 386	Theatre Practicum III				1
Select one course from the following:			X		3
TH 344	Dramaturgy Protocol Seminar				
TH 375	Playwright's Workshop			4A	
Diversity and Global Awareness				3E	3
Historical Perspectives				3D	3
Electives					6
CO 301A must be completed by the end of Semester 5.					
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
TH 350	Classical Text				3
TH 400	Theatre Production Workshop				1
Select one course from the following:			X		3
TH 351	Acting III			4A	
TH 355	Directing Seminar			4A	
Upper-Division Electives					6
	Total Credits				13

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
TH 400	Theatre Production Workshop				1
TH 450	Professional Actor Preparation		X	4B	3
Social and Behavioral Sciences				3C	3
Electives					8
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
TH 400	Theatre Production Workshop		X		1
TH 451	Advanced Topics in Acting		X		3
TH 471	Capstone in Theatre Practice		X	4C	3
Electives			X		6

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X	
	Total Credits	13
	Program Total Credits:	120

Department of Philosophy

Office in Eddy Hall, Room 243
(970) 491-6315

philosophy.colostate.edu (http://philosophy.colostate.edu)

Professor Matthew MacKenzie, Chair
Associate Professor Jeffrey Kasser, Undergraduate Coordinator
Professors Katie McShane (FA19) & Kenneth Shockley (SP20), Graduate Coordinator

Undergraduate Majors

- Major in Philosophy
  - General Philosophy Concentration
  - Global Philosophies and Religions Concentration
  - Philosophy, Science, and Technology Concentration

Minor

A minor in Philosophy is intended to broaden students' education and to complement and encourage critical and constructive reflection in other courses.

- Minor in Philosophy

Undergraduate Certificates

- Certificate in Ethics and Society
- Certificate in World Philosophies and Religions

Graduate Graduate Programs in Philosophy

The Department of Philosophy offers courses of study that lead to a Master of Arts degree in Philosophy. Master's students can specialize in applied ethics, particularly animal welfare and environmental ethics; comparative philosophy; ethical theory; history of modern philosophy; metaphysics; aesthetics; or epistemology. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Philosophy. (http://philosophy.colostate.edu)

Master's Programs

- Master of Arts in Philosophy, Plan A
- Master of Arts in Philosophy, Plan B

Courses Philosophy (PHIL)

PHIL 100 Appreciation of Philosophy (GT-AH3) Credits: 3 (3-0-0)
Course Description: Basic issues in philosophy including theories of knowledge, metaphysics, ethics, and aesthetics.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Ways of Thinking (GT-AH3).

PHIL 103 Moral and Social Problems (GT-AH3) Credits: 3 (3-0-0)
Course Description: Contemporary ethical issues in the United States, such as abortion, euthanasia, and genetic engineering.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Ways of Thinking (GT-AH3).

PHIL 104 Values, Culture, and Food Animal Agriculture Credits: 3 (3-0-0)
Also Offered As: ANEQ 104.
Course Description: Evolution of the social values and cultural understandings shaping modern animal agriculture; current problems in animal agriculture.
Prerequisite: None.
Registration Information: Non-Animal Science majors with freshman or sophomore standing. Credit not allowed for both PHIL 104 and ANEQ 104.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 110 Logic and Critical Thinking (GT-AH3) Credits: 3 (3-0-0)
Course Description: Identify, analyze, and evaluate real arguments in everyday life, politics, the sciences, and the professions.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Ways of Thinking (GT-AH3).

PHIL 112 Reasoning and Problem Solving Credits: 3 (3-0-0)
Course Description: Creative and critical techniques in problem solving and decision making.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 120 History and Philosophy of Scientific Thought (GT-AH3) Credits: 3 (3-0-0)
Course Description: Historical case studies designed to illuminate methods, theory choice, and progress in scientific disciplines.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Ways of Thinking (GT-AH3).

PHIL 130 Bioethics and Society Credits: 2 (2-0-0)
Course Description: Major issues in bioethics.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 145 Environmental Justice and Sustainability Credits: 3 (3-0-0)
Course Description: Introductory philosophical examination of the idea of fairness through an exploration of environmental justice and sustainability.
Prerequisite: None.
Registration Information: Credit not allowed for both PHIL 145 and PHIL 180A1.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 170 World Philosophies (GT-AH3) Credits: 3 (3-0-0)
Course Description: Survey of world philosophical traditions.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Ways of Thinking (GT-AH3).

PHIL 171 Religions of the West Credits: 3 (3-0-0)
Course Description: Major religions of the Near East and West emphasizing their classical development; Judaism, Zoroastrianism, Christianity, Islam.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 172 Religions of the East Credits: 3 (3-0-0)
Course Description: Major religions of India and the Far East emphasizing their classical development; Hinduism, Buddhism, Confucianism, Taoism.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 173 Philosophy of Traditional Judaism Credits: 3 (3-0-0)
Course Description: Concepts and essentials of Jewish philosophy and Judaism, including overview of Jewish lifecycle, history, law, literature, ethics, and mysticism.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 174 World Religions Credits: 3 (3-0-0)
Course Description: Philosophical survey of several major world religions in terms of their historical development, worldviews, and practices.
Prerequisite: None.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 205 Introduction to Ethics Credits: 3 (3-0-0)
Course Description: Problems and theories concerning values and standards, right action, and the good life.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 206 Knowledge and Existence-An Introduction Credits: 3 (3-0-0)
Course Description: Problems and theories concerning knowledge, being, nature of the world.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 210 Introduction to Formal Logic Credits: 3 (3-0-0)
Course Description: Elementary principles, techniques in propositional and predicate logic.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 240 Philosophies of Peace and Nonviolence Credits: 3 (3-0-0)
Course Description: Classic and contemporary religious and philosophical work on peace and nonviolence.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 270 Issues in the Study of Religion Credits: 3 (3-0-0)
Course Description: Contemporary religion, its nature, types, forms of expression.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 295 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 297 Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 300 Ancient Greek Philosophy Credits: 3 (3-0-0)
Course Description: Philosophy of ancient Greece emphasizing Plato and Aristotle.
Prerequisite: PHIL 205 or PHIL 206 or PHIL 210.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 301 17th and 18th Century European Philosophy Credits: 3 (3-0-0)
Course Description: Philosophy from the scientific revolution through Kant.
Prerequisite: PHIL 206 or PHIL 210 or PHIL 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 302 19th Century Philosophy Credits: 3 (3-0-0)
Course Description: Major figures, movements, concepts in Europe and America from about 1800 to early 20th century.
Prerequisite: PHIL 301.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 303 Medieval Philosophy Credits: 3 (3-0-0)
Course Description: In the Medieval period, philosophers in the Pagan, Jewish, Christian, and Islamic traditions simultaneously influenced and opposed one another. Focus on the important debates in these traditions and determine to what extent the cross-cultural philosophical dialogues of the Medieval period can serve as models for cross-cultural philosophical dialogue in our own time.
Prerequisite: PHIL 100 to 499 - at least 3 credits.
Registration Information: Credit not allowed for both PHIL 303 and PHIL 380A2.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 305A Philosophical Issues in the Professions: Business Ethics Credits: 3 (3-0-0)
Course Description: Philosophical problems, theories relevant to business.
Prerequisite: None.
Registration Information: May be repeated for credit with consent of department chair.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 305B Philosophical Issues in the Professions: Medical Life Science Credits: 3 (3-0-0)
Course Description: Philosophical problems, theories relevant to medical-life science professions.
Prerequisite: None.
Registration Information: May be repeated for credit with consent of department chair.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 305C Philosophical Issues in the Professions: Caring Professions Credits: 3 (3-0-0)
Course Description: Philosophical problems, theories related to caring professions.
Prerequisite: None.
Registration Information: May be repeated for credit with consent of department chair.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 305D Philosophical Issues in the Professions: Engineering Credits: 3 (3-0-0)
Course Description: Philosophical problems, theories relevant to engineering.
Prerequisite: None.
Registration Information: May be repeated for credit with consent of department chair.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 305E Philosophical Issues in the Professions: Animal Science Credits: 3 (3-0-0)
Course Description: Philosophical problems, theories relevant to professions in animal science.
Prerequisite: None.
Registration Information: May be repeated for credit with consent of department chair.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 305F Philosophical Issues in the Professions: Information Science Credits: 3 (3-0-0)
Course Description: Philosophical problems, theories relevant to professions in information science.
Prerequisite: None.
Registration Information: May be repeated for credit with consent of department chair.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 305G Philosophical Issues in the Professions: Research Ethics Credits: 3 (3-0-0)
Course Description: Philosophical problems, theories relevant to professions in information science.
Prerequisite: None.
Registration Information: May be repeated for credit with consent of department chair.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 310 Writing and Reasoning Credits: 3 (3-0-0)
Course Description: Logic-based, analytic and critical writing and reading of complex argument and explanation types.
Prerequisite: (CO 150) and (PHIL 110 or PHIL 210).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 312 Philosophy of Law Credits: 3 (3-0-0)
Course Description: Philosophical concepts, theories, and problems concerning the law.
Prerequisite: None.
Registration Information: Sophomore standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 315 Philosophy of Language Credits: 3 (3-0-0)
Course Description: Basic concepts and principles in the theory of language.
Prerequisite: PHIL 205 or PHIL 206 or PHIL 210 or PHIL 300 to 481 - at least 1 course.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 318 Aesthetics-Visual Arts Credits: 3 (3-0-0)
Course Description: Central, traditional, and contemporary theories of the nature of visual arts.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 320 Ethics of Sustainability Credits: 3 (3-0-0)
Course Description: Ethical and conceptual issues surrounding creation of sustainable societies and lifestyles.
Prerequisite: None.
Registration Information: Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 322 Biomedical Ethics Credits: 3 (3-0-0)
Course Description: Assorted topics at the intersection of ethics, the biological sciences, medicine, and health policy. Topics may include ethical problems at the beginning and end of life (e.g., abortion, euthanasia), cloning, research ethics, genetic engineering, human enhancement, informed consent, disability, justice in health care, the doctor-patient relationship, conflicts of interest, and others.
Prerequisite: None.
Registration Information: Sophomore standing.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 325 Philosophy of Natural Science Credits: 3 (3-0-0)
Course Description: Structure of theories; basic concepts and assumptions; methods of explanation and confirmation; emphasis varies between physical and life sciences.
Prerequisite: PHIL 210.
Registration Information: PHIL 210; one course in natural sciences. May be repeated for credit with consent of department chair.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 327 Philosophy of Behavioral Sciences Credits: 3 (3-0-0)
Course Description: Structure of theories; basic concepts; explanation and confirmation; reductionism and values; emphasis varies between psychology and social sciences.
Prerequisite: PHIL 120 or PHIL 205 or PHIL 206 or PHIL 210 or PHIL 300 to 481 - at least 1 course.
Registration Information: May be repeated for credit with consent of department chair.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 330 Agricultural and Food System Ethics Credits: 3 (3-0-0)
Also Offered As: AGRI 330.
Course Description: Basic concepts in ethics and their application to agriculture and the food system.
Prerequisite: CO 150.
Registration Information: Credit not allowed for both PHIL 330 and AGRI 330.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 333 Latin American Philosophy Credits: 3 (3-0-0)
Course Description: Major figures, problems, and traditions in Latin American philosophy.
Prerequisite: PHIL 100 to 499 - at least 3 credits.
Registration Information: Sophomore standing.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 335 Islam: Cosmology and Practice Credits: 3 (3-0-0)
Course Description: Cosmological, spiritual, ritual, and practical aspects of Islam.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 345 Environmental Ethics Credits: 3 (3-0-0)
Course Description: Scientific, philosophical, and religious concepts of nature as they bear on human conduct; an ecological perspective.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 348 Philosophy of Literature and the Arts Credits: 3 (3-0-0)
Course Description: Aesthetic and philosophical issues in literature and the arts.
Prerequisite: None.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 349 Philosophies of East Asia Credits: 3 (3-0-0)
Course Description: Philosophical traditions of East Asia, including Confucianism, Daoism, and Zen Buddhism.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 350 Social and Political Philosophy Credits: 3 (3-0-0)
Course Description: Moral relationships between persons and institutions.
Prerequisite: PHIL 205 or PHIL 206 or PHIL 300 to 499 - at least 1 course.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 351 Interpreting the New Testament Credits: 3 (3-0-0)
Course Description: Contemporary methods of New Testament interpretation.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 353 Feminist Philosophies Credits: 3 (3-0-0)
Course Description: Conceptual, moral, and social analysis of women's issues from a variety of philosophical feminist perspectives.
Prerequisite: None.
Registration Information: Sophomore standing or higher.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 354 Philosophy and Science Fiction Credits: 3 (3-0-0)
Course Description: Science fiction offers students the chance to consider difficult philosophical questions with real-world relevance. Students will read science fiction to stimulate thinking about three questions: (1) What does it mean for human technology to be natural or unnatural, and how should technology and nature be related? (2) What constitutes possession of rationality and/or intelligence? (3) What are space and time, and how should humans understand the spatiality and temporality of our own lives?
Prerequisite: CO 150.
Registration Information: Sophomore standing.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 355 Philosophy of Religion Credits: 3 (3-0-0)
Course Description: Philosophical analysis of nature of religion and structure of meaning in religious discourse.
Prerequisite: PHIL 000 to 99999 - at least 3 credits.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 359 Philosophy of Human Nature Credits: 3 (3-0-0)
Course Description: Philosophical study of theories of human nature.
Prerequisite: PHIL 205 or PHIL 206 or PHIL 300 to 481 - at least 1 course.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 360 Topics in Asian Philosophy Credits: 3 (3-0-0)
Course Description: Examination of major philosophical topics from ethics, sociopolitical philosophy, metaphysics, aesthetics.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 366 Philosophy of Aging Credits: 3 (3-0-0)
Course Description: Philosophical problems related to experience of growing old.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 370 Contemporary Western Religious Thought Credits: 3 (3-0-0)
Course Description: Contemporary interpretations of significant Western religious traditions.
Prerequisite: PHIL 171 or PHIL 172 or PHIL 270.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 371 Contemporary Eastern Religious Thought Credits: 3 (3-0-0)
Course Description: Transformation of Indian and Chinese religious thought in the modern period.
Prerequisite: None.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 372 Meaning and Truth in Religion Credits: 3 (3-0-0)
Course Description: Nature, variety, functions, interpretation, evaluation of religious language.
Prerequisite: PHIL 171 or PHIL 172 or PHIL 270.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 375 Science and Religion Credits: 3 (3-0-0)
Course Description: Encounter of religious belief with Western science, influences on each other, present relations.
Prerequisite: PHIL 171 or PHIL 172 or PHIL 270.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 379 Mysticism East and West Credits: 3 (3-0-0)
Course Description: Varieties of mystical experience in selected Eastern and Western representatives.
Prerequisite: PHIL 171 or PHIL 172 or PHIL 270.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description: Teaching basic philosophy courses.
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 407 Phenomenology and Existentialism Credits: 3 (3-0-0)
Course Description: Methods, epistemology, metaphysics, axiology, ethics of 20th-century phenomenologists and existentialists.
Prerequisite: PHIL 205 or PHIL 206 or PHIL 300 or PHIL 301.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 409 20th Century Philosophy Credits: 3 (3-0-0)
Course Description: Major figures, trends, and concepts in 20th-century philosophy.
Prerequisite: PHIL 301.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 410 Formal Logic Credits: 3 (3-0-0)
Course Description: Quantification theory; axiomatic systems; rigorous axiomatization of some logical or mathematical theory.
Prerequisite: PHIL 210 or CS 270.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 411 Formal Tools in Philosophy Credits: 3 (3-0-0)
Course Description: Formal methodological tools used in contemporary philosophy. Topics may include modal logic, formal semantics, and decision theory.
Prerequisite: PHIL 210.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 415 Logic and Scientific Method Credits: 3 (3-0-0)
Course Description: Approaches to analysis, assessment of scientific inference, problems of induction; applications to natural, behavioral, social sciences.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 425 Epistemology Credits: 3 (3-0-0)
Course Description: Concepts, problems, and theories of knowledge.
Prerequisite: PHIL 210 or PHIL 300 or PHIL 301.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 435 Metaphysics Credits: 3 (3-0-0)
Course Description: Philosophical problems concerning nature, structure, and basic constituents of reality.
Prerequisite: PHIL 210 or PHIL 300 or PHIL 301.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 438 Philosophy of Mind Credits: 3 (3-0-0)
Course Description: Nature and status of mind, mental states, mental activity; the mind-body problem, mind and human sciences, mind and self, nature of human action.
Prerequisite: PHIL 300 or PHIL 301 or PHIL 302 or PHIL 315 or PHIL 325 or PHIL 327 or PHIL 359.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 447 Ethical Theory Credits: 3 (3-0-0)
Course Description: Fundamental problems and options in ethical theory.
Prerequisite: PHIL 205 or PHIL 300 or PHIL 301.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 455 Islamic Philosophy Credits: 3 (3-0-0)
Course Description: Development of philosophical thought in early, middle, and late Muslim civilization.
Prerequisite: PHIL 206 and PHIL 210.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 460 Seminar in Great Philosophers Credits: 3 (3-0-0)
Course Description: Works of one major figure in the history of philosophy.
Prerequisite: PHIL 300 or PHIL 301 or PHIL 302.
Registration Information: Maximum of 9 credits allowed in course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 461 Seminar in Philosophical Issues and Problems Credits: 3 (3-0-0)
Course Description: Thorough examination of a major philosophical problem or issue.
Prerequisite: PHIL 300 or PHIL 301 or PHIL 302.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 462 Capstone Seminar Credits: 3 (1-0-2)
Course Description: In-depth, integrative study of major topics, texts, and problems in both philosophy and religion.
Prerequisite: PHIL 300 and PHIL 301 or PHIL 300 and PHIL 302 or PHIL 300 and PHIL 409 or PHIL 301 and PHIL 302 or PHIL 301 and PHIL 409 or PHIL 302 and PHIL 409.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing. Two of the following courses are required: PHIL 300, PHIL 301, PHIL 302, PHIL 409. Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 463 Seminar in Religious Studies Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 479 Topics in Comparative Religions Credits: 3 (3-0-0)
Course Description: Comparative study of topics in world religions and philosophy or religion.
Prerequisite: PHIL 171 or PHIL 172 or PHIL 270.
Registration Information: PHIL 171 or PHIL 172 or PHIL 270; 300-level religious studies course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 495 Independent Study Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 497 Group Study Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 499 Thesis Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Registration Information: Written consent of department chair.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 500 Seminar in Major Philosophical Texts Credits: 3 (0-0-3)
Course Description: Intensive study of one or two major works in the history of philosophy.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 501 Seminar: Topics in History of Philosophy Credits: 3 (0-0-3)
Course Description: Selected figures and periods from the history of western philosophy, from ancient to modern. Topics change from semester to semester.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 525 Seminar in Epistemology Credits: 3 (0-0-3)
Course Description: Analysis of contemporary theories of knowledge.
Prerequisite: PHIL 425.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 527 Seminar in Philosophy of Science Credits: 3 (0-0-3)
Course Description: Systematic survey of major 20th-century philosophies of science.
Prerequisite: PHIL 325 or PHIL 327 or PHIL 415.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 535 Seminar in Metaphysics Credits: 3 (0-0-3)
Course Description: Contemporary topics in philosophical metaphysics.
Prerequisite: PHIL 500.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 545 Concept of Natural Value Credits: 3 (3-0-0)
Course Description: Philosophical analysis of nature as a value carrier. Types of value associated with nature, their interrelations.
Prerequisite: PHIL 345.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 547 Seminar in Meta-Ethics Credits: 3 (0-0-3)
Course Description: Systematic and historical overview of contemporary theories of meta-ethics.
Prerequisite: PHIL 447.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 548 Seminar in Normative Ethical Theory Credits: 3 (0-0-3)
Course Description: Major topics in contemporary theories of normative ethics.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 550 Ethics and International Development Credits: 3 (3-0-0)
Also Offered As: IE 550.
Course Description: Ethical reflection applied to development goals, strategies of Third World countries; relations between developed and developing countries.
Prerequisite: None.
Registration Information: Written consent of instructor.
Credit not allowed for both PHIL 550 and IE 550.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 555 Seminar in Philosophical Models of Nature Credits: 3 (0-0-3)
Course Description: Comparative inquiry into the "nature" of nature as viewed by philosophers of the past and present.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 564 Seminar in Animal Rights Credits: 3 (0-0-3)
Course Description: Contemporary issues concerning nature and moral status of nonhuman animals.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 565 Seminar in Environmental Philosophy Credits: 3 (0-0-3)
Course Description: Aesthetic appreciation of nature, duties concerning fauna, flora, endangered species, ecosystem.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 566 Seminar in Applied Philosophy Credits: 3 (0-0-3)
Course Description: Application of philosophical ideas and methods to analyze practical problems such as distributive justice, abortion, human rights conflicts.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 570 Seminar in Contemporary Philosophical Theory Credits: 3 (0-0-3)
Course Description: Major concepts and problems in current philosophical theory.
Prerequisite: PHIL 500.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 593 Seminar Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 601 Master of Profess. Natural Sciences Ethics Credit: 1 (0-0-1)
Also Offered As: NSCI 601.
Course Description: Ethical issues involving the care and treatment of animals in captive environments. Lectures, case studies, discussions, and student presentations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in the Master of Professional Natural Sciences program required. Credit not allowed for both PHIL 601 and NSCI 601. This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 662 Seminar Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 666 Science and Ethics Credits: 3 (3-0-0)
Also Offered As: CM 666.
Course Description: Ethical issues of research on humans and animals; biosafety; fraud and deception in science; genetic engineering.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Credit not allowed for both PHIL 666 and CM 666.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 684 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 695 Independent Study Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 697 Group Study Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 698 Research Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 699 Thesis Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Philosophy

Philosophy is the oldest form of systematic, scholarly inquiry. It is the study of the most basic moral, legal, aesthetic, religious, and metaphysical ideas by which we quest for understanding and develop principles of conduct. Philosophers seek to establish standards of evidence, provide rational methods of conflict resolution, establish criteria for just social orders, and create techniques for evaluating ideas and arguments.

The study of philosophy broadens and intensifies liberal education while enhancing interpretive abilities in many fields. The curriculum encourages a broad liberal arts background, including courses in foreign languages, and a plan for graduate school and teaching careers in philosophy. The broad relevance of philosophy to other fields permits most students to work toward goals such as professional training in law, medicine, business, or theology. There are three concentrations available to Philosophy majors: General Philosophy; Global Philosophies and Religions; and Philosophy, Science and Technology. It is not unusual for Philosophy majors to second-major in other disciplines, and these concentrations combine easily with other majors at CSU.

Student Learning Outcomes

Outcome 1: Critical Thinking

Students will recognize, construct, and evaluate arguments and alternative positions by correctly applying logical standards and methodology, demonstrating the ability to identify underlying assumptions, ambiguous or contested terms, and potential objections to a thesis.

Outcome 2: Content Knowledge

Students will demonstrate knowledge of major questions, arguments, problems, and figures from a variety of philosophical areas and traditions.

Outcome 3: Reading and Research

Students will develop the interpretive, analytical, and conceptual skills to read with understanding a variety of philosophical texts. Students will be able to assess the quality and relevance of a variety of sources (books, journal articles, etc.) and use these sources in their own research and writing.

Outcome 4: Communication

Students will clearly articulate ideas and arguments in writing and oral communication. Students will demonstrate competence in interpretive, analytical, and argumentative writing. They will effectively present their own ideas and research in oral communication and writing. Students will engage in open, thoughtful, and respectful dialogue.

Outcome 5: Values and Attitudes

Students will demonstrate cognitive flexibility by applying alternative possibilities and conceptual frameworks to their own and others' ideas and values. They will demonstrate intellectual curiosity in their pursuits of truth and meaning. They will engage in reflective inquiry and aim to achieve a greater understanding of their subject matter.

Potential Occupations

A major in Philosophy prepares students for a wide variety of professional aspirations, including graduate study in philosophy or other disciplines; training in law, computer technology, social work, health care, the ministry, business; and general intellectual flexibility in a changing world. The high level of skill that Philosophy majors acquire in communication, writing, and analytical and critical thinking enables them to secure jobs in a variety of private and public sector professions and to become leaders in their fields.

Depending on the major concentration that a student pursues, available career opportunities include, but are not limited to: public policy analyst, business manager, public administrator, computer programmer, intelligence officer, legislator, teacher, foreign diplomat, social worker, community developer, philanthropic organizer, physician, lawyer, researcher, writer, theologian, human resources manager, publisher, and ethics consultant, in a variety of fields, e.g., in medicine, business, law, public administration, non-profit administration, engineering, and the sciences.

Concentrations

- General Philosophy Concentration
- Global Philosophies and Religions Concentration
- Philosophy, Science, and Technology Concentration

Major in Philosophy, General Philosophy Concentration

Requirements
Effective Fall 2016

Students are required to receive at least a C- (1.670) in each Philosophy course required for the major or minor in Philosophy. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	7
Historical Perspectives		3D	3
Quantitative Reasoning		1B	3
Social and Behavioral Sciences		3C	3
PHIL*** Lower-Division Philosophy Elective[1]			3
Electives			6
	Total Credits		31

Sophomore

PHIL 205	Introduction to Ethics		3
PHIL 210	Introduction to Formal Logic		3
PHIL*** Philosophy Elective			3
Advanced Writing		2	3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3

Electives			13
	Total Credits		31
Junior			
PHIL 300	Ancient Greek Philosophy	4A	3
PHIL 301	17th and 18th Century European Philosophy	4A	3
Select one course from the following:			3
PHIL 170	World Philosophies (GT-AH3)	3E	
PHIL 335	Islam: Cosmology and Practice		
PHIL 349	Philosophies of East Asia		
PHIL 353	Feminist Philosophies		
PHIL 360	Topics in Asian Philosophy		
PHIL 455	Islamic Philosophy		
PHIL*** Upper-Division Philosophy Elective[2]			3
Electives			18
	Total Credits		30
Senior			
PHIL 462	Capstone Seminar	4B,4C	3
Select one course from the following:			3
PHIL 315	Philosophy of Language		
PHIL 325	Philosophy of Natural Science		
PHIL 425	Epistemology		
PHIL 435	Metaphysics		
PHIL 438	Philosophy of Mind		
PHIL*** Upper-Division Philosophy Electives[3]			6
Electives[4]			16
	Total Credits		28
	Program Total Credits:		120

1 No more than 6 PHIL credits at the 100-level may be applied toward the major.

2 At least 18 PHIL credits must be at the 300-level or above.

3 At least 6 PHIL credits must be at the 400-level.

4 Select enough elective credits to bring the program total to 120, of which at least 42 must be Upper-Division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

Students are required to receive at least a C- (1.670) in each Philosophy course required for the major or minor in Philosophy. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
PHIL*** Lower-Division Philosophy Elective		X			3
Biological and Physical Sciences				3A	3
Quantitative Reasoning			X	1B	3
Social and Behavioral Sciences				3C	3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Arts and Humanities		X		3B	3
Biological and Physical Sciences				3A	4
Historical Perspectives				3D	3
Electives					6

CO 150 and AUCC 1B (Quantitative Reasoning) must be completed by the end of Semester 2.		X			
	Total Credits				16
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
PHIL 205	Introduction to Ethics	X			3
PHIL*** Philosophy Elective		X			3
Diversity and Global Awareness				3E	3
Electives					6
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
PHIL 210	Introduction to Formal Logic	X			3
Advanced Writing		X		2	3
Arts and Humanities				3B	3
Electives					7
	Total Credits				16
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
PHIL 300	Ancient Greek Philosophy	X		4A	3
Select one course from the following:					3
PHIL 170	World Philosophies (GT-AH3)			3E	
PHIL 335	Islam: Cosmology and Practice				
PHIL 349	Philosophies of East Asia				
PHIL 353	Feminist Philosophies				
PHIL 360	Topics in Asian Philosophy				
PHIL 455	Islamic Philosophy				
PHIL*** Upper-Division Philosophy Elective					3
Electives					6
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
PHIL 301	17th and 18th Century European Philosophy	X		4A	3
Electives					12
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:		X			3
PHIL 315	Philosophy of Language				
PHIL 325	Philosophy of Natural Science				
PHIL 425	Epistemology				
PHIL 435	Metaphysics				
PHIL 438	Philosophy of Mind				
PHIL*** Philosophy Upper-Division Elective		X			3
Electives					8
	Total Credits				14
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
PHIL 462	Capstone Seminar	X		4B,4C	3
PHIL*** Philosophy Upper-Division Elective		X			3
Electives		X			8

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X	
Total Credits		14
Program Total Credits:		120

Major in Philosophy, Global Philosophies and Religions Concentration

Requirements Effective Fall 2019

Students are required to receive at least a C- (1.670) in each Philosophy course required for the major or minor in Philosophy. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	7
Historical Perspectives		3D	3
Quantitative Reasoning		1B	3
PHIL*** Lower-Division Philosophy Electives[1]			6
Electives			6
	Total Credits		31

Sophomore

Select one course from the following:			3
PHIL 110	Logic and Critical Thinking (GT-AH3)	3B	
PHIL 210	Introduction to Formal Logic		
Advanced Writing		2	3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Social and Behavioral Sciences		3C	3
PHIL*** Philosophy Electives[2]			6
Electives			9
	Total Credits		30

Junior

PHIL 300	Ancient Greek Philosophy	4A	3
PHIL 301	17th and 18th Century European Philosophy	4A	3
Select two courses from the following:[3]			6
PHIL 270	Issues in the Study of Religion		
PHIL 335	Islam: Cosmology and Practice		
PHIL 355	Philosophy of Religion		
PHIL 370	Contemporary Western Religious Thought		
PHIL 372	Meaning and Truth in Religion		
PHIL 375	Science and Religion		
PHIL 463	Seminar in Religious Studies		
Electives			16
	Total Credits		28

Senior

Select two courses from the following:			6
PHIL 349	Philosophies of East Asia		
PHIL 360	Topics in Asian Philosophy		
PHIL 371	Contemporary Eastern Religious Thought		
PHIL 379	Mysticism East and West		
PHIL 455	Islamic Philosophy		
PHIL 462	Capstone Seminar	4B,4C	3
Electives[4]			22
	Total Credits		31
	Program Total Credits:		120

1 A maximum of 9 PHIL credit hours at the 100-level may be applied toward the major.

2 A minimum of 18 PHIL credit hours must be at the 300- or 400-level.

3 A minimum of 6 PHIL credit hours must be at the 400-level.

4 Select enough elective credits to bring the program total to 120, of which at least 42 must be Upper-Division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

Students are required to receive at least a C- (1.670) in each Philosophy course required for the major or minor in Philosophy. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
PHIL*** Lower-Division Philosophy Elective					3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
Elective					3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
PHIL*** Lower-Division Philosophy Elective		X			3
Biological and Physical Sciences				3A	4
Historical Perspectives				3D	3
Quantitative Reasoning		X		1B	3
Elective					3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:		X			3
PHIL 110	Logic and Critical Thinking (GT-AH3)			3B	
PHIL 210	Introduction to Formal Logic				
Arts and Humanities				3B	3
Social and Behavioral Sciences				3C	3
Electives					6
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
PHIL*** Philosophy Electives		X			6
Advanced Writing				2	3
Diversity and Global Awareness				3E	3
Electives					3
	Total Credits				15

Junior

Semester 5		Critical	Recommended	AUCC	Credits
PHIL 300	Ancient Greek Philosophy	X		4A	3
Select two courses from the following:		X			6
PHIL 270	Issues in the Study of Religion				
PHIL 335	Islam: Cosmology and Practice				
PHIL 355	Philosophy of Religion				
PHIL 370	Contemporary Western Religious Thought				
PHIL 372	Meaning and Truth in Religion				
PHIL 375	Science and Religion				
PHIL 463	Seminar in Religious Studies				
Electives					5
	Total Credits				14

Semester 6		Critical	Recommended	AUCC	Credits
PHIL 301	17th and 18th Century European Philosophy	X		4A	3
Electives					11
	Total Credits				14

Senior

Semester 7		Critical	Recommended	AUCC	Credits
Select two courses from the following:		X			6
PHIL 349	Philosophies of East Asia				
PHIL 360	Topics in Asian Philosophy				
PHIL 371	Contemporary Eastern Religious Thought				
PHIL 379	Mysticism East and West				
PHIL 455	Islamic Philosophy				
Electives					9
	Total Credits				15

Semester 8		Critical	Recommended	AUCC	Credits
PHIL 462	Capstone Seminar	X		4B,4C	3
Electives		X			13
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				16
	Program Total Credits:				120

Major in Philosophy, Philosophy, Science, and Technology Concentration

Requirements
Effective Fall 2016

Students are required to receive at least a C- (1.670) in each Philosophy course required for the major or minor in Philosophy. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
PHIL 120	History and Philosophy of Scientific Thought (GT-AH3)	3B	3
Biological and Physical Sciences		3A	7
Historical Perspectives		3D	3
Quantitative Reasoning		1B	3

PHIL*** Lower-Division Philosophy Elective[1]			3
Electives			9
	Total Credits		31
Sophomore			
PHIL 210	Introduction to Formal Logic		3
Advanced Writing		2	3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Social and Behavioral Sciences		3C	3
PHIL*** Philosophy Electives[2]			6
Electives			9
	Total Credits		30
Junior			
PHIL 300	Ancient Greek Philosophy	4A	3
PHIL 301	17th and 18th Century European Philosophy	4A	3
Select one course from the following:			3
PHIL 325	Philosophy of Natural Science		
PHIL 327	Philosophy of Behavioral Sciences		
PHIL*** Upper-Division Philosophy Elective[3]			3
Electives			17
	Total Credits		29
Senior			
Select one course from the following:			3
PHIL 315	Philosophy of Language		
PHIL 410	Formal Logic		
PHIL 411	Formal Tools in Philosophy		
PHIL 415	Logic and Scientific Method		
PHIL 425	Epistemology		
PHIL 435	Metaphysics		
PHIL 438	Philosophy of Mind		
Select one course from the following:			3
PHIL 205	Introduction to Ethics		
PHIL 305A	Philosophical Issues in the Professions: Business Ethics		
PHIL 305B	Philosophical Issues in the Professions: Medical Life Science		
PHIL 305C	Philosophical Issues in the Professions: Caring Professions		
PHIL 305D	Philosophical Issues in the Professions: Engineering		
PHIL 305E	Philosophical Issues in the Professions: Animal Science		
PHIL 305F	Philosophical Issues in the Professions: Information Science		
PHIL 305G	Philosophical Issues in the Professions: Research Ethics		
PHIL 320	Ethics of Sustainability		
PHIL 330	Agricultural and Food System Ethics		
PHIL 345	Environmental Ethics		
PHIL 350	Social and Political Philosophy		
PHIL 447	Ethical Theory		
PHIL 462	Capstone Seminar	4B,4C	3
Electives[4]			21
	Total Credits		30
	Program Total Credits:		120

1 A maximum of 9 PHIL credit hours at the 100-level may be applied toward the major.

2 A minimum of 18 PHIL credit hours must be at the 300-level or higher.

3 A minimum of 6 PHIL credit hours must be at the 400-level or higher.

4 Select enough elective credits to bring the program total to 120, of which at least 42 must be Upper-Division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
Students are required to receive at least a C- (1.670) in each Philosophy course required for the major or minor in Philosophy. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
PHIL 120	History and Philosophy of Scientific Thought (GT-AH3)	X		3B	3
Biological and Physical Sciences				3A	3
Quantitative Reasoning			X	1B	3
Elective					3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
PHIL*** Lower-Division Philosophy Elective					3
Biological and Physical Sciences				3A	4
Historical Perspectives				3D	3
Electives					6
CO 150 and AUCC 1B (Quantitative Reasoning) must be completed by the end of Semester 2.		X			
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
PHIL*** Philosophy Electives					6
Diversity and Global Awareness				3E	3
Social and Behavioral Sciences				3C	3
Elective					3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
PHIL 210	Introduction to Formal Logic	X			3
Advanced Writing				2	3
Arts and Humanities				3B	3
Electives					6
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
PHIL 300	Ancient Greek Philosophy	X		4A	3
Select one course from the following:		X			3
PHIL 325	Philosophy of Natural Science				
PHIL 327	Philosophy of Behavioral Sciences				
Electives					9
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
PHIL 301	17th and 18th Century European Philosophy	X		4A	3
PHIL*** Upper-Division Philosophy Elective		X			3
Electives					8
	Total Credits				14

Senior

Semester 7		Critical	Recommended	AUCC	Credits
Select one course from the following:		X			3
PHIL 315	Philosophy of Language				
PHIL 410	Formal Logic				
PHIL 411	Formal Tools in Philosophy				
PHIL 415	Logic and Scientific Method				
PHIL 425	Epistemology				
PHIL 435	Metaphysics				
PHIL 438	Philosophy of Mind				
Select one course from the following:		X			3
PHIL 205	Introduction to Ethics				
PHIL 305A	Philosophical Issues in the Professions: Business Ethics				
PHIL 305B	Philosophical Issues in the Professions: Medical Life Science				
PHIL 305C	Philosophical Issues in the Professions: Caring Professions				
PHIL 305D	Philosophical Issues in the Professions: Engineering				
PHIL 305E	Philosophical Issues in the Professions: Animal Science				
PHIL 305F	Philosophical Issues in the Professions: Information Science				
PHIL 305G	Philosophical Issues in the Professions: Research Ethics				
PHIL 320	Ethics of Sustainability				
PHIL 330	Agricultural and Food System Ethics				
PHIL 345	Environmental Ethics				
PHIL 350	Social and Political Philosophy				
PHIL 447	Ethical Theory				
Electives					9
	Total Credits				15

Semester 8		Critical	Recommended	AUCC	Credits
PHIL 462	Capstone Seminar	X		4B,4C	3
Electives		X			12
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Minor in Philosophy

Philosophy is the study of the most basic moral, legal, aesthetic, religious, and metaphysical ideas by which we pursue understanding and development of principles of conduct. Philosophers seek to establish standards of evidence, provide rational methods of conflict resolution, establish criteria for just social orders, and create techniques for evaluating ideas and arguments. The minor in Philosophy is intended to broaden students' education and to complement and encourage critical and constructive reflection in other courses.

Effective Spring 2017

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Students are required to receive at least a C (2.000) in each Philosophy course required for the Minor in Philosophy.

Code	Title	Credits
Select one from the following:		3
PHIL 110	Logic and Critical Thinking (GT-AH3)	
PHIL 210	Introduction to Formal Logic	
Select one from the following:		3
PHIL 300	Ancient Greek Philosophy	
PHIL 301	17th and 18th Century European Philosophy	
PHIL ***		6
PHIL 3** or 4**		6
PHIL 4**		3
Program Total Credits:		21

Substitutions allowed with prior approval of department chair.

Certificate in Ethics and Society

The Certificate in Ethics and Society aims to provide students from any major with a broad background in ethics and social philosophy. The objective of the certificate is for students to learn to competently navigate questions of social and ethical values on a wide range of issues. The program is structured to foster a deep understanding of both the theoretical foundations and the practical application of ethics. By allowing choice from a wide range of courses in ethics, the certificate provides the opportunity to gain experience making and assessing value judgments on a variety of important social issues or to focus on the particular issues most relevant to their major or their area of interest. The certificate is open to students in any major or minor.

Effective Spring 2017

Additional coursework may be required due to prerequisites.

Code	Title	Credits
PHIL 205	Introduction to Ethics	3
Select 12 credits from the following: [1]		12
PHIL 103	Moral and Social Problems (GT-AH3)	
PHIL 104/ ANEQ 104	Values, Culture, and Food Animal Agriculture	
PHIL 130	Bioethics and Society	
PHIL 240	Philosophies of Peace and Nonviolence	
PHIL 305A	Philosophical Issues in the Professions: Business Ethics	
PHIL 305B	Philosophical Issues in the Professions: Medical Life Science	
PHIL 305C	Philosophical Issues in the Professions: Caring Professions	
PHIL 305D	Philosophical Issues in the Professions: Engineering	
PHIL 305E	Philosophical Issues in the Professions: Animal Science	
PHIL 305F	Philosophical Issues in the Professions: Information Science	
PHIL 305G	Philosophical Issues in the Professions: Research Ethics	
PHIL 312	Philosophy of Law	
PHIL 320	Ethics of Sustainability	
PHIL 330/ AGRI 330	Agricultural and Food System Ethics	
PHIL 345	Environmental Ethics	
PHIL 350	Social and Political Philosophy	
PHIL 353	Feminist Philosophies	
PHIL 366	Philosophy of Aging	
PHIL 447	Ethical Theory	
Program Total Credits:		15

[1] At least 9 credits must be from upper-division (300- to 400-level) courses.

Certificate in World Philosophies and Religions

The Certificate in World Philosophies and Religions is open to students in any major or minor. It offers a broad education in philosophical and religious perspectives from around the world. Students will develop expertise in the philosophical interpretation and evaluation of religious and non-religious doctrines that have arisen in many times and places, reflecting the broadening of academic philosophy in the U.S. beyond its European roots.

Requirements
Effective Spring 2017

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Select one course from the following:		3
PHIL 170	World Philosophies (GT-AH3)	
PHIL 171	Religions of the West	
PHIL 172	Religions of the East	
Select twelve credits from the following not taken above: [1]		12
PHIL 170	World Philosophies (GT-AH3)	
PHIL 171	Religions of the West	
PHIL 172	Religions of the East	
PHIL 173	Philosophy of Traditional Judaism	
PHIL 270	Issues in the Study of Religion	
PHIL 335	Islam: Cosmology and Practice	
PHIL 349	Philosophies of East Asia	
PHIL 351	Interpreting the New Testament	
PHIL 355	Philosophy of Religion	
PHIL 360	Topics in Asian Philosophy	
PHIL 370	Contemporary Western Religious Thought	
PHIL 371	Contemporary Eastern Religious Thought	
PHIL 372	Meaning and Truth in Religion	
PHIL 375	Science and Religion	
PHIL 379	Mysticism East and West	
PHIL 455	Islamic Philosophy	
PHIL 463	Seminar in Religious Studies	
Program Total Credits:		15

[1] At least 9 credits must be from upper-division (300- to 400-level) courses.

Master of Arts in Philosophy, Plan A

The Department of Philosophy offers courses of study that lead to a Master of Arts degree in Philosophy. Master's students can specialize in applied ethics, particularly animal welfare and environmental ethics; comparative philosophy; ethical theory; history of modern philosophy; metaphysics; aesthetics; or epistemology. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Philosophy. (http://philosophy.colostate.edu)

Learning Outcomes for the M.A. Program in Philosophy

Outcome 1: Critical Thinking Skills

Recognize, evaluate, and construct arguments in a way that correctly applies logical methodology and evaluative standards, and demonstrates an ability to identify underlying assumptions, ambiguous or contested terms, and potential objections to a thesis.

Outcome 2: Content Mastery

Explain, orally or in writing, the current state of knowledge and research, referencing the major works and positions in the field, on topics within three areas of philosophy: (1) value theory, broadly construed; (2) metaphysics, epistemology, and related fields; and (3) history of philosophy.

Outcome 3: Research Skills

Conduct independent research on a philosophical topic, identifying the major texts, positions, and arguments concerning that topic.

Outcome 4: Writing Skills

Write an original philosophical paper that contributes to knowledge in some field of philosophical study and is of sufficient quality to be presented at a professional conference or published in a professional journal.

Outcome 5: Oral Communication Skills

Give an oral presentation that clearly and effectively explains philosophical arguments, issues, and positions in a manner demonstrating a broad competency in the field.

Requirements Effective Fall 2018

Any courses required to address deficiencies must be completed before graduation. Credits earned through completion of such courses do not count toward the M.A. degree.

Code	Title	Credits
Group 1: Choose 2 courses		6
PHIL 525	Seminar in Epistemology	
PHIL 527	Seminar in Philosophy of Science	
PHIL 535	Seminar in Metaphysics	
Group 2: Choose 1 course		3
PHIL 547	Seminar in Meta-Ethics	
PHIL 548	Seminar in Normative Ethical Theory	
Group 3: Choose 1 course		3
PHIL 550/IE 550	Ethics and International Development	
PHIL 564	Seminar in Animal Rights	
PHIL 565	Seminar in Environmental Philosophy	
PHIL 566	Seminar in Applied Philosophy	
Group 4: Choose 1 course		3
PHIL 500	Seminar in Major Philosophical Texts	
PHIL 501	Seminar: Topics in History of Philosophy	
Philosophy Electives [1, 2]		6-9
Out-of-Department Courses [2]		0-3
Thesis		6
PHIL 699	Thesis	
Program Total Credits:		30

A minimum of 30 credits are required to complete this program. In addition to completing program credits and courses required to address deficiencies, students must pass an oral defense of their thesis.

1. Select courses with PHIL subject code. A minimum of 6 credits must be taken as regular courses (courses ending in -00 through -79) at the 500- to 600-level. A maximum of 6 credits may be taken as PHIL 695 and/or PHIL 697. A maximum of 2 credits may be taken as PHIL 684.
2. Students may select a maximum of 6 credits total within the program at the 400-level with approval of advisor and graduate committee.

Students must complete the minimum number of credits specified in the official program of study as approved by the University Curriculum Committee, and all credit requirements specified in the Graduate and Professional Bulletin for their degree.

Master of Arts in Philosophy, Plan B

The Department of Philosophy offers courses of study that lead to a Master of Arts degree in Philosophy. Master's students can specialize in applied ethics, particularly animal welfare and environmental ethics; comparative philosophy; ethical theory; history of modern philosophy; metaphysics; aesthetics; or epistemology. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Philosophy. (http://philosophy.colostate.edu)

Learning Outcomes for CSU M.A. Program in Philosophy

Outcome 1: Critical Thinking Skills

Recognize, evaluate, and construct arguments in a way that correctly applies logical methodology and evaluative standards, and demonstrates an ability to identify underlying assumptions, ambiguous or contested terms, and potential objections to a thesis.

Outcome 2: Content Mastery

Explain, orally or in writing, the current state of knowledge and research, referencing the major works and positions in the field, on topics within three areas of philosophy: (1) value theory, broadly construed; (2) metaphysics, epistemology, and related fields; and (3) history of philosophy.

Outcome 3: Research Skills

Conduct independent research on a philosophical topic, identifying the major texts, positions, and arguments concerning that topic.

Outcome 4: Writing Skills

Write an original philosophical paper that contributes to knowledge in some field of philosophical study and is of sufficient quality to be presented at a professional conference or published in a professional journal.

Outcome 5: Oral Communication Skills

Give an oral presentation that clearly and effectively explains philosophical arguments, issues, and positions in a manner demonstrating a broad competency in the field.

Requirements
Effective Fall 2018

Any courses required to address deficiencies must be completed before graduation. Credits earned through completion of such courses do not count toward the M.A. degree.

Code	Title	Credits
Group 1: Choose 2 courses		6
PHIL 525	Seminar in Epistemology	
PHIL 527	Seminar in Philosophy of Science	
PHIL 535	Seminar in Metaphysics	
Group 2: Choose 1 course		3
PHIL 547	Seminar in Meta-Ethics	
PHIL 548	Seminar in Normative Ethical Theory	
Group 3: Choose 1 course		3
PHIL 550/IE 550	Ethics and International Development	
PHIL 564	Seminar in Animal Rights	
PHIL 565	Seminar in Environmental Philosophy	
PHIL 566	Seminar in Applied Philosophy	
Group 4: Choose 1 course		3
PHIL 500	Seminar in Major Philosophical Texts	
PHIL 501	Seminar: Topics in History of Philosophy	
Philosophy Electives [1,2]		9-15
Out-of-Department Courses [2]		0-6
Research		3
PHIL 698	Research	
Program Total Credits:		33

A minimum of 33 credits are required to complete this program. In addition to completing program credits and courses required to address deficiencies, students must also pass a final examination.

1. Select courses with PHIL subject code. A minimum of 6 credits must be taken as regular courses (courses ending in -00 through -79) at the 500 to 600 level. A maximum of 6 credits may be taken as PHIL 695 and/or PHIL 697. A maximum of 2 credits may be taken as PHIL 684.
2. Students may select a maximum of 6 credits total within the program at the 400-level with approval of advisor and graduate committee.

Students must complete the minimum number of credits specified in the official program of study as approved by the University Curriculum Committee, and all credit requirements specified in the Graduate and Professional Bulletin for their degree.

Department of Political Science

Office in Clark Building, Room C346
(970) 491-5156
polisci.colostate.edu (http://polisci.colostate.edu)

Professor Michele Betsill, Chair

Professor Matthew Hitt, Undergraduate Coordinator

Professor Gamze Cavdar, Graduate Coordinator

Undergraduate
Majors

- Major in Political Science
  - Environmental Politics and Policy Concentration
  - Global Politics and Policy Concentration
  - U.S. Government, Law, and Policy Concentration

Minors

- Minor in Applied Environmental Policy Analysis
- Minor in Political Science

Interdisciplinary Minors

- Environmental Affairs Interdisciplinary Minor
- Latin American and Caribbean Studies Interdisciplinary Minor
- Political Communication Interdisciplinary Minor

Graduate
Graduate Programs in Political Science

The department offers graduate programs in Political Science leading to the Master of Arts and Doctor of Philosophy degrees. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Political Science (http://polisci.colostate.edu).

Master's Programs

- Master of Arts in Political Science, Plan A*
- Master of Arts in Political Science, Plan B*

Ph.D.

- Ph.D. in Political Science, Environmental Politics and Policy Specialization*

* Please see department for program of study.

Courses

Subjects in this department include: Political Science (POLS) and Public Policy + Administration (PPA)

Political Science (POLS)

POLS 101 American Government and Politics (GT-SS1) Credits: 3 (3-0-0)
Course Description: Principles, structures, and processes of American national government.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

POLS 103 State and Local Government and Politics (GT-SS1) Credits: 3 (3-0-0)
Course Description: Principles, organization, and operation of American state and local government.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

POLS 131 Current World Problems (GT-SS1) Credits: 3 (3-0-0)
Course Description: Background and nature of international political events.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Economic or Political Systems (GT-SS1).

POLS 232 International Relations (GT-SS1) Credits: 3 (3-0-0)
Course Description: Basic concepts and approaches to international relations.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Economic or Political Systems (GT-SS1).

POLS 241 Comparative Government and Politics (GT-SS1) Credits: 3 (3-0-0)
Course Description: Major foreign political systems stressing cross-national comparison of political forces, parties, ideologies, and institutions.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Economic or Political Systems (GT-SS1).

POLS 302 U.S. Political Parties and Elections Credits: 3 (3-0-0)
Course Description: Foundational, institutional, and behavioral features of American political parties and elections.
Prerequisite: POLS 101.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 303 Politics of Organized Interests Credits: 3 (3-0-0)
Course Description: Role of interests in varied forms: social movements, institutions, associations, and membership groups in American politics.
Prerequisite: POLS 101.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 304 Legislative Politics Credits: 3 (3-0-0)
Course Description: Structure, organization, behavior, processes, and policy implications of U.S. legislatures.
Prerequisite: POLS 101.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 305 Judicial Politics Credits: 3 (3-0-0)
Course Description: Allocation of powers among judicial structures in American federal system.
Prerequisite: POLS 101.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 306 Executive Politics Credits: 3 (3-0-0)
Course Description: Structure, organization, behavior, processes, and policy implications of U.S. executive leadership.
Prerequisite: POLS 101.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 309 Urban Politics Credits: 3 (3-0-0)
Course Description: Governmental structures and political processes in urban government.
Prerequisite: POLS 101 or POLS 103.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 320 Empirical Political Analysis Credits: 3 (3-0-0)
Course Description: Methods of empirical political inquiry.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 321 Empirical Political Analysis Laboratory Credit: 1 (0-2-0)
Course Description: Laboratory applications of empirical research methods.
Prerequisite: None.
Registration Information: Must have concurrent registration in POLS 320.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 331 Politics and Society Along Mexican Border Credits: 3 (3-0-0)
Course Description: Analysis of U.S.-Mexican relations and domestic politics as these affect regional characteristics and development of U.S.-Mexican border region.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 332 International Political Economy Credits: 3 (3-0-0)
Also Offered As: ECON 332.
Course Description: Theories on relations between international politics and economics. Policy implications of different theories and case studies.
Prerequisite: (ECON 202 or AREC 202) and (POLS 232).
Registration Information: Credit not allowed for both POLS 332 and ECON 332.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 341 Western European Government and Politics Credits: 3 (3-0-0)
Course Description: Politics in Western European countries such as Britain, France, and Germany, and countries influenced by European traditions.
Prerequisite: POLS 241.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 345 Russian, Central, and East European Politics Credits: 3 (3-0-0)
Course Description: Political structures and processes in Russia, Central and East Europe, and selected post-Communist countries.
Prerequisite: POLS 241.
Registration Information: Must register for lecture and recitation. Freshman not allowed.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 347 Comparative Authoritarianism Credits: 3 (3-0-0)
Course Description: Explore non-democratic regimes in the world and the dynamics precipitating the emergence and breakdown of authoritarianism.
Prerequisite: POLS 241.
Registration Information: Sophomore standing. Credit not allowed for both POLS 347 and POLS 380A3.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 351 Public Administration Credits: 3 (3-0-0)
Course Description: Government organization and management; decision processes; political and intergovernmental relations in administration.
Prerequisite: POLS 101.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 361 U.S. Environmental Politics and Policy Credits: 3 (3-0-0)
Course Description: Public and contemporary issues relating to U.S. environmental policy.
Prerequisite: POLS 101.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 362 Global Environmental Politics Credits: 3 (3-0-0)
Course Description: Cross-national and international contexts of environmental politics and policy.
Prerequisite: POLS 232.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 364 Air, Climate, and Energy Policy Analysis Credits: 3 (3-0-0)
Course Description: Discussion and analysis of air quality, climate, and energy nexus, with a focus on policy impacts on the economy and the environment under future scenarios.
Prerequisite: POLS 101.
Registration Information: Sophomore standing. Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

POLS 382A Study Abroad: Global Environmental Politics in the Amazon Credits: 3 (0-0-3)
Course Description: Explores global environmental politics in the Brazilian Amazon. Through lectures, site visits, and meetings with local decision-makers, stakeholders and activists, apply international relations theories and concepts to understand various social, economic, political and ecological dimensions of global environmental problems such as biodiversity loss and climate change and efforts to address these problems from the global to local levels.
Prerequisite: POLS 232.
Registration Information: Sophomore standing. Written consent of instructor. Students need a minimum of a 2.5 GPA per Education Abroad standards.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 392 Washington DC Semester Seminar Credits: 3 (0-0-3)
Course Description: Topics vary each semester, but each focuses on some aspect of politics and government in Washington, DC. Offered by The Washington Center which typically offers 25 courses each semester although the specific courses offered each semester varies.
Prerequisite: POLS 101 or POLS 103 or POLS 232 or POLS 241.
Registration Information: Sophomore standing. Requires written consent of program advisor, and the completion of the internal application form for students interested in the program. To be eligible, students should have a 3.000 GPA or greater.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

POLS 405 Race and Ethnicity in U.S. Politics Credits: 3 (3-0-0)
Course Description: Relationships among American racial/ethnic groups, political attitudes, behavior; race and ethnicity roles in elections; implications for public policy.
Prerequisite: POLS 101.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 409 Urban and Regional Politics Credits: 3 (3-0-0)
Course Description: Governance processes and public policies in metropolitan regions.
Prerequisite: POLS 101 or POLS 103.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 410 American Constitutional Law Credits: 3 (3-0-0)
Course Description: Allocation of powers among structures in American federal system.
Prerequisite: POLS 101.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 413 U.S. Civil Rights and Liberties Credits: 3 (3-0-0)
Course Description: U.S. Constitutional provisions and cases pertaining to the rights and liberties of individuals.
Prerequisite: POLS 101.
Terms Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 420 History of Political Thought Credits: 3 (3-0-0)
Course Description: Issues and texts related to tradition of political thought from the ancient through the modern period.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 421 Contemporary Political Theories Credits: 3 (3-0-0)
Course Description: Major political theories and ideologies of contemporary times.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 422 Democratic Theory Credits: 3 (3-0-0)
Course Description: Competing approaches to the theory and practice of democracy, both locally and globally.
Prerequisite: POLS 101.
Registration Information: Sophomore standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 423 American Political Theories Credits: 3 (3-0-0)
Course Description: Major American theories and ideologies: their development and present uses.
Prerequisite: POLS 101.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 431 International Law Credits: 3 (3-0-0)
Course Description: Rules and obligations for conduct of relations among states and other international entities.
Prerequisite: POLS 232.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 433 International Organization Credits: 3 (3-0-0)
Course Description: History, development, structure, process, and activity of selected public international organizations.
Prerequisite: POLS 232.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 435 United States Foreign Policy Credits: 3 (3-0-0)
Course Description: Institutions, responsibilities, processes, and issues in formulation and execution of U.S. foreign policy.
Prerequisite: POLS 232.
Registration Information: Sophomore standing. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 436 Comparative Foreign Policy Credits: 3 (3-0-0)
Course Description: Effect of varying international and domestic contexts on foreign policy choices and outcomes across different countries, cultures, issues, and time.
Prerequisite: POLS 232 and POLS 241.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 437 International Security Credits: 3 (3-0-0)
Course Description: Examines the conditions that make for war and peace in international relations.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 440 Political Geography Credits: 3 (3-0-0)
Also Offered As: GR 440.
Course Description: Examines the meaning of political space; states and nations; competition for territory, including methods and justifications; the structure of political space focusing on states; geopolitics; and the state in an era of globalization. Concepts are illustrated by real-world situations.
Prerequisite: GR 100 or POLS 101.
Registration Information: Sophomore standing. Sections may be offered: Online or Mixed Face-to-Face. Credit not allowed for both GR 440 and POLS 440.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 442 Environmental Politics in Developing World Credits: 3 (3-0-0)
Course Description: Examines environmental politics in developing countries and evaluates climate change, natural resource governance and environmental justice.
Prerequisite: POLS 241.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 443 Comparative Social Movements Credits: 3 (3-0-0)
Course Description: Reviews major works dealing with conceptual and theoretical foundations of social movements and examines a number of cases across regions.
Prerequisite: POLS 241.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 444 Comparative African Politics Credits: 3 (3-0-0)
Course Description: African political systems focusing on precolonial, colonial influences; rise of nationalism; approaches to new political order; influences of development.
Prerequisite: POLS 241.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 445 Comparative Asian Politics Credits: 3 (3-0-0)
Course Description: East and South Asian political systems emphasizing issues of development, political culture, and institutional change.
Prerequisite: POLS 241.
Terms Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 446 Politics of South America Credits: 3 (3-0-0)
Course Description: South American political actors and institutions with emphasis on themes of development, democracy, revolution, and international affairs.
Prerequisite: POLS 241.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 447 Politics in Mexico, Central America, Caribbean Credits: 3 (3-0-0)
Course Description: Mexican politics with comparison to one or more Central American and Caribbean countries.
Prerequisite: POLS 241.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 448 Comparative Racial/Ethnic Politics Credits: 3 (3-0-0)
Course Description: Comparative examination of politics of race and ethnicity and role it plays in formation of nation-states.
Prerequisite: POLS 241.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 449 Middle East Politics Credits: 3 (3-0-0)
Course Description: Political issues of the Middle East, including the Palestinian-Israeli conflict, Islamism, and democratization.
Prerequisite: POLS 241.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 451 Public Policy Design and Governance Credits: 3 (3-0-0)
Course Description: Examination of governance institutions outside the scope of traditional bureaucratic organizations and accountability.
Prerequisite: POLS 101 or POLS 103.
Registration Information: Junior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 459 Program Evaluation for Public Administrators Credits: 3 (3-0-0)
Course Description: An overview of research methods and statistical methods for public administrators.
Prerequisite: POLS 101.
Registration Information: Junior or senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 460 Public Policy Process Credits: 3 (3-0-0)
Course Description: Explanations of U.S. policy formation, implementation, and impact.
Prerequisite: POLS 101.
Registration Information: Junior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 462 Globalization, Sustainability, and Justice Credits: 3 (3-0-0)
Course Description: Public and private policies to promote sustainability and social justice in a globalizing world.
Prerequisite: POLS 232 or POLS 241.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 463 Urban Policy and Management Credits: 3 (3-0-0)
Course Description: Policy choices and management issues associated with urban government.
Prerequisite: POLS 101 or POLS 103.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 465 Public Policy Analysis Credits: 3 (3-0-0)
Course Description: Methods and tools used in the practice of policy analysis and evaluation of current public policy; emphasis on applied analysis.
Prerequisite: POLS 101.
Registration Information: Sophomore standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 482A Study Abroad: Politics and Culture in Turkey Credits: 3 (0-0-3)
Course Description: Politics, history and material culture of Turkey. A study abroad experience.
Prerequisite: POLS 241.
Registration Information: Written consent of instructor. Freshman not allowed.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 482B Study Abroad: Comparative UK and US Policy - London Credits: 3 (0-0-3)
Course Description: Study and practice of public policy and law in the US and UK. In-depth comparative study of the central features of the American and UK policy-making process, administration, and legal system. Review a variety of substantive policy issues and existing public policies from a comparative perspective.
Prerequisite: POLS 101 or POLS 103 or POLS 241.
Registration Information: Sophomore standing. Written consent of instructor. This is a partial semester course. Credit not allowed for both POLS 482B and POLS 482C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 482C Study Abroad: London Experience Credit: 1 (0-0-1)
Course Description: Study and practice of public policy and law in the US and UK. In-depth comparative study of the central features of the American and UK policy-making process, administration, and legal system. Review a variety of substantive policy issues and existing public policies from a comparative perspective.
Prerequisite: POLS 101 or POLS 103 or POLS 241.
Registration Information: Sophomore standing. Written consent of instructor. This is a partial semester course. Credit not allowed for both POLS 482B and POLS 482C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 486A Practicum: Legislative Politics Credits: 6 (0-8-2)
Course Description:
Prerequisite: None.
Registration Information: Must register for laboratory and recitation.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

POLS 486B Practicum: Government Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

POLS 486C Practicum: Civic Engagement Credits: 3 (1-0-4)
Also Offered As: SPCM 486C.
Course Description: Participatory study of civic engagement in public education. Examination of civic engagement pedagogies and their role in public life. Evaluation of and participation in Public Achievement program in partnership with local K-12 schools.
Prerequisite: None.
Registration Information: Must register for lecture and practicum. POLS 486C and SPCM 486C may not be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 487 Internship – Washington DC Semester Credits: Var[6-9] (0-0-0)
Course Description: Students in The Washington Center semester programs will work with an organization in Washington DC. Most internships are for 4 days/week and individually tailored for each student. The Washington Center ensures that all internships are "substantive and challenging." At least 80% of the student's work is non-clerical. Supervised by a professional academic program advisor.
Prerequisite: POLS 101 or POLS 103 or POLS 232 or POLS 241.
Registration Information: Sophomore standing. Requires written consent of program advisor, and the completion of the internal application form for students interested in the program. To be eligible, students should have a 3.000 GPA or greater.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

POLS 492 Capstone Seminar Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Registration Information: Must have taken upper-division course in at least four subfields of political science.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

POLS 496 Washington Semester Colloquium Group Study Credits: 3 (0-0-3)
Course Description: Participating in the Washington DC semester program, groups of more than two students will work together under the supervision of faculty to explore how government and politics occurs in Washington, DC. Interaction with members of the cabinet, ambassadors, leading journalists and CEOs. Participation in small group discussions and attendance at programming related to the internship. Portfolio creation of a student's work documenting and reflecting on their experiences.
Prerequisite: POLS 101 or POLS 103 or POLS 232 or POLS 241.
Registration Information: Sophomore standing. Requires written consent of program advisor, and the completion of the internal application form for students interested in the program. To be eligible, students should have a 3.000 GPA or greater.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

POLS 500 Governmental Politics in the U.S. Credits: 3 (3-0-0)
Course Description: Selected primary source materials on performance of government officials and institutions at federal, state, and local levels.
Prerequisite: None.
Registration Information: Must have taken three upper-division credits in American politics with a grade of B or better.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 501 Citizen Politics in the U.S. Credits: 3 (3-0-0)
Course Description: Selected primary source materials on behavior of individuals and groups in American politics.
Prerequisite: None.
Registration Information: Must have taken three upper-division credits in American politics with a grade of B or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 509 Gender and the Law Credits: 3 (3-0-0)
Course Description: Relationship between gender and the law and the changing nature of that relationship over time.
Prerequisite: POLS 410 or POLS 413.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 520 Theories of Political Action Credits: 3 (3-0-0)
Course Description: Intensive review of primary material on Western political thought.
Prerequisite: POLS 420 or POLS 421.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 530 International Relations Credits: 3 (3-0-0)
Course Description: Theory and methodology utilized in different approaches to international relations.
Prerequisite: None.
Registration Information: Nine credits in international relations or related studies.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 531 International Security Studies Credits: 3 (3-0-0)
Course Description: Theories of international security as applied to different issue areas, both traditional and non-traditional.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Three upper-division credits in international relations with a grade of B or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 532 Governance of the World Political Economy Credits: 3 (3-0-0)
Course Description: Theoretical and practical debates on the organization and governance of the world political economy.
Prerequisite: None.
Registration Information: Nine upper-division credits in international relations with a grade of B or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 540 Comparative Politics Credits: 3 (3-0-0)
Course Description: Theories, methods, and approaches to study of comparative politics.
Prerequisite: None.
Registration Information: Three upper-division credits in comparative politics with a grade of B or better.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 541 Political Economy of Change and Development Credits: 3 (3-0-0)
Course Description: Responses of the state and its institutions to political, economic, and social change.
Prerequisite: None.
Registration Information: Three upper-division credits in comparative politics with a grade of B or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 542 Democracy and Democratization Credits: 3 (3-0-0)
Course Description: Theoretical foundations of democracy and democratization across world regions.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 544 National Identities and Nation Building Credits: 3 (3-0-0)
Also Offered As: ETST 544.
Course Description: How statist conceptions of race and ethnicity have been mobilized in nation-building projects.
Prerequisite: None.
Registration Information: Credit not allowed for both POLS 544 and ETST 544.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 550 Advanced Public Administration Credits: 3 (3-0-0)
Course Description: Overview of study of public administration; recent developments in theory and practice.
Prerequisite: POLS 351.
Registration Information: Written consent of instructor required.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 552A Topics in Public Administration, Personnel Credits: 3 (3-0-0)
Course Description:
Prerequisite: POLS 351.
Registration Information: GPA of 3.00 or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 552B Topics in Public Administration, Budgeting and Finance Credits: 3 (3-0-0)
Course Description:
Prerequisite: POLS 351.
Registration Information: GPA of 3.00 or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 552C Topics in Public Administration, Regulation Credits: 3 (3-0-0)
Course Description:
Prerequisite: POLS 351.
Registration Information: GPA of 3.00 or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 558 Administrative Law Credits: 3 (3-0-0)
Also Offered As: PPA 558.
Course Description: Introduction to the different roles that each branch of the national and state governments play in administrative law, also the politics of administration and regulation. Attention dedicated to the complex ways areas of law interact across administrative decision-making and disputes.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online. Credit allowed for only one of the following: POLS 558, PPA 558, or POLS 580A2.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 587 Internship Credits: Var[1-6] (0-0-0)
Course Description: Supervised work experience in a professional setting related to political science.
Prerequisite: POLS 500 to 99999 - at least 18 credits.
Registration Information: Graduate standing in Political Science.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

POLS 620 Approaches to the Study of Politics Credits: 3 (3-0-0)
Course Description:
Prerequisite: POLS 100 to 481 - at least 15 credits.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 621 Qualitative Methods in Political Science Credits: 3 (3-0-0)
Course Description: Research design, data gathering and organization, ethical issues, and computer applications in qualitative political research.
Prerequisite: SOC 311 or POLS 620, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both POLS 621 and SOC 610.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

POLS 624 Scope and Methods of Political Science Credits: 3 (3-0-0)
Course Description: Graduate survey of the scope of the Political Science discipline and the range of research designs and methods used in the discipline.
Prerequisite: POLS 300 to 9999 - at least 15 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 625 Quantitative Methods of Political Research Credits: 3 (3-0-0)
Course Description: Quantitative approaches and methods for study of political life.
Prerequisite: POLS 320.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 626 Political Research Laboratory Credit: 1 (0-2-0)
Course Description:
Prerequisite: POLS 321.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in POLS 625.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 652 Public Organization Theory Credits: 3 (0-0-3)
Course Description: Theories of behavior of individuals and organizations in government bureaucracies.
Prerequisite: POLS 351.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 660 Theories of the Policy Process Credits: 3 (3-0-0)
Course Description: Recent developments in policy analysis.
Prerequisite: POLS 351 or POLS 460.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 665 Public Policy Analysis Credits: 3 (3-0-0)
Also Offered As: PPA 665.
Course Description: The practice of policy analysis and the tools used to conduct an analysis including: forecasting, cost benefit analysis, cost effectiveness analysis, and policy design.
Prerequisite: PPA 501 or POLS 625.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Sections may be offered: Online. Credit not allowed for both POLS 665 and PPA 665.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 670 Politics of Environment and Sustainability Credits: 3 (3-0-0)
Course Description: Domestic, international, and comparative dimensions of environment and natural resource politics and policy.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 684 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: One year of graduate work.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

POLS 692 Seminar in Environmental Policy Credits: 3 (0-0-3)
Course Description: Topics in domestic and/or global environmental policy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

POLS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

POLS 709 Environmental Politics in the U.S. Credits: 3 (3-0-0)
Course Description: Selected primary materials on governmental performance, groups, and mass public in American environmental politics.
Prerequisite: (POLS 500 or POLS 501) and (POLS 670).
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 729 Political Theory and the Environment Credits: 3 (3-0-0)
Course Description: Political thought applied to questions of the environment.
Prerequisite: POLS 520 and POLS 670.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 739 International Environmental Politics Credits: 3 (3-0-0)
Course Description: Theories and methodologies used in analyzing international environmental politics and policy.
Prerequisite: POLS 530 and POLS 670.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 749 Comparative Environmental Politics Credits: 3 (3-0-0)
Course Description: Application of comparative political theory to analysis of environmental politics.
Prerequisite: (POLS 540 or POLS 541) and (POLS 670).
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 759 Environmental Policy and Administration Credits: 3 (3-0-0)
Course Description: Effects of regulation, intergovernmental relations, and resource availability on federal environmental programs in U.S.
Prerequisite: POLS 670.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

POLS 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Public Policy + Administration (PPA)

PPA 500 Research Methods for Public Policy and Admin Credits: 3 (3-0-0)
Course Description: Introduction to the design, logic, and ethics of research methods appropriate for the evaluation of policies and programs before, during, and after implementation.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PPA 501 Program Evaluation and Quantitative Methods Credits: 3 (3-0-0)
Course Description: Overview of program evaluation and hands-on application to managerial decision making in public administration. Topics include program evaluation, data collection and measurement in public administration, descriptive statistics, measures of association and other bivariate statistics, index variable construction, regression analysis, and an overview of selected other methods applied to problems of public administration and policy.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

PPA 530 Civic Engagement Credits: 3 (3-0-0)
Course Description: Focus on public engagement directed at the tools, theories, and processes relevant to public policy and administration. Introduction to the role citizens play in democracy, decision making, public administration, and public policy. Trends of engagement are explored alongside strategies useful to manage, encourage, and facilitate public participation in public policy and administration. Practice is emphasized.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

PPA 540 International Policy Toolkit Credits: 3 (3-0-0)
Course Description: Provides a valuable toolkit for those interested in working for an intergovernmental organization, international non-governmental organization, or for the U.S. foreign policy-making apparatus. Topics covered include regime change, civil society, political culture, terrorism, and international organizations.
Prerequisite: PPA 500 or PPA 501.
Restriction: Must be a: Graduate.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

PPA 541 Principles & Processes of International Mgmt Credits: 3 (3-0-0)
Course Description: Policy-making and policy-implementation processes of intergovernmental organizations and international non-governmental organizations.
Prerequisite: PPA 500 or PPA 501.
Restriction: Must be a: Graduate.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

PPA 542 Policy Accountability--Non-Democratic Regimes Credits: 3 (3-0-0)
Course Description: Theoretical knowledge and practical, real-world applications that navigate the complex political and economic terrain of non-democratic regimes.
Prerequisite: PPA 500 to 699 - at least 9 credits.
Restriction: Must be a: Graduate.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

PPA 543 Evidence-Based Decision Making Credits: 3 (3-0-0)
Course Description: A survey of evidence-based decision making, including tools, constraints, and opportunities for public servants.
Prerequisite: PPA 500.
Restriction: Must be a: Graduate.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

PPA 544 Ethics and Efficacy--Global Policymaking Credits: 3 (3-0-0)
Course Description: In-depth study of international policymaking success and failure with a focus on ethics and cross-border issues. Provides the expertise and awareness necessary for leadership in international policy and management.
Prerequisite: PPA 500 to 699 - at least 9 credits.
Restriction: Must be a: Graduate.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

PPA 555 Environmental Law and Policy Credits: 3 (3-0-0)
Course Description: Explores different methods of setting environmental goals, economic incentives, and the roles of federal, state, and local governments in protecting the natural environment. Focus on substantive policy areas to connect theory with practice.
Prerequisite: POLS 660 or POLS 665 or PPA 665.
Restriction: Must be a: Graduate.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

PPA 558 Administrative Law Credits: 3 (3-0-0)
Also Offered As: POLS 558.
Course Description: Introduction to the different roles that each branch of the national and state governments play in administrative law, also the politics of administration and regulation. Attention dedicated to the complex ways areas of law interact across administrative decision-making and disputes.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online. Credit allowed for only one of the following: POLS 558, PPA 558, or POLS 580A2.
Grade Mode: Traditional.
Special Course Fee: No.

PPA 587 Internship Credits: Var[1-6] (0-0-0)
Course Description: Supervised professional work experience related to public policy and administration.
Prerequisite: PPA 500 to 699 - at least 18 credits.
Restriction: Must be a: Graduate.
Registration Information: Sections may be offered: Online.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PPA 592 Special Topics in Public Policy and Admin Credits: 3 (0-0-3)
Course Description: Current topics in public policy and administration.
Prerequisite: PPA 500 or PPA 501.
Restriction: Must be a: Graduate.
Registration Information: May only be taken once for credit. Sections may be offfered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

PPA 665 Public Policy Analysis Credits: 3 (3-0-0)
Also Offered As: POLS 665.
Course Description: The practice of policy analysis and the tools used to conduct an analysis including: forecasting, cost benefit analysis, cost effectiveness analysis, and policy design.
Prerequisite: PPA 501 or POLS 625.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online. Credit not allowed for both POLS 665 and PPA 665.
Grade Mode: Traditional.
Special Course Fee: No.

PPA 670 Capstone in Public Policy and Administration Credits: 3 (3-0-0)
Course Description: Opportunity to reflect, integrate, and synthesize what has been learned in the MPPA program. Completing the capstone demonstrates mastery of the knowledge gained in the core curriculum, selected specialization, and internship experience.
Prerequisite: PPA 500 to 699 - at least 21 credits.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

Major in Political Science

Political science is the study of politics and political action in society. It encompasses international agreements and organizations as well as the patterns of political action which both create and shape them. It encompasses citizen action and the institutions which produce public policy at the local, state, and national levels within the United States. It encompasses systems of voting, political parties, and courts, compared across national political systems. It encompasses the raising of normative questions about the nature and purposes of political life. The presence of politics is felt in all areas and sectors of society at all times. The dynamic and transformative effects of political action are seen virtually everywhere.

The department's curriculum is distributed across five subfields of the discipline: American politics, political theory, comparative politics, international relations, and public policy. Course work across the discipline's subfields is complemented by a required support option. Support options include a minor in another department; an interdisciplinary minor; the second language support option; the methods support option, or a second major.

Learning Outcomes

Students majoring in Political Science shall demonstrate the following:

- Ability to reason through political claims and assertions by political actors
- Skill in recognizing and responding to diverse ideological perspectives
- Ability to locate political issues and controversies within their relevant institutional and historical contexts
- Familiarity with the institutional processes of politics in numerous global and domestic political arenas
- Confidence in expressing opinions and presenting analyses of political problems and their solutions

Potential Occupations

The Major in Political Science, like all studies in the liberal arts, provides students with a broad academic background that is serviceable across a broad spectrum of employment in the public and private sectors. Political Science majors are trained to be independent and critical thinkers; to be discerning and active observers and listeners; to communicate persuasively; to constructively engage and solve intellectual and practical problems; to adapt and function effectively in a number of distinct occupational and institutional settings; to function comfortably in a multiethnic, multiracial, and globalizing society. The employment profiles of departmental alumni attest to the breadth of possibilities for today's graduates: public and non-profit organization managers, prosecutors, public policy analysts and consultants, federal law enforcement agents, legislators and legislative analysts, foreign service officers, private attorneys, demographers, criminal investigators, advertising specialists, urban/regional planners, environmental policy analysts, state budget analysts, public relations representatives, market researchers, elementary and high school teachers, international businessmen and businesswomen, lobbyists, novelists, construction industry managers, insurance agents and managers, financiers, and real estate brokers. Some graduates join professions following advanced study in law, international relations, area studies, public administration, public policy analysis, and business management.

Concentrations

Students may complete the general Political Science major or select one of the following concentrations for a more specialized course of study.

- Environmental Politics and Policy Concentration
- Global Politics and Policy Concentration
- U.S. Government, Law, and Policy Concentration

For further information on declaring the Major in Political Science, please schedule an appointment with a College of Liberal Arts Academic Success Coordinator by calling 970-491-3117 or visit Clark C 207.

Requirements Effective Fall 2018

Political science majors must achieve a minimum grade of C (2.000) in each of the political science (POLS) courses counted toward meeting the requirement of the major.

Political Science, Upper-Division

At least 24 credits of upper-division political science courses must be completed for the major. The 24 credits include the senior capstone course, POLS 492, at least 3 credits of AUCC 4A and 4B in addition to POLS 492, and at least one upper-division course in each of the following five subfields.

American Politics and Law

Code	Title	AUCC	Credits
POLS 302	U.S. Political Parties and Elections	4A,4B	3
POLS 303	Politics of Organized Interests	4A,4B	3
POLS 304	Legislative Politics		3
POLS 305	Judicial Politics		3
POLS 306	Executive Politics		3
POLS 309	Urban Politics		3
POLS 405	Race and Ethnicity in U.S. Politics	4A,4B	3
POLS 409	Urban and Regional Politics		3
POLS 410	American Constitutional Law		3
POLS 413	U.S. Civil Rights and Liberties		3

Political Theory

Code	Title	AUCC	Credits
POLS 420	History of Political Thought	4A,4B	3
POLS 421	Contemporary Political Theories	4A,4B	3
POLS 422	Democratic Theory	4A,4B	3
POLS 423	American Political Theories	4A,4B	3

International Relations

Code	Title	Credits
POLS 331	Politics and Society Along Mexican Border	3
POLS 332/ECON 332	International Political Economy	3
POLS 362	Global Environmental Politics	3
POLS 431	International Law	3
POLS 433	International Organization	3
POLS 435	United States Foreign Policy	3
POLS 436	Comparative Foreign Policy	3
POLS 437	International Security	3

Comparative Politics

Code	Title	AUCC	Credits
POLS 341	Western European Government and Politics		3
POLS 345	Russian, Central, and East European Politics		3
POLS 347	Comparative Authoritarianism		3
POLS 442	Environmental Politics in Developing World		3
POLS 443	Comparative Social Movements		3
POLS 444	Comparative African Politics		3
POLS 445	Comparative Asian Politics		3
POLS 446	Politics of South America		3
POLS 447	Politics in Mexico, Central America, Caribbean		3

POLS 448	Comparative Racial/Ethnic Politics	4A,4B	3
POLS 449	Middle East Politics	4A,4B	3

Public Policy and Administration

Code	Title	Credits
POLS 351	Public Administration	3
POLS 361	U.S. Environmental Politics and Policy	3
POLS 364	Air, Climate, and Energy Policy Analysis	3
POLS 451	Public Policy Design and Governance	3
POLS 459	Program Evaluation for Public Administrators	3
POLS 460	Public Policy Process	3
POLS 462	Globalization, Sustainability, and Justice	3
POLS 463	Urban Policy and Management	3
POLS 465	Public Policy Analysis	3

Other Possible Elective Courses Under the 24-Credit Requirement

Code	Title	Credits
POLS 320	Empirical Political Analysis	3
POLS 5**	Selected graduate course [1]	
A maximum of six credits from the following may be used to fulfill this requirement:		
POLS 392	Washington DC Semester Seminar	
POLS 486A	Practicum: Legislative Politics	
POLS 486B	Practicum: Government	
POLS 487	Internship – Washington DC Semester	
POLS 496	Washington Semester Colloquium Group Study	

Support Options

Political Science majors must complete one of the following five Support Options.

Minor or Interdisciplinary Minor Support Option

Code	Title	Credits
Select a minor or interdisciplinary minor in consultation with advisor.		21-24

Student-Selected Course Group Support Option

Code	Title	Credits
A program of courses proposed by student and approved by advisor containing a minimum of 21 credits, of which at least 12 must be upper-division (300- to 400-level).		21

Second Major Support Option

Code	Title	Credits
Select a second major in consultation with advisor. This option may require as much as 36 credits. Credit range shown is approximate, and may require more or less, depending on the second major chosen.		27-36

Foreign Language Support Option

Code	Title	Credits
A minimum of 5 courses totaling at least 15 credits in a single foreign language, including at least 2 courses of language instruction or in the language at the upper-division level.		15-22

Methods Support Option [2]

Code	Title	Credits
Methods Support Option		21
POLS 320	Empirical Political Analysis [2]	3
STAT 301	Introduction to Statistical Methods	3
Select two from the following:		6
PHIL 120	History and Philosophy of Scientific Thought (GT-AH3)	
PHIL 327	Philosophy of Behavioral Sciences	
PHIL 415	Logic and Scientific Method	
Select one from the following:		3
STAT 305	Sampling Techniques	
STAT 340	Multiple Regression Analysis	
STAT 350	Design of Experiments	
Select two from the following:		6
ANTH 441	Method in Cultural Anthropology	
AREC 335/ ECON 335	Introduction to Econometrics	
SOC 210	Quantitative Sociological Analysis	
SOC 311	Methods of Sociological Inquiry	

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
POLS 101	American Government and Politics (GT-SS1)	3C	3
POLS 103	State and Local Government and Politics (GT-SS1)	3C	3
Arts and Humanities		3B	6
Biological and Physical Sciences		3A	4
Historical Perspectives		3D	3
Quantitative Reasoning		1B	3
Electives			5
	Total Credits		30

Sophomore

POLS 232	International Relations (GT-SS1)	3E	3
POLS 241	Comparative Government and Politics (GT-SS1)	3E	3
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)	2	
CO 302	Writing in Digital Environments (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
Political Science, Upper-Division (See list above)[3]			3-6
Support Option (See list above)			3-12
Biological and Physical Sciences		3A	3
Electives			12
	Total Credits		33

Junior

Political Science - AUCC 4A and/or 4B (See Upper-Division list above)[4]		4A,4B	3
Political Science, Upper-Division (See list above)[3]			6-12
Support Option (See list above)			6-12
Electives			3-12
	Total Credits		30

Senior

POLS 492[5]	Capstone Seminar	4A,4B,4C	3
Political Science, Upper-Division (See list above)[3]			3-6
Support Option (See list above)			6-12
Electives[6]			3-15
	Total Credits		27
	Program Total Credits:		120

1 Students may select a 500-level POLS graduate course with approval of advisor and the instructor to fulfill a maximum of 3 credits of the 24-credit upper-division requirement.

2 Students choosing the Methods Support Option must take POLS 320. Credits earned in POLS 495 may not be used to satisfy this requirement.

3 Select a minimum of 24 upper-division (300- to 400-level) courses as described above in the Political Science, Upper-Division list.

4 In addition to POLS 492 students must select at least one course from among the courses listed in the five subfields (see Political Science, Upper-Division list above), for a minimum of 3 credits, that meets the AUCC 4A/4B requirement for the major.

5 Students must have completed upper division courses in at least four of the five subfields (see Political Science, Upper-Division list above) in order to enroll in POLS 492.

6 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

Political science majors must achieve a minimum grade of C (2.000) in each of the political science (POLS) courses counted toward meeting the requirement of the major.

At least 24 credits of upper-division political science courses must be completed for the major. The 24 credits include the senior capstone course, POLS 492, at least 3 credits of AUCC 4A and 4B in addition to POLS 492, and at least one upper-division course in each of the following five subfields.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
POLS 101	American Government and Politics (GT-SS1)		X	3C	3

Arts and Humanities				3B	3
Biological and Physical Sciences				3A	4
Elective					2
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
POLS 103	State and Local Government and Politics (GT-SS1)		X	3C	3
Arts and Humanities				3B	3
Historical Perspectives				3D	3
Quantitative Reasoning		X		1B	3
Elective					3
CO 150 must be completed by the end of Semester 2.					
	Total Credits				15
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
POLS 232	International Relations (GT-SS1)		X	3E	3
Biological and Physical Sciences				3A	3
Support Option (See option list on Major Requirements Tab)					3-12
Electives					6
	Total Credits				18
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
POLS 241	Comparative Government and Politics (GT-SS1)		X	3E	3
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)			2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)			2	
CO 302	Writing in Digital Environments (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
POLS*** Upper-Division (See list on Major Requirements Tab)					3-6
Electives					6
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
POLS*** AUCC 4A and/or 4B (See list on Major Requirements Tab)				4A,4B	3
POLS*** Upper-Division (See list on Major Requirements Tab)					3
Support Option (See Option list on Major Requirements Tab)					3-6
Electives					3-6
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
POLS*** Upper-Division (See list on Major Requirements Tab)					3-9
Support Option (See Option list on Major Requirements Tab					3-6
Electives					3-6
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
POLS*** Upper-Division (See list on Major Requirements Tab)					3-6
Support Option (See Option list on Major Requirements Tab)					3-6
Electives					6
	Total Credits				12
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
POLS 492	Capstone Seminar	X		4A,4B,4C	3

POLS*** Upper-Division (See list on Major Requirements Tab)	X	3
Support Option (See Option list on Major Requirements Tab)	X	3-6
Electives	X	3-6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X	
Total Credits		15
Program Total Credits:		120

Major in Political Science, Environmental Politics and Policy Concentration

The Environmental Politics and Policy concentration is designed to help students develop the knowledge and skills to analyze the connections between politics and the natural world, and pursue careers in environmental politics and policy-making. Students will learn about how political forces contribute to environmental degradation, the process for developing environmental policies, strategies to assess the strengths and weaknesses of different policy approaches, and how political forces can be harnessed to develop effective responses to problems such as climate change, water and air pollution, food security, and energy provision. Students will explore these issues from both domestic and global perspectives. Environmental Politics and Policy students are strongly encouraged to complete an internship to gain practical experience working in the field.

Learning Outcomes

Students majoring in Political Science shall demonstrate the following:

- Ability to reason through political claims and assertions by political actors
- Skill in recognizing and responding to diverse ideological perspectives
- Ability to locate political issues and controversies within their relevant institutional and historical contexts
- Familiarity with the institutional processes of politics in numerous global and domestic political arenas
- Confidence in expressing opinions and presenting analyses of political problems and their solutions

Potential Occupations

Graduates may work as policy analysts, advocates, planners, educators or decision-makers in government agencies, non-profit organizations, businesses and consulting firms at the local, state, national and international levels.

For further information on declaring the Major in Political Science, Environmental Politics and Policy Concentration, please schedule an appointment with a College of Liberal Arts Academic Success Coordinator by calling 970-491-3117 or visit Clark C 207.

Requirements Effective Fall 2018

Political science majors must achieve a minimum grade of C (2.000) in each of the political science (POLS) courses counted toward meeting the requirement of the major.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
POLS 101	American Government and Politics (GT-SS1)	3C	3
POLS 103	State and Local Government and Politics (GT-SS1)	3C	3
Arts and Humanities		3B	6
Biological and Physical Sciences		3A	4
Historical Perspectives		3D	3
Quantitative Reasoning		1B	3
Electives			5
	Total Credits		30

Sophomore

POLS 232	International Relations (GT-SS1)	3E	3
POLS 241	Comparative Government and Politics (GT-SS1)	3E	3
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	

CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)	2	
CO 302	Writing in Digital Environments (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
LB 300	Specialized Professional Writing	2	
Tier Four: Select one from the following:[1,2]			3
POLS 361	U.S. Environmental Politics and Policy		
POLS 362	Global Environmental Politics		
POLS 364	Air, Climate, and Energy Policy Analysis		
POLS 3** Tier Three (300-level courses only; see list below)[2,3]			0-3
Support Option (See list below)			3-12
Biological and Physical Sciences		3A	3
Electives			12
	Total Credits		33

Junior

Tier Two: Select one from the following:			3
POLS 420	History of Political Thought	4A,4B	
POLS 421	Contemporary Political Theories	4A,4B	
POLS 422	Democratic Theory	4A,4B	
POLS 423	American Political Theories	4A,4B	
POLS *** Tier Three (courses not taken previously; see list below)[2]			3-6
POLS *** Tier Four (courses not taken previously; see list below)[1,2]			3-6
Support Option (See list below)			6-12
Electives[4]			3-12
	Total Credits		30

Senior

POLS 492 (Tier Five)[5]	Capstone Seminar	4A,4B,4C	3
POLS *** Tier Four (courses not taken previously; see list below)[1,2]			3-6
Support Option (See list below)			6-12
Electives[4]			3-15
	Total Credits		27
	Program Total Credits:		120

Environmental Politics and Policy Concentration Tier Requirements

Code	Title	AUCC	Credits
TIER ONE COURSES			
12 credits, four courses taken in the freshman and sophomore years as shown above			
POLS 101	American Government and Politics (GT-SS1)	3C	3
POLS 103	State and Local Government and Politics (GT-SS1)	3C	3
POLS 232	International Relations (GT-SS1)	3E	3
POLS 241	Comparative Government and Politics (GT-SS1)	3E	3
TIER TWO COURSES			
3 credits, one course taken in the junior year, as shown above			
POLS 420	History of Political Thought	4A,4B	3
POLS 421	Contemporary Political Theories	4A,4B	3

POLS 422	Democratic Theory	4A,4B	3
POLS 423	American Political Theories	4A,4B	3
TIER THREE COURSES			
Select 6 unique credits, two courses, one each from among two different subfields of the three subfields below, taken in the sophomore, junior and/or senior years [2,3]			
American Politics and Law			
POLS 302	U.S. Political Parties and Elections	4A,4B	3
POLS 303	Politics of Organized Interests	4A,4B	3
POLS 304	Legislative Politics		3
POLS 305	Judicial Politics		3
POLS 306	Executive Politics		3
POLS 309	Urban Politics		3
POLS 405	Race and Ethnicity in U.S. Politics	4A,4B	3
POLS 409	Urban and Regional Politics		3
POLS 410	American Constitutional Law		3
POLS 413	U.S. Civil Rights and Liberties		3
International Relations			
POLS 331	Politics and Society Along Mexican Border		3
POLS 332/ECON 332	International Political Economy		3
POLS 362	Global Environmental Politics		3
POLS 431	International Law		3
POLS 433	International Organization		3
POLS 435	United States Foreign Policy		3
POLS 436	Comparative Foreign Policy		3
POLS 437	International Security		3
Comparative Politics			
POLS 341	Western European Government and Politics		3
POLS 345	Russian, Central, and East European Politics		3
POLS 347	Comparative Authoritarianism		3
POLS 442	Environmental Politics in Developing World		3
POLS 443	Comparative Social Movements		3
POLS 444	Comparative African Politics		3
POLS 445	Comparative Asian Politics		3
POLS 446	Politics of South America		3
POLS 447	Politics in Mexico, Central America, Caribbean		3
POLS 448	Comparative Racial/Ethnic Politics	4A,4B	3
POLS 449	Middle East Politics	4A,4B	3
TIER FOUR COURSES			
Select 12 unique credits, four courses taken in the sophomore, junior and/or senior years [1,2]			
POLS 361	U.S. Environmental Politics and Policy		3
POLS 362	Global Environmental Politics		3
POLS 364	Air, Climate, and Energy Policy Analysis		3
POLS 442	Environmental Politics in Developing World		3

POLS 459	Program Evaluation for Public Administrators		3
POLS 460	Public Policy Process		3
POLS 462	Globalization, Sustainability, and Justice		3
POLS 463	Urban Policy and Management		3
POLS 465	Public Policy Analysis		3
A maximum of six credits from the following may be used to fulfill the Tier Four requirement:			
POLS 392	Washington DC Semester Seminar		
POLS 486A	Practicum: Legislative Politics		
POLS 486B	Practicum: Government		
POLS 487	Internship – Washington DC Semester		
POLS 496	Washington Semester Colloquium Group Study		
Maximum of one course (three credits) may be taken from the following:			
AREC 340/ECON 340	Introduction-Economics of Natural Resources		
HIST 351	American West to 1900		
HIST 352	American West Since 1900		
HIST 355	American Environmental History		
HIST 470	World Environmental History, 1500-Present		
HIST 476	History of America's National Parks		
SOC 320	Population-Natural Resources and Environment		
SOC 321	Soil, Environment, and Society		
SOC 322	Introduction to Environmental Justice		
SOC 364	Food, Agriculture and Global Society		
SOC 460	Society and Environment		
SOC 463	Sociology of Disaster		
TIER FIVE COURSE			
3 credits, one course taken in the senior year			
POLS 492	Capstone Seminar [5]	4A,4B,4C	3

Support Option

Political Science majors must complete one of the following five Support Options.

Minor or Interdisciplinary Minor Support Option

Code	Title	Credits
Select a minor or interdisciplinary minor in consultation with advisor.		21-24

Student-Selected Course Group Support Option

Code	Title	Credits
A program of courses proposed by student and approved by advisor containing a minimum of 21 credits, of which at least 12 must be upper-division (300- to 400-level).		21

Second Major Support Option

Code	Title	Credits
Select a second major in consultation with advisor. This option may require as much as 36 credits. Credit range shown is approximate, and may require more or less, depending on the second major chosen.		27-36

Foreign Language Support Option

Code	Title	Credits
A minimum of 5 courses totaling at least 15 credits in a single foreign language, including at least 2 courses of language instruction or in the language at the upper-division level.		15-22

Methods Support Option

Code	Title	Credits
Methods Support Option		21
POLS 320	Empirical Political Analysis	3
STAT 301	Introduction to Statistical Methods	3
Select two from the following:		6

PHIL 120	History and Philosophy of Scientific Thought (GT-AH3)	
PHIL 327	Philosophy of Behavioral Sciences	
PHIL 415	Logic and Scientific Method	
Select one from the following:		3
STAT 305	Sampling Techniques	
STAT 340	Multiple Regression Analysis	
STAT 350	Design of Experiments	
Select two from the following:		6
ANTH 441	Method in Cultural Anthropology	
AREC 335/ ECON 335	Introduction to Econometrics	
SOC 210	Quantitative Sociological Analysis	
SOC 311	Methods of Sociological Inquiry	

[1] Select a minimum of 12 upper-division (300- to 400-level) credits to fulfill Tier Four. Sophomores may take only 300-level courses from this section. Students may substitute a maximum of 3 credits in one of two ways: 1. from non-POLS specified courses shown above in the program; 2. by petitioning the advisor to include a non-POLS upper-division course when at least fifty percent (50%) of the course material and grading are related to environmental politics and policy. A course syllabus will be required for this option.

[2] Courses selected to fulfill Tier Three requirements may not also fulfill Tier Four requirements, and vice versa.

[3] Sophomores may take only 300-level Tier Three courses.

[4] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

[5] Students must complete one upper-division course in each of four of the five departmental subfields (American Politics, Political Theory, International Relations, Comparative Politics, and Public Policy and Administration) prior to taking POLS 492.

Major Completion Map

Distinctive Requirements for Degree Program:

Political science majors must achieve a minimum grade of C (2.000) in each of the political science (POLS) courses counted toward meeting the requirement of the major.

Upper-Division course in at least four subfields of Political Science required to register for POLS 492.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
POLS 101	American Government and Politics (GT-SS1)		X	3C	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	4
Elective					2
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
POLS 103	State and Local Government and Politics (GT-SS1)		X	3C	3
Arts and Humanities				3B	3
Historical Perspectives				3D	3
Quantitative Reasoning		X		1B	3
Elective					3
CO 150 and AUCC 1B (Quantitative Reasoning) must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
POLS 232	International Relations (GT-SS1)		X	3E	3
POLS 241	Comparative Government and Politics (GT-SS1)			3E	3
Support Option (See option list on Concentration Requirements Tab)					3-12
Tier Three (See Department List on Concentration Requirements tab)					0-3
Biological and Physical Sciences			X	3A	3
Elective					3
	Total Credits				18
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:			X		3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)			2	

CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)			2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)			2	
CO 302	Writing in Digital Environments (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
LB 300	Specialized Professional Writing			2	
Tier Four: Select one course from the following:					3
POLS 361	U.S. Environmental Politics and Policy				
POLS 362	Global Environmental Politics				
POLS 364	Air, Climate, and Energy Policy Analysis				
Electives					9
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
Tier Four (See List on Concentration Requirements Tab)					3-6
Tier Three (See List on Concentration Requirements Tab)					3-6
Support Option (See option list on Concentration Requirements Tab)					3-6
Elective					0-3
	Total Credits				18
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Tier Two: Select one from the following:					3
POLS 420	History of Political Thought			4A,4B	
POLS 421	Contemporary Political Theories			4A,4B	
POLS 422	Democratic Theory			4A,4B	
POLS 423	American Political Theories			4A,4B	
Support Option (See option list on Concentration Requirements Tab)					3-6
Electives					3-9
	Total Credits				12

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Tier Four (See List on Concentration Requirements Tab)		X			3-6
Support Option (See option list on Concentration Requirements Tab)		X			3-6
Elective		X			0-3
	Total Credits				12
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
POLS 492 (Tier Five)	Capstone Seminar	X		4A,4B,4C	3
Support Option (See option list on Concentration Requirements Tab)		X			3-6
Electives		X			3-12
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Political Science, Global Politics and Policy Concentration

The Global Politics and Policy concentration is designed to help students develop the knowledge and skills to analyze political relationships between and within countries and to pursue careers in international affairs (http://www.apsia.org/career-guide). Students will learn about different systems of government, state-society relations in various parts of the world, the ways that public and private actors interact through international institutions and the global economy, as well as the causes of and responses to domestic and international conflict. Global Politics and Policy students are strongly encouraged to study a foreign language (http://languages.colostate.edu) and to complete some of their coursework in one of CSU's many study abroad programs (http://educationabroad.colostate.edu/students).

Learning Outcomes

Students majoring in Political Science shall demonstrate the following:

- Ability to reason through political claims and assertions by political actors
- Skill in recognizing and responding to diverse ideological perspectives
- Ability to locate political issues and controversies within their relevant institutional and historical contexts
- Familiarity with the institutional processes of politics in numerous global and domestic political arenas
- Confidence in expressing opinions and presenting analyses of political problems and their solutions

Potential Occupations

Graduates may work for government agencies, intergovernmental organizations, international businesses, consulting firms or non-profit organizations in the U.S. and abroad.

For further information on declaring the Major in Political Science, Global Politics and Policy Concentration, please schedule an appointment with a College of Liberal Arts Academic Success Coordinator by calling 970-491-3117 or visit Clark C 207.

Requirements Effective Fall 2018

Political science majors must achieve a minimum grade of C (2.000) in each of the political science (POLS) courses counted toward meeting the requirement of the major.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
POLS 101	American Government and Politics (GT-SS1)	3C	3
POLS 103	State and Local Government and Politics (GT-SS1)	3C	3
Arts and Humanities		3B	6
Biological and Physical Sciences		3A	4
Historical Perspectives		3D	3
Quantitative Reasoning		1B	3
Electives			5
	Total Credits		30

Sophomore

POLS 232	International Relations (GT-SS1)	3E	3
POLS 241	Comparative Government and Politics (GT-SS1)	3E	3
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)	2	
CO 302	Writing in Digital Environments (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
LB 300	Specialized Professional Writing	2	
Tier Four: Select one course from the following:[1,2]			3
POLS 331	Politics and Society Along Mexican Border		
POLS 332/ECON 332	International Political Economy		
POLS 341	Western European Government and Politics		
POLS 345	Russian, Central, and East European Politics		
POLS 362	Global Environmental Politics		
POLS *** Tier Three (300-level courses only; see list below)[2,3]			0-3
Support Option (see list below)			3-12
Biological and Physical Sciences		3A	3
Electives			12
	Total Credits		33

Junior

Tier Two: Select one course from the following:			3
POLS 420	History of Political Thought	4A,4B	
POLS 421	Contemporary Political Theories	4A,4B	
POLS 422	Democratic Theory	4A,4B	
POLS 423	American Political Theories	4A,4B	
POLS *** Tier Three (course not taken previously; see list below)[2,3]			3-6
POLS *** Tier Four (course not taken previously; see list below)[1,2]			3-6
Support Option (see list below)			6-12
Electives[4]			3-12
	Total Credits		30

Senior

POLS 492 (Tier Five)[5]	Capstone Seminar	4A,4B,4C	3
POLS *** Tier Four (courses not taken previously; see list below)[1,2]			3-6
Support Option (see list below)			6-12
Electives[4]			3-15
	Total Credits		27
	Program Total Credits:		120

Global Politics and Policy Concentration Tier Requirements

Code	Title	AUCC	Credits
TIER ONE COURSES			
12 credits, four courses taken in the freshman and sophomore years as shown above			
POLS 101	American Government and Politics (GT-SS1)	3C	3
POLS 103	State and Local Government and Politics (GT-SS1)	3C	3
POLS 232	International Relations (GT-SS1)	3E	3
POLS 241	Comparative Government and Politics (GT-SS1)	3E	3
TIER TWO COURSES			
3 credits, one course taken in the junior year, as shown above			
POLS 420	History of Political Thought	4A,4B	3
POLS 421	Contemporary Political Theories	4A,4B	3
POLS 422	Democratic Theory	4A,4B	3
POLS 423	American Political Theories	4A,4B	3
TIER THREE COURSES			
Select 6 unique credits, two courses, one from each of the two different subfields below, taken in the sophomore, junior and/or senior years [2,3]			
American Politics and Law			
POLS 302	U.S. Political Parties and Elections	4A,4B	3
POLS 303	Politics of Organized Interests	4A,4B	3
POLS 304	Legislative Politics		3
POLS 305	Judicial Politics		3
POLS 306	Executive Politics		3
POLS 309	Urban Politics		3
POLS 405	Race and Ethnicity in U.S. Politics	4A,4B	3
POLS 409	Urban and Regional Politics		3

POLS 410	American Constitutional Law		3
POLS 413	U.S. Civil Rights and Liberties		3
Public Policy and Administration			
POLS 351	Public Administration		3
POLS 361	U.S. Environmental Politics and Policy		3
POLS 364	Air, Climate, and Energy Policy Analysis		3
POLS 451	Public Policy Design and Governance		3
POLS 459	Program Evaluation for Public Administrators		3
POLS 460	Public Policy Process		3
POLS 462	Globalization, Sustainability, and Justice		3
POLS 463	Urban Policy and Management		3
POLS 465	Public Policy Analysis		3
TIER FOUR COURSES			
Select 12 unique credits, with at least one course from each of the first two subfields below, taken in the sophomore, junior and/or senior years [1,2]			
International Relations			
POLS 331	Politics and Society Along Mexican Border		3
POLS 332/ECON 332	International Political Economy		3
POLS 362	Global Environmental Politics		3
POLS 431	International Law		3
POLS 433	International Organization		3
POLS 435	United States Foreign Policy		3
POLS 436	Comparative Foreign Policy		3
POLS 437	International Security		3
Comparative Politics			
POLS 341	Western European Government and Politics		3
POLS 345	Russian, Central, and East European Politics		3
POLS 347	Comparative Authoritarianism		3
POLS 442	Environmental Politics in Developing World		3
POLS 443	Comparative Social Movements		3
POLS 444	Comparative African Politics		3
POLS 445	Comparative Asian Politics		3
POLS 446	Politics of South America		3
POLS 447	Politics in Mexico, Central America, Caribbean		3
POLS 448	Comparative Racial/Ethnic Politics	4A,4B	3
POLS 449	Middle East Politics	4A,4B	3
A maximum of six credits from the following may be used to fulfill the Tier Four requirement:			
POLS 392	Washington DC Semester Seminar		
POLS 486A	Practicum: Legislative Politics		
POLS 486B	Practicum: Government		
POLS 487	Internship – Washington DC Semester		

POLS 496	Washington Semester Colloquium Group Study		
TIER FIVE COURSES			
3 credits, one course taken in the senior year			
POLS 492	Capstone Seminar [5]	4A,4B,4C	3

Support Option

Political Science majors must complete one of the following five Support Options.

Minor or Interdisciplinary Minor Support Option

Code	Title	Credits
Select a minor or interdisciplinary minor in consultation with advisor.		21-24

Student-Selected Course Group Support Option

Code	Title	Credits
A program of courses proposed by student and approved by advisor containing a minimum of 21 credits, of which at least 12 must be upper-division (300- to 400-level).		21

Second Major Support Option

Code	Title	Credits
Select a second major in consultation with advisor. This option may require as much as 36 credits. Credit range shown is approximate, and may require more or less, depending on the second major chosen.		27-36

Foreign Language Support Option

Code	Title	Credits
A minimum of 5 courses totaling at least 15 credits in a single foreign language, including at least 2 courses of language instruction or in the language at the upper-division level.		15-22

Methods Support Option

Code	Title	Credits
Methods Course Option		21
POLS 320	Empirical Political Analysis	3
STAT 301	Introduction to Statistical Methods	3
Select two from the following:		6
PHIL 120	History and Philosophy of Scientific Thought (GT-AH3)	
PHIL 327	Philosophy of Behavioral Sciences	
PHIL 415	Logic and Scientific Method	
Select one from the following:		3
STAT 305	Sampling Techniques	
STAT 340	Multiple Regression Analysis	
STAT 350	Design of Experiments	
Select two from the following:		6
ANTH 441	Method in Cultural Anthropology	
AREC 335/ ECON 335	Introduction to Econometrics	
SOC 210	Quantitative Sociological Analysis	
SOC 311	Methods of Sociological Inquiry	

1 Select a minimum of 12 upper-division (300- to 400-level) credits to fulfill Tier Four. Sophomores may take only 300-level courses from this section.

2 Courses selected to fulfill Tier Three requirements may not also fulfill Tier Four requirements, and vice versa.

3 Sophomores may take only 300-level Tier Three courses.

4 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

5 Students must complete one upper-division course in each of four of the five departmental subfields (American Politics, Political Theory, International Relations, Comparative Politics, and Public Policy and Administration) prior to taking POLS 492.

Major Completion Map

Distinctive Requirements for Degree Program:

Political science majors must achieve a minimum grade of C (2.000) in each of the political science (POLS) courses counted toward meeting the requirement of the major.

Upper-Division course in at least four subfields of political science required to register for POLS 492.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
CO 150	College Composition (GT-CO2)		X	1A	3
POLS 101	American Government and Politics (GT-SS1)		X	3C	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	4
Elective					2
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
POLS 103	State and Local Government and Politics (GT-SS1)		X	3C	3
Arts and Humanities				3B	3
Historical Perspectives				3D	3
Quantitative Reasoning		X		1B	3

Elective					3
CO 150 must be completed by the end of Semester 2.			X		
	Total Credits				15
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
POLS 232	International Relations (GT-SS1)		X	3E	3
POLS 241	Comparative Government and Politics (GT-SS1)			3E	3
Support Option (See option list on Concentration Requirements Tab)					3-12
Tier Three (See Department list on Concentration Requirements Tab)					0-3
Biological and Physical Sciences			X	3A	3
Elective					3
	Total Credits				18
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)		X	2	
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)		X	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)		X	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)		X	2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)		X	2	
CO 302	Writing in Digital Environments (GT-CO3)		X	2	
JTC 300	Professional and Technical Communication (GT-CO3)		X	2	
LB 300	Specialized Professional Writing		X	2	
Tier Four: Select one course from the following:					3
POLS 331	Politics and Society Along Mexican Border				
POLS 332/ ECON 332	International Political Economy				
POLS 341	Western European Government and Politics				
POLS 345	Russian, Central, and East European Politics				
POLS 362	Global Environmental Politics				
Electives					9
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
Tier Three (See Department list on Concentration Requirements Tab)					3-6
Tier Four (See Department list on Concentration Requirements Tab)					3-6
Support Option (See option list on Concentration Requirements Tab)					3-6
Elective					0-3
	Total Credits				18
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Tier Two: Select one course from the following:					3
POLS 420	History of Political Thought			4A,4B	
POLS 421	Contemporary Political Theories			4A,4B	
POLS 422	Democratic Theory			4A,4B	
POLS 423	American Political Theories			4A,4B	
Support Option (See option list on Concentration Requirements Tab)					3-6
Electives					3-9
	Total Credits				12
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Tier Four (See Department list on Concentration Requirements Tab)					3-6
Support Option (See option list on Concentration Requirements Tab)					3-6

Elective					0-3
	Total Credits				12
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
POLS 492 (Tier Five)	Capstone Seminar	X		4A,4B,4C	3
Support Option (See option list on Concentration Requirements Tab)		X			3-6
Electives		X			3-12
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Political Science, U.S. Government, Law, and Policy Concentration

The U.S. Government, Law, and Policy concentration is designed to prepare students to become future leaders in the public sector. The skills gained in this concentration help prepare students for a variety of careers. Resources for careers include the American Political Science Association (http://www.apsanet.org/careersinpoliticalscience) and the Network of Schools of Public Policy, Affairs, and Administration (https://www.naspaa.org). The courses in this concentration educate students about the political processes and the legal environment of all levels of American government, as well as the processes of policymaking and the administrative apparatus used to implement public policy. Students will also be exposed to a variety of substantive policy issues including urban policy, energy policy, and environmental policy in the United States. U.S. Government, Law, and Public Policy students are strongly encouraged to complete an internship in one of the many organizations in the broader community. Students in this concentration are also encouraged to participate in the Legislative Internship Program (http://polisci.colostate.edu/undergraduate/legislative-internship) during their junior or senior years.

Learning Outcomes

Students majoring in Political Science shall demonstrate the following:

- Ability to reason through political claims and assertions by political actors
- Skill in recognizing and responding to diverse ideological perspectives
- Ability to locate political issues and controversies within their relevant institutional and historical contexts
- Familiarity with the institutional processes of politics in numerous global and domestic political arenas
- Confidence in expressing opinions and presenting analyses of political problems and their solutions

Potential Occupations

Graduates may work for government agencies, nonprofits, community organizations, lobbying firms, elected office, political communication, research and policy analysts. Other graduates will utilize their political science education to prepare for law and graduate schools. Past students have completed internships (https://polisci.colostate.edu/internships) with a variety of law firms, the cities of Fort Collins, Windsor, Loveland, and Westminster, the Colorado General Assembly, and Woodward among others.

For further information on declaring the Major in Political Science, U.S. Government, Law, and Policy Concentration, please schedule an appointment with a College of Liberal Arts Academic Success Coordinator by calling 970-491-3117 or visit Clark C 207.

Requirements Effective Fall 2018

Political science majors must achieve a minimum grade of C (2.000) in each of the political science (POLS) courses counted toward meeting the requirement of the major.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
POLS 101	American Government and Politics (GT-SS1)	3C	3
POLS 103	State and Local Government and Politics (GT-SS1)	3C	3
Arts and Humanities		3B	6
Biological and Physical Sciences		3A	4
Historical Perspectives		3D	3
Quantitative Reasoning		1B	3
Electives			5
	Total Credits		30

Sophomore

POLS 232	International Relations (GT-SS1)	3E	3
POLS 241	Comparative Government and Politics (GT-SS1)	3E	3
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)	2	
CO 302	Writing in Digital Environments (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
LB 300	Specialized Professional Writing	2	
Tier Four: Select one course from the following (see list below)[1,2]			3
POLS 302	U.S. Political Parties and Elections	4A,4B	
POLS 303	Politics of Organized Interests	4A,4B	
POLS 304	Legislative Politics		
POLS 305	Judicial Politics		
POLS 306	Executive Politics		
POLS 309	Urban Politics		
POLS 351	Public Administration		
POLS 361	U.S. Environmental Politics and Policy		
POLS 364	Air, Climate, and Energy Policy Analysis		
POLS 3** Tier Three (300-level courses only; see list below)[2,3]			0-3
Support Option (see list below)			3-12
Biological and Physical Sciences		3A	3
Electives			12
	Total Credits		33

Junior

Tier Two: Select one course from the following:			3
POLS 420	History of Political Thought	4A,4B	
POLS 421	Contemporary Political Theories	4A,4B	
POLS 422	Democratic Theory	4A,4B	
POLS 423	American Political Theories	4A,4B	
POLS *** Tier Three (courses not taken previously; see list below)[2,3]			3-6
POLS *** Tier Four (courses not taken previously; see list below)[1,2]			3-6
Support Option (see list below)			6-12
Electives[4]			3-12
	Total Credits		30

Senior

POLS 492 (Tier Five)[5]	Capstone Seminar	4A,4B,4C	3
POLS *** Tier Four (courses not taken previously; see list below)[1,2]			3-6
Support Option (see list below)			6-12
Electives[4]			3-15
	Total Credits		27
	Program Total Credits:		120

U.S. Government, Law, and Policy Concentration Tier Requirements

Code	Title	AUCC	Credits
TIER ONE COURSES			
12 credits, four courses taken in the freshman and sophomore years as shown above			
POLS 101	American Government and Politics (GT-SS1)	3C	3
POLS 103	State and Local Government and Politics (GT-SS1)	3C	3
POLS 232	International Relations (GT-SS1)	3E	3
POLS 241	Comparative Government and Politics (GT-SS1)	3E	3
TIER TWO COURSES			
3 credits, one course taken in the junior year, as shown above			
POLS 420	History of Political Thought	4A,4B	3
POLS 421	Contemporary Political Theories	4A,4B	3
POLS 422	Democratic Theory	4A,4B	3
POLS 423	American Political Theories	4A,4B	3
TIER THREE COURSES			
Select 6 unique credits, one course from each of the two different subfields below, taken in the sophomore, junior and/or senior years [2,3]			
International Relations			
POLS 331	Politics and Society Along Mexican Border		3
POLS 332/ECON 332	International Political Economy		3
POLS 362	Global Environmental Politics		3
POLS 431	International Law		3
POLS 433	International Organization		3
POLS 435	United States Foreign Policy		3
POLS 436	Comparative Foreign Policy		3
POLS 437	International Security		3
Comparative Politics			
POLS 341	Western European Government and Politics		3
POLS 345	Russian, Central, and East European Politics		3
POLS 347	Comparative Authoritarianism		3
POLS 442	Environmental Politics in Developing World		3
POLS 443	Comparative Social Movements		3
POLS 444	Comparative African Politics		3
POLS 445	Comparative Asian Politics		3
POLS 446	Politics of South America		3
POLS 447	Politics in Mexico, Central America, Caribbean		3
POLS 448	Comparative Racial/Ethnic Politics	4A,4B	3
POLS 449	Middle East Politics	4A,4B	3
TIER FOUR COURSES			
Select 12 unique credits, with at least one course from each of the first two subfields below, taken in the sophomore, junior and/or senior years [1,2]			
American Politics and Law			
POLS 302	U.S. Political Parties and Elections	4A,4B	3
POLS 303	Politics of Organized Interests	4A,4B	3
POLS 304	Legislative Politics		3

POLS 305	Judicial Politics		3
POLS 306	Executive Politics		3
POLS 309	Urban Politics		3
POLS 405	Race and Ethnicity in U.S. Politics	4A,4B	3
POLS 409	Urban and Regional Politics		3
POLS 410	American Constitutional Law		3
POLS 413	U.S. Civil Rights and Liberties		3
Public Policy and Administration			
POLS 351	Public Administration		3
POLS 361	U.S. Environmental Politics and Policy		3
POLS 364	Air, Climate, and Energy Policy Analysis		3
POLS 451	Public Policy Design and Governance		3
POLS 459	Program Evaluation for Public Administrators		3
POLS 460	Public Policy Process		3
POLS 462	Globalization, Sustainability, and Justice		3
POLS 463	Urban Policy and Management		3
POLS 465	Public Policy Analysis		3
A maximum of six credits from the following may be used to fulfill the Tier Four requirement:			
POLS 392	Washington DC Semester Seminar		
POLS 486A	Practicum: Legislative Politics		
POLS 486B	Practicum: Government		
POLS 487	Internship – Washington DC Semester		
POLS 496	Washington Semester Colloquium Group Study		
TIER FIVE COURSE			
3 credits, one course taken in the senior year			
POLS 492	Capstone Seminar [5]	4A,4B,4C	3

Support Option

Political Science majors must complete one of the following five Support Options.

Minor or Interdisciplinary Minor Support Option

Code	Title	Credits
Select a minor or interdisciplinary minor in consultation with advisor.		21-24

Student-Selected Course Group Support Option

Code	Title	Credits
A program of courses proposed by student and approved by advisor containing a minimum of 21 credits, of which at least 12 must be upper-division (300- to 400-level).		21

Second Major Support Option

Code	Title	Credits
Select a second major in consultation with advisor. This option may require as much as 36 credits. Credit range shown is approximate, and may require more or less, depending on the second major chosen.		27-36

Foreign Language Support Option

Code	Title	Credits
A minimum of 5 courses totaling at least 15 credits in a single foreign language, including at least 2 courses of language instruction or in the language at the upper-division level.		15-22

Methods Support Option

Code	Title	Credits
Methods Support Option		21
POLS 320	Empirical Political Analysis	3
STAT 301	Introduction to Statistical Methods	3
Select two from the following:		6
PHIL 120	History and Philosophy of Scientific Thought (GT-AH3)	
PHIL 327	Philosophy of Behavioral Sciences	
PHIL 415	Logic and Scientific Method	
Select one from the following:		3
STAT 305	Sampling Techniques	
STAT 340	Multiple Regression Analysis	
STAT 350	Design of Experiments	

Select two from the following:		6
ANTH 441	Method in Cultural Anthropology	
AREC 335/ ECON 335	Introduction to Econometrics	
SOC 210	Quantitative Sociological Analysis	
SOC 311	Methods of Sociological Inquiry	

1 Select a minimum of 12 upper-division (300- to 400-level) credits to fulfill Tier Four. Sophomores may take only 300-level courses from this section.

2 Courses selected to fulfill Tier Three requirements may not also fulfill Tier Four requirements, and vice versa.

3 Sophomores may take only 300-level Tier Three courses.

4 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

5 Students must complete one upper-division course in each of four of the five departmental subfields (American Politics, Political Theory, International Relations, Comparative Politics, and Public Policy and Administration) prior to taking POLS 492.

Major Completion Map

Distinctive Requirements for Degree Program:

Political science majors must achieve a minimum grade of C (2.000) in each of the political science (POLS) courses counted toward meeting the requirement of the major.

Upper-Division course in at least four subfields of political science required to register for POLS 492.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
POLS 101	American Government and Politics (GT-SS1)		X	3C	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	4
Elective					2
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
POLS 103	State and Local Government and Politics (GT-SS1)		X	3C	3
Arts and Humanities				3B	3
Historical Perspectives				3D	3
Quantitative Reasoning		X		1B	3
Elective					3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
POLS 232	International Relations (GT-SS1)		X	3E	3
POLS 3** Tier Three (See Department list on Concentration Requirements Tab)					0-3
Support Option (See option list on Concentration Requirements Tab)					3-12
Biological and Physical Sciences			X	3A	3
Electives					6
	Total Credits				18
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
POLS 241	Comparative Government and Politics (GT-SS1)			3E	3
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)		X	2	
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)		X	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)		X	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)		X	2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)		X	2	
CO 302	Writing in Digital Environments (GT-CO3)		X	2	
JTC 300	Professional and Technical Communication (GT-CO3)		X	2	
LB 300	Specialized Professional Writing		X	2	

Tier Four: Select one course from the following:					3
POLS 302	U.S. Political Parties and Elections			4A,4B	
POLS 303	Politics of Organized Interests			4A,4B	
POLS 304	Legislative Politics				
POLS 305	Judicial Politics				
POLS 306	Executive Politics				
POLS 309	Urban Politics				
POLS 351	Public Administration				
POLS 361	U.S. Environmental Politics and Policy				
POLS 364	Air, Climate, and Energy Policy Analysis				
Electives					6
	Total Credits				15

Junior

Semester 5	**Critical**	**Recommended**	**AUCC**	**Credits**
POLS*** Tier Three (See Department list on Concentration Requirements Tab)				3-6
POLS*** Tier Four (See Department list on Concentration Requirements Tab)				3-6
Support Option (See option list on Concentration Requirements Tab)				3-6
Elective				0-3
Total Credits				18

Semester 6	**Critical**	**Recommended**	**AUCC**	**Credits**
Tier Two: Select one course from the following:				3
POLS 420 History of Political Thought			4A,4B	
POLS 421 Contemporary Political Theories			4A,4B	
POLS 422 Democratic Theory			4A,4B	
POLS 423 American Political Theories			4A,4B	
Support Option (See option list on Concentration Requirements Tab)				3-6
Electives				3-9
Total Credits				12

Senior

Semester 7	**Critical**	**Recommended**	**AUCC**	**Credits**
POLS*** Tier Four (See option list on Concentration Requirements Tab)				3-6
Support Option (See option list on Concentration Requirements Tab)				3-6
Elective				0-3
Total Credits				12

Semester 8	**Critical**	**Recommended**	**AUCC**	**Credits**
POLS 492 (Tier Five) Capstone Seminar	X		4A,4B,4C	3
Support Option (See option list on Concentration Requirements Tab)	X			3-6
Electives	X			3-12
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X			
Total Credits				15
Program Total Credits:				120

Minor in Applied Environmental Policy Analysis

The minor in Applied Environmental Policy Analysis will provide students with a rigorous and in-depth study of the public sector environment, practice, and methods for analyzing and developing policy. Each course will also have the environment as a focus in the material, exams, and assignments. At the end of the minor, students will be able to recall and explain the basic rationales for public policies, apply rigorous research methods for evaluating policy, and integrate the elements of theory, methods, problem structuring, ethics, analysis and argumentation to generate reports useable in government and nonprofit management. The minor is appropriate for practicing professionals and current undergraduate students interested in expanding their applied evaluation skills and environmental policy expertise.

For further information on adding Applied Environmental Policy Analysis as a minor, please contact Kate Sherman at 970-491-5156 or visit Clark C346.

Requirements
Effective Spring 2014

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Students must complete each course in the minor with a grade of C or better.

Code	Title	Credits
Lower Division		
POLS 101	American Government and Politics (GT-SS1)	3
POLS 103	State and Local Government and Politics (GT-SS1)	3
Upper Division		
POLS 361	U.S. Environmental Politics and Policy	3
POLS 364	Air, Climate, and Energy Policy Analysis	3
POLS 459	Program Evaluation for Public Administrators	3
POLS 460	Public Policy Process	3
POLS 465	Public Policy Analysis	3
Program Total Credits:		21

Minor in Political Science

The minor in Political Science provides a sound academic core for students in other social science or non-social science majors who are interested in politics. It may be particularly useful for persons preparing themselves for careers in law, teaching in the social sciences, journalism, and public service.

For further information on adding Political Science as a minor, please contact Kate Sherman at 970-491-5156 or visit Clark C346.

Requirements
Effective Spring 1990

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Lower Division		
POLS 101	American Government and Politics (GT-SS1)	3
Select two courses from the following:		6
POLS 103	State and Local Government and Politics (GT-SS1)	
POLS 232	International Relations (GT-SS1)	
POLS 241	Comparative Government and Politics (GT-SS1)	
Upper Division		
Twelve credits in political science courses with at least three credits in political theory and in at least one additional subfield of political science. Credits earned in POLS 486A, POLS 486B, and POLS 495 may not be used to satisfy this upper-division credit requirement.		12
Program Total Credits:		21

Department of Sociology

Office in Clark Building, Room B258
(970) 491-6045
sociology.colostate.edu (http://sociology.colostate.edu)

Professor Pete Taylor, Chair
Professor Laura Raynolds, Director of Graduate Studies
Associate Professor Tara Opsal, Director of Undergraduate Studies

Undergraduate
Majors

- Major in Sociology
  - Criminology and Criminal Justice Concentration
  - Environmental Sociology Concentration
  - General Sociology Concentration

Minors

- Minor in Criminology and Criminal Justice
- Minor in General Sociology

Graduate
Graduate Programs in Sociology

Programs leading to M.A. and Ph.D. degrees are described in the Graduate and Professional Bulletin and the Department of Sociology. (http://sociology.colostate.edu)

Master's Programs

- Master of Arts in Sociology, Plan A*
- Master of Arts in Sociology, Plan B*

Ph.D.

- Ph.D. in Sociology*

* Please see department for program of study.

Courses
Sociology (SOC)

SOC 100 General Sociology (GT-SS3) Credits: 3 (3-0-0)
Course Description: Analysis of human societies in the U.S. and abroad; major institutions, groups, and interaction patterns from the sociological perspective.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).

SOC 105 Social Problems (GT-SS3) Credits: 3 (3-0-0)
Course Description: Analysis of global and domestic social problems.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).

SOC 192 Civic Culture and Social Responsibility Credits: 3 (0-0-3)
Course Description: Erosion of civility in society with particular emphasis on civic culture on the university campus.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 205 Contemporary Race-Ethnic Relations (GT-SS3) Credits: 3 (3-0-0)
Course Description: People of color and white ethnic groups in the U.S. and internationally.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

SOC 210 Quantitative Sociological Analysis Credits: 3 (3-0-0)
Course Description: Application of quantitative concepts and methodology to investigation of social problems.
Prerequisite: MATH 100 to 199 - at least 1 credit.
Registration Information: Mathematics placement exam can substitute for coursework.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 220 Global Environmental Issues (GT-SS3) Credits: 3 (3-0-0)
Course Description: Relationship between human societies around the world and the larger natural environment.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

SOC 253 Intro to Criminology and Criminal Justice Credits: 3 (3-0-0)
Course Description: Criminal justice as a system. Addresses the concept of crime, how crime is measured, the correlates of crime (such as race, age, gender, and social class), policing, sentencing, prisons, and corrections.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 270 Self in Society Credits: 3 (3-0-0)
Course Description: Understand how we become social creatures and how our everyday interactions with one another make and remake ourselves, our culture, and our social worlds. Explores a variety of social psychological ideas related to formation of the self, socialization, social reference groups, social interaction, and the social construction of reality.
Prerequisite: None.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 271 Body and Society Credits: 3 (3-0-0)
Course Description: Examines the body through the lens of sociology by focusing on its relationship with society. Explores how social structures shape the body, how bodies fit or don't fit into society, and how we understand and experience the body in a social context.
Prerequisite: None.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 275 Introduction to Forensic Anthropology Credits: 3 (3-0-0)
Also Offered As: ANTH 275.
Course Description: Forensic anthropological theory and methods including estimation of age-at-death, sex, stature, ancestry, and trauma analysis.
Prerequisite: None.
Registration Information: Credit not allowed for both ANTH 275 and SOC 275. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

SOC 301 Development of Sociological Thought Credits: 3 (3-0-0)
Course Description: Central themes in sociological thought from Enlightenment to present.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 302 Contemporary Sociological Theory Credits: 3 (3-0-0)
Course Description: Theoretical approaches and models in sociology.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 311 Methods of Sociological Inquiry Credits: 3 (3-0-0)
Course Description: Application of sociological concepts to sociological problems including problem formulation, data gathering, and research design.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 313 Computer Methods in Sociology Credit: 1 (1-0-0)
Course Description: Experimental introduction to typical uses of computers in sociology with emphasis on data analysis.
Prerequisite: SOC 210 or STAT 200 to 499.
Registration Information: Sections may be offered: Online. Credit not allowed for both SOC 313 and SOC 314.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 314 Sociological Approaches to Quantitative Data Credits: 3 (3-0-0)
Course Description: Quantitative data acquisition, cleaning, management and analysis. Using an analytical software package, students will clean, merge, and manage data from various sources, perform quantitative analyses, and present their data and results through tables and figures.
Prerequisite: (SOC 210 or STAT 200 to 499) and (SOC 311, may be taken concurrently).
Registration Information: Sections may be offered: Online. Credit not allowed for both SOC 313 and SOC 314.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 315 Applications of Qualitative Research Credits: 3 (3-0-0)
Course Description: Qualitative research practices in contemporary contexts, including unobtrusive observation, content analysis, in-depth interviewing, and immersive participant observation.
Prerequisite: SOC 311, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 320 Population-Natural Resources and Environment Credits: 3 (3-0-0)
Course Description: Population studies; world growth patterns and their relationship to natural resources and environment.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 321 Soil, Environment, and Society Credits: 3 (3-0-0)
Course Description: Role of soil in our environment and its value as it relates to the social and economic well-being of society.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 322 Introduction to Environmental Justice Credits: 3 (3-0-0)
Course Description: Unequal distribution of environmental risks, benefits, policies, and regulatory practices across different populations.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 323 Soc. of Environmental Cooperation & Conflict Credits: 3 (3-0-0)
Course Description: Roles of government and civil society in creating environmental problems and in developing effective responses to those problems.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 324 Food Justice Credits: 3 (3-0-0)
Course Description: Food justice strives to eliminate exploitation and oppression by challenging the structural drivers within and beyond the food system. As a practice, food justice advocates for the right to healthy food that is justly and sustainably produced, recognizes diverse cultural foodways and histories, and promotes democratic participation and equitable distribution of resources in the food system.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 330 Social Inequality Credits: 3 (3-0-0)
Course Description: Theories of social inequality and mobility and their ramifications in American society.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 332 Comparative Majority-Minority Relations Credits: 3 (3-0-0)
Course Description: Discrimination, ideology, power, policy issues in the U.S. and selected societies; application of basic concepts in student's self appraisal.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 333 Gender and Society Credits: 3 (3-0-0)
Course Description: Analysis of social organization of gender in contemporary society, emphasizing gendered experiences and institutional linkages.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 334 Sociology of Intersectionality Credits: 3 (3-0-0)
Course Description: Multiple and intersecting ways race, class, gender, and sexuality shape society, individual life-chances, and daily social interactions.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 340 Bureaucracy and Modern Organizations Credits: 3 (3-0-0)
Course Description: Structure and function of large-scale organization; coordination of activities between organizations and society.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 341 Sociology of Rural Life Credits: 3 (3-0-0)
Course Description: Rural life in U.S. and third world societies; analysis of sociocultural systems, social differentiation, social institutions, and problems of social change.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 342 Leisure and Society Credits: 3 (3-0-0)
Course Description: Nature and purpose of leisure and work in society; influences of culture and social structure on leisure values and behavior.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 343 Sport and Society Credits: 3 (3-0-0)
Course Description: Analysis of sports as social phenomena with a focus on the social implications of sports in everyday life.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 344 Health, Medicine, and Society Credits: 3 (3-0-0)
Course Description: The impact of sociocultural factors like social class, gender, and race/ethnicity on health and illness in society and the social organization of healthcare delivery. The U.S. health care system.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 352 Criminology Credits: 3 (3-0-0)
Course Description: Crime in contemporary society; behavioral, causation, prevention, and justice issues.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 353 Criminal Investigations Credits: 3 (3-0-0)
Course Description: Examination of the social, organization, and applied facets of the criminal investigation process.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 354 Law Enforcement and Society Credits: 3 (3-0-0)
Course Description: Rise and development of law enforcement as a societal reaction to crime.
Prerequisite: (SOC 100 or SOC 105) and (SOC 253).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 356 Inequality in Criminal Sentencing Credits: 3 (3-0-0)
Course Description: Examines the structure and process involved in the prosecution, adjudication, and sentencing of criminal defendants, and how that structure and process can produce disparities in criminal justice outcomes.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 357 Women, Crime, and Victimization Credits: 3 (3-0-0)
Course Description: Issues related to women as offenders, victims, and professionals in the criminal justice system.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Credit not allowed for SOC 357 and SOC 450.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 358 Punishment and Society Credits: 3 (3-0-0)
Course Description: Social and organizational issues in the administration of punishment and correction.
Prerequisite: (SOC 100 or SOC 105) and (SOC 253).
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 359 Green Criminology Credits: 3 (3-0-0)
Course Description: Environmental offenses, victims, and responses to environmental crimes and harms.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 360 Political Sociology Credits: 3 (3-0-0)
Course Description: Analysis of power as a sociological concept, emphasizing competing theories of the state and power.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 362 Social Change Credits: 3 (3-0-0)
Course Description: Sources of stability and stress in changing societies, consequences of planned and unplanned change; future trends.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 364 Food, Agriculture and Global Society Credits: 3 (3-0-0)
Course Description: Analysis of relationships between global food, agriculture and social change.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 366 Peoples and Institutions of Latin America Credits: 3 (3-0-0)
Course Description: Change in the cultures and institutions of contemporary Latin America.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 371 Symbolic Interaction Credits: 3 (3-0-0)
Course Description: Basic concepts and issues in sociological perspective of social action and interactionism.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 372 Sociology of Deviance Credits: 3 (3-0-0)
Course Description: Description, comparison, and analysis of theories and research of deviance.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 373 Visual Sociology Credits: 3 (3-0-0)
Course Description: Blends theory, methods, and practice to provide grounding in the role of images in sociological inquiry. Applies sociological principles to understanding photographs, from an area of interest, to provide a deeper level of understanding of the role of the photographer, through the focus of the intended audience, and how they contribute to an understanding of society at large.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Offered as an online course only.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 375 Sociology of Religion Credits: 3 (3-0-0)
Course Description: Descriptions and analyses of the roles and relationships of religion as a modern social institution.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 403 Capstone Seminar Credits: 3 (0-0-3)
Course Description: Student demonstration of central concepts and procedures currently employed in sociology discipline.
Prerequisite: (SOC 210 or STAT 200 to 499) and (SOC 301 or SOC 302) and (SOC 311) and (SOC 313 or SOC 314 or SOC 315 or CS 110).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 422 Comparative Legal Systems Credits: 3 (3-0-0)
Also Offered As: ANTH 422.
Course Description: Traditional approaches to law, competing concepts of law in the global system, and experiences of minorities in state legal systems.
Prerequisite: ANTH 100 or SOC 100.
Registration Information: Credit not allowed for both SOC 422 and ANTH 422.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOC 429 Comparative Urban Studies Credits: 3 (3-0-0)
Course Description: World urbanization and metropolitan development, measurement of growth and change in cities, and sociological perspective in planning.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 431 Community Dynamics and Development Credits: 4 (3-2-0)
Course Description: Nature of community; its institutions, problems and processes, including growth, disintegration, and development.
Prerequisite: (SOC 100 or SOC 105) and (SOC 311).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 444 Federal Indian Law and Policy Credits: 3 (3-0-0)
Also Offered As: ETST 444.
Course Description: Indian policy processes and their impact on Native lives and culture, particularly Native sovereignty.
Prerequisite: None.
Registration Information: Credit not allowed for both SOC 444 and ETST 444.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 455 Sociology of Law Credits: 3 (3-0-0)
Course Description: Social origins, functions, and procedures of law in society.
Prerequisite: (SOC 100 or SOC 105) and (SOC 253).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 460 Society and Environment Credits: 3 (3-0-0)
Course Description: Technology as a social phenomenon interacting with social organization and the natural environment.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 461 Water, Society, and Environment Credits: 3 (3-0-0)
Course Description: Social aspects of water resource utilization; interface of social organization with physical environment.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 462 Applied Social Change Credits: 3 (3-0-0)
Course Description: Applied sociology with a focus on research and practice designed to foster social change.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 463 Sociology of Disaster Credits: 3 (3-0-0)
Course Description: Determinants and consequences of behavior and response to environmental extremes including floods, earthquakes, wind, severe storms, and technological emergencies.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 474 Social Movements Credits: 3 (3-0-0)
Course Description: Theory and research on causes, organizational structure, and outcomes of social movements.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 482A Travel Abroad: Comparative Criminal Justice Credits: 3 (0-0-3)
Course Description: International and comparative issues in sociology.
Prerequisite: SOC 482B, may be taken concurrently.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 482B Travel Abroad: Crime and Deviance Credits: 3 (0-0-3)
Course Description: International and comparative issues in sociology.
Prerequisite: SOC 482A, may be taken concurrently.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 487 Internship Credits: 3 (0-0-9)
Course Description: Academic-based work experience with selected organizations or agencies. Supervised application of sociological principles and seminar participation.
Prerequisite: (SOC 210 or STAT 200 to 499) and (SOC 301 or SOC 302) and (SOC 311) and (SOC 313 or SOC 314 or SOC 315 or CS 110).
Registration Information: Must have concurrent registration in SOC 492.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 492 Seminar Credit: 1 (0-0-1)
Course Description: Examination of work-oriented instruction in seminar setting where sociological principles are analyzed using internship experience.
Prerequisite: (SOC 210 or STAT 200 to 499) and (SOC 301 or SOC 302) and (SOC 311) and (SOC 313 or SOC 314 or SOC 315 or CS 110).
Registration Information: Must have concurrent registration in SOC 487.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 500 The Sociological Profession I Credit: 1 (1-0-0)
Course Description: Examination of issues and values affecting sociology as a profession.
Prerequisite: SOC 100 to 481 - at least 15 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 501 The Sociological Profession II Credits: 3 (3-0-0)
Course Description: Examination of the activities and procedures critical to the socialization of professional sociologists.
Prerequisite: SOC 100 to 499 - at least 15 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 502 Foundations of Theoretical Sociology Credits: 3 (3-0-0)
Course Description: Contributions of major sociological theorists prior to mid-20th century.
Prerequisite: SOC 500, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 503 Contemporary Sociological Theory Credits: 3 (3-0-0)
Course Description: Contributions of major sociological theorists since mid-20th century.
Prerequisite: SOC 502.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 510 Sociological Methods I Credits: 3 (3-0-0)
Course Description: Linkage of sociological theory and conceptual models; case studies; data-gathering techniques.
Prerequisite: SOC 210 or SOC 311.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 511 Sociological Methods II Credits: 3 (3-0-0)
Course Description: Linkage of sociological theory and conceptual models; case studies; data-gathering techniques.
Prerequisite: SOC 510.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 540 Community Sociology Credits: 3 (3-0-0)
Course Description: Intellectual roots of community sociology and contemporary community studies.
Prerequisite: SOC 500.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 555 Society, Deviance, and Crime Credits: 3 (0-0-3)
Course Description: Sociological perspectives and research in the areas of deviance and crime, including classical, positivist, and critical approaches.
Prerequisite: SOC 300 to 499 - at least 12 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 562 Sociology of Food Systems and Agriculture Credits: 3 (2-0-1)
Also Offered As: AGRI 562.
Course Description: How agricultural choices generate intended and unintended consequences for human communities and the natural environment.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Credit not allowed for both SOC 562 and AGRI 562.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 564 Environmental Justice Credits: 3 (3-0-0)
Course Description: Unequal distribution of environmental risks, benefits, policies, and regulatory practices across different populations.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 566 Contemporary Issues of Developing Countries Credits: 3 (3-0-0)
Also Offered As: AREC 566.
Course Description: Social, economic, and technological factors in developing countries.
Prerequisite: None.
Registration Information: Must have taken 2 or more courses in SOC or AREC or ECON. Credit not allowed for both SOC 566 and AREC 566.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 610 Seminar in Methods of Qualitative Analysis Credits: 3 (0-0-3)
Course Description: Examination and application of qualitative techniques of analysis.
Prerequisite: SOC 311, may be taken concurrently or POLS 620, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both SOC 610 and POLS 621.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 612 Seminar in Methods of Evaluational Research Credits: 3 (0-0-3)
Course Description: Quantitative and qualitative techniques of evaluating social action programs.
Prerequisite: SOC 511.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 613 Seminar in Multiple Regression and Path Analysis Credits: 3 (0-0-3)
Course Description: Analysis and application of techniques for multiple regression and path analysis.
Prerequisite: SOC 511.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 614 Comparative Sociology Credits: 3 (3-0-0)
Course Description: Examination of problems and prospects in extending and carrying out sociological research across social systems.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 630 Social Stratification Credits: 3 (3-0-0)
Course Description: Theory and research on class structure, status attainment, ideology, and social change.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 631 Sociology of Rural Development Credits: 3 (3-0-0)
Course Description: Rural social organization and development, modernization, and social change as it relates to rural social systems; underdeveloped regions of world.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 633 Theories of Modern Organizations Credits: 3 (3-0-0)
Course Description: Comparison of various theoretical perspectives on functioning of modern large-scale organizations.
Prerequisite: SOC 340.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 639 Technology Assessment and Social Forecasting Credits: 3 (3-0-0)
Course Description: Interrelationship between technology and society emphasizing procedures for evaluating impacts and forecasting alternatives.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 660 Theories of Development and Social Change Credits: 3 (3-0-0)
Course Description: Central concepts, issues, and approaches in sociology of development.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 661 Gender and Global Society Credits: 3 (0-0-3)
Course Description: Gender relations and social change in global society.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 662 Seminar in Sociological Policy Analysis Credits: 3 (0-0-3)
Course Description: Examination of sociological perspectives on formulation and impact of policies to deal with social problems.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 663 Sociology of Sustainable Development Credits: 3 (3-0-0)
Course Description: Social dimensions of sustainable Third World development and implications for policy.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 664 Sociology of Water Resources Credits: 3 (3-0-0)
Course Description: Social organization, conflict, and power in arid environments.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 665 Sociology of Science and Technology Credits: 3 (3-0-0)
Course Description: Examination of connections among science, technology, and social development in national and global context.
Prerequisite: SOC 100.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken 10 credits of undergraduate natural sciences.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 666 Globalization and Socioeconomic Restructuring Credits: 3 (0-0-3)
Course Description: Sociological theories and issues in globalization; socioeconomic restructuring of the world economy.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 667 Theories of State, Economy, and Society Credits: 3 (3-0-0)
Course Description: Major classical and contemporary sociological theories of state-economy-society relations emphasizing development.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 668 Environmental Sociology Credits: 3 (3-0-0)
Course Description: Connections between social organizations, the environment, and science and technology.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 669 Global Inequality and Change Credits: 3 (0-0-3)
Course Description: Major issues in global inequality and change from a historical and contemporary perspective.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 671 Metatheoretical Issues in Sociology Credits: 3 (0-0-3)
Course Description: Analysis of metatheoretical concepts and issues in sociological theory.
Prerequisite: SOC 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 693A Seminar: Structural Theory Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOC 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 693B Seminar: Cultural Theory Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOC 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 693C Seminar: Middle Range Theory Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOC 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 693D Seminar: Metatheory Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOC 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 696 Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 752 Seminar in Utopian Thought Credits: 3 (0-0-3)
Course Description: Sociological analysis of major utopian writings.
Prerequisite: SOC 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 787 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 793A Seminar: Quantitative Data Collection Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOC 511.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 793B Seminar: Quantitative Data Analysis Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOC 511.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 793C Seminar: Advanced Ethnographic Methods Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOC 511.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 793D Seminar: Comparative Methods Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOC 511.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Sociology

Sociology is the study of social life, focusing on the mutual interaction between human groups and institutions. Human beings, through patterned social interactions, construct and reconstruct the social webs within which they live. The nature and type of social relationships are central to their lives. Sociologists study relationships within family units from the most primitive cultures to interactions of large, bureaucratic institutions in major industrialized nations. Social issues are studied in

a variety of ways: direct observation of groups; surveying or interviewing individuals; analyzing historical research; and a variety of other methods.

Sociology majors have many opportunities to pursue broad and diverse ranges of interest. Students gain a sense of social perspective, an understanding of human affairs, an ability to think critically and perform research, and a capacity to write well. The curriculum includes general courses in the arts and humanities and the social sciences along with sociology course work. A generous selection of electives allows students to major or minor in a complementary discipline. A Sociology major also may enroll in one of the interdisciplinary minors, such as Latin American and Caribbean Studies, Religious Studies, or Women's and Gender Studies.

Learning Outcomes

Students will:

- Analyze critically the major classical and contemporary theories from the 19th and 20th centuries. Students are expected to demonstrate how well these theories help us understand or explain current social phenomena both in the U.S. and abroad. Students will learn to apply a wide variety of theories, including European critical theory, functionalism, symbolic interactionism, and post-modern theory, in required empirical research.
- Analyze critically sociological phenomena by applying objective social research methodologies. Students will demonstrate a working knowledge of sociological theories and the application of these theories to real world social phenomena. Specifically, students will understand conceptual frameworks associated with:
  a. social structure (social stratification, ethnic structures, social institutions, small group dynamics, social demography, and social organizations);
  b. culture (socialization and the development of personalities, social norms, framing normative assumptions of societies and organizations); and
  c. social agency (the behavior of the individual, collective behavior such as with social movements, and the principles of social-psychology).
- Analyze critically sociological phenomena by applying social statistical techniques and qualitative research methods. Students will demonstrate a strong working knowledge of statistical techniques, including:
  a. parametric statistics;
  b. non-parametric statistics;
  c. ordinary least squares statistical analysis;
  d. application of the SPSS statistical package;
  e. interview techniques;
  f. focus group interviews;
  g. qualitative data analysis techniques; and
  h. qualitative data management and presentation.

Potential Occupations

Careers are exceptionally varied. Participating in internships and cooperative education opportunities is highly recommended to enhance practical training and development. Sociology graduates apply their education to a large variety of occupations in the non-profit, private, and public sectors. Because Sociology graduates possess a number of transferable communication, analytical, and people skills, they find positions in government, industry, and academia. Many employers appreciate liberal arts majors for their multiple skills and their ability to adapt to a variety of tasks and work environments. Graduates who go on to advanced studies can pursue careers in sociology or attain advanced positions with the possibility of rising to top professional levels.

Depending on student interests, the electives taken, or the concentration selected, available career choices include, but are not limited to: business manager, personnel director, city manager, clinical social worker, college/university instructor, human relations director, demographer, government aide, labor relations specialist, market analyst, researcher, medical administrator, police officer, politician, probation/parole officer, program director/manager, public administrator, publishers, sociologist-specialist, consultant, criminologist, lawyer, librarian.

Concentrations

- Criminology and Criminal Justice Concentration
- Environmental Sociology Concentration
- General Sociology Concentration

Major in Sociology, Criminology and Criminal Justice Concentration

Sociology majors who opt for the Criminology and Criminal Justice concentration will supplement their general sociological training with course work focused on social aspects of crime and criminal justice. Students will find the concentration helpful in enhancing their ability to think critically about issues of crime and justice and in preparing for various careers associated with the criminal justice system.

Requirements
Effective Fall 2019

Each course used to satisfy requirements of the concentration requires a minimum grade of C (2.000), i.e. all SOC courses, STAT 2**, and each course taken to satisfy the Social and Behavioral Sciences electives or the Criminology and Criminal Justice electives.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
SOC 253	Intro to Criminology and Criminal Justice		3
Select one course from the following:			3
SOC 100	General Sociology (GT-SS3)	3C	
SOC 105	Social Problems (GT-SS3)	3C	
Social and Behavioral Sciences[1]			3
Arts and Humanities		3B	3

Biological and Physical Sciences		3A	3
Quantitative Reasoning[2]		1B	3
Electives			7
	Total Credits		28

Sophomore

Advanced Writing		2	3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	4
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Social and Behavioral Sciences[1]			6
Electives			9
	Total Credits		31

Junior

Select one course from the following:			3
SOC 210	Quantitative Sociological Analysis		
STAT 2** Statistics[3]			
Select one course from the following:			3
SOC 301	Development of Sociological Thought		
SOC 302	Contemporary Sociological Theory		
Select one course from the following:			3
SOC 352	Criminology		
SOC 372	Sociology of Deviance		
Criminology and Criminal Justice Electives (See list below)[4]			6
Social and Behavioral Sciences[1]			12
Electives			3
	Total Credits		30

Senior

SOC 311	Methods of Sociological Inquiry	4A,4B	3
Select one course from the following:			3
SOC 314	Sociological Approaches to Quantitative Data		
SOC 315	Applications of Qualitative Research		
Select one group from the following:			3-4
Group A:			
SOC 403	Capstone Seminar	4C	
Group B:			
SOC 431	Community Dynamics and Development	4C	
Group C:			
SOC 487	Internship	4C	
SOC 492	Seminar	4C	
Criminology and Criminal Justice Electives (See list below)[4]			9
Electives[5]			12-13
	Total Credits		30-32
	Program Total Credits:		120

Criminology and Criminal Justice Electives – 15 credits

Code	Title	Credits
Select two courses from Group A and two courses from Group B, plus one additional course from either Group A or Group B.		
Group A: Criminal Justice System		6-9
SOC 354	Law Enforcement and Society	3
SOC 482A	Travel Abroad: Comparative Criminal Justice	3

A maximum of one course may be selected from the following:		3
SOC 358	Punishment and Society	
SOWK 371B	Social Work with Selected Populations: Juvenile Offenders	
SOWK 371C	Social Work with Selected Populations: Adult Offenders	
A maximum of one course may be selected from the following:		3
SOC 455	Sociology of Law	
POLS 413	U.S. Civil Rights and Liberties	
Group B: Critical Criminology and Criminal Justice		6-9
SOC 322	Introduction to Environmental Justice	3
SOC 356	Inequality in Criminal Sentencing	3
SOC 357	Women, Crime, and Victimization	3
SOC 359	Green Criminology	3
SOC 482B	Travel Abroad: Crime and Deviance	3

1 Select any AUCC 3C, AUCC 3D, and AUCC 3E courses not counted elsewhere in the program and excluding all SOC subject code courses.

2 Select three credits of Quantitative Reasoning from the list of courses in category 1B of the AUCC except MATH 105.

3 Select STAT 201 General Statistics or any statistics course 200-level and above.

4 For students interested in working in the criminal justice system it is recommended that they enroll in SOC 354, 358, and 455.

5 Select enough elective credits to bring program total to 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Each course used to satisfy requirements of the concentration requires a minimum grade of C (2.000), i.e. all SOC courses, STAT 2**, and each course taken to satisfy the Social and Behavioral Sciences electives or the Criminology and Criminal Justice electives.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
Social and Behavioral Sciences					3
Elective					3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
SOC 100	General Sociology (GT-SS3)			3C	
SOC 105	Social Problems (GT-SS3)			3C	
SOC 253	Intro to Criminology and Criminal Justice				3
Quantitative Reasoning		X		1B	3
Electives					4
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				13

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	4
Historical Perspectives				3D	3
Social and Behavioral Sciences					6
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Advanced Writing				2	3
Diversity and Global Awareness				3E	3
Electives					9
SOC 253 must be completed by the end of Semester 4.		X			
	Total Credits				15

Junior

Semester 5	**Critical**	**Recommended**	**AUCC**	**Credits**
Criminology and Criminal Justice Electives (See list on concentration requirements tab.)				6
Social and Behavioral Sciences				6

Electives					3
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:		X			3
SOC 210	Quantitative Sociological Analysis				
STAT 2**					
Select one course from the following:		X			3
SOC 301	Development of Sociological Thought				
SOC 302	Contemporary Sociological Theory				
Select one course from the following:					3
SOC 352	Criminology				
SOC 372	Sociology of Deviance				
SOC 482B	Travel Abroad: Crime and Deviance				
Social and Behavioral Sciences					6
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
SOC 311	Methods of Sociological Inquiry	X		4A,4B	3
Select one course from the following:		X			3
SOC 314	Sociological Approaches to Quantitative Data				
SOC 315	Applications of Qualitative Research				
Criminology and Criminal Justice Elective (See list on concentration requirements tab.)					3
Electives					6
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one group from the following:		X			3-4
Group A:					
SOC 403	Capstone Seminar			4C	
Group B:					
SOC 431	Community Dynamics and Development			4C	
Group C:					
SOC 487	Internship			4C	
SOC 492	Seminar			4C	
Criminology and Criminal Justice Electives (See list on concentration requirements tab.)		X			6
Electives		X			6-7
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15-17
	Program Total Credits:				120

Major in Sociology, Environmental Sociology Concentration

The Environmental Sociology concentration takes sociology's long established disciplinary orientation to the world and applies it to the study of nature-society relations. Sociology is about people, institutions, and behaviors. It is about social interactions and social structures. The task of the sociologist, therefore, is to stand back from common sense views of the world and understand the structure and processes of a society as a whole, including global societies. Environmental sociology is about translating these tasks into analysis and action around environmental issues. Some of the pressing contemporary environmental issues to which environmental sociology can be applied are: transboundary pollution, climate change, biodiversity loss, and water and soil degradation. Students will find the concentration helpful in preparing them for a growing number of jobs that have a focus in environmentally related matters.

Requirements Effective Fall 2019

Each course used to satisfy requirements of the concentration requires a minimum grade of C (2.000), i.e. all SOC courses, STAT 2**, and each

course taken to satisfy the Social and Behavioral Sciences electives or the Environmental Sociology electives.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
Select one from the following:			3
SOC 100	General Sociology (GT-SS3)	3C	
SOC 105	Social Problems (GT-SS3)	3C	
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	4
Quantitative Reasoning[1]		1B	3
Social and Behavioral Sciences[2]			3
Electives			11
	Total Credits		30

Sophomore

SOC 220	Global Environmental Issues (GT-SS3)	3E	3
Advanced Writing		2	3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	3
Historical Perspectives		3D	3
Social and Behavioral Sciences[2]			6
Environmental Sociology Electives[3]			3
Elective			6
	Total Credits		30

Junior

Select one from the following:			3
SOC 210	Quantitative Sociological Analysis		
STAT 2** Statistics[4]			
Select one from the following:			3
SOC 301	Development of Sociological Thought		
SOC 302	Contemporary Sociological Theory		
Social and Behavioral Sciences[2]			12
Environmental Sociology Electives[3]			3
Electives			9
	Total Credits		30

Senior

SOC 311	Methods of Sociological Inquiry	4A,4B	3
Select one course from the following:			3
SOC 314	Sociological Approaches to Quantitative Data		
SOC 315	Applications of Qualitative Research		
Select one group from the following:			3-4
Group A:			
SOC 403	Capstone Seminar	4C	
Group B:			
SOC 431	Community Dynamics and Development	4C	
Group C:			
SOC 487	Internship	4C	

SOC 492	Seminar	4C
Environmental Sociology Electives[3]		6
Electives[5]		14-15
	Total Credits	29-31
	Program Total Credits:	120

Environmental Sociology Electives – 12 credits

Code	Title	Credits
Sociology Courses		6-12
SOC 320	Population-Natural Resources and Environment	
SOC 321	Soil, Environment, and Society	
SOC 322	Introduction to Environmental Justice	
SOC 323	Soc. of Environmental Cooperation & Conflict	
SOC 324	Food Justice	
SOC 359	Green Criminology	
SOC 360	Political Sociology	
SOC 362	Social Change	
SOC 364	Food, Agriculture and Global Society	
SOC 460	Society and Environment	
SOC 461	Water, Society, and Environment	
SOC 462	Applied Social Change	
SOC 463	Sociology of Disaster	
SOC 564	Environmental Justice	
Out-of-Department Courses		0-6
ANTH 415	Indigenous Ecologies and the Modern World	
ANTH 446	New Orleans and the Caribbean	
ERHS 220	Environmental Health	
ERHS 430	Human Disease and the Environment	
HIST 355	American Environmental History	
HIST 470	World Environmental History, 1500-Present	
NR 320	Natural Resources History and Policy	
NR 330	Human Dimensions in Natural Resources	
NR 425	Natural Resource Policy and Sustainability	
PHIL 345	Environmental Ethics	
POLS 361	U.S. Environmental Politics and Policy	
POLS 362	Global Environmental Politics	
PSY 316	Environmental Psychology	

1 Select three credits of Quantitative Reasoning from category 1B of the All-University Core Curriculum (AUCC) except MATH 105 .

2 Select any AUCC 3C, AUCC 3D, and AUCC 3E courses not counted elsewhere in the program and excluding all SOC subject code courses.

3 Select 12 credits from the Environmental Sociology electives list of eligible upper-division sociology courses. A total of 6 credits may come from outside sociology. See the department list for pre-approved courses. Students can also petition the department for program credit when >25% of course material and grading are related to environment and society.

4 Select STAT 201 General Statistics or any statistics course 200-level and above.

5 Select enough elective credits to bring program total to minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Each course used to satisfy requirements of the concentration requires a minimum grade of C (2.000), i.e. all SOC courses, STAT 2**, and each course taken to satisfy the Social and Behavioral Sciences electives or the Environmental Sociology electives.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	4
Social and Behavioral Sciences					3
Elective					3
	Total Credits				16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:			X		3
SOC 100	General Sociology (GT-SS3)			3C	
SOC 105	Social Problems (GT-SS3)			3C	
Quantitative Reasoning		X		1B	3
Electives					8
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				14

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
Historical Perspectives				3D	3
Social and Behavioral Sciences					6
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
SOC 220	Global Environmental Issues (GT-SS3)			3E	3
Advanced Writing				2	3
Environmental Sociology Elective (See List on Concentration Requirements Tab)					3
Elective					6
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:		X			3
SOC 210	Quantitative Sociological Analysis				
STAT 2**		X			
Social and Behavioral Sciences					6
Environmental Sociology Elective (See List on Concentration Requirements Tab)					3
Elective					3
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:		X			3
SOC 301	Development of Sociological Thought				
SOC 302	Contemporary Sociological Theory				
Social and Behavioral Sciences					6
Electives					6
	Total Credits				15

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
SOC 311	Methods of Sociological Inquiry	X		4A,4B	3
Select one course from the following:		X			3
SOC 314	Sociological Approaches to Quantitative Data				
SOC 315	Applications of Qualitative Research				
Environmental Sociology Electives (See List on Concentration Requirements Tab)					6
Electives					3
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one group from the following:		X			3-4
Group A:					
SOC 403	Capstone Seminar			4C	
Group B:					
SOC 431	Community Dynamics and Development			4C	
Group C:					
SOC 487	Internship			4C	
SOC 492	Seminar			4C	
Electives		X			11-12

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X	
Total Credits		14-16
Program Total Credits:		120

Major in Sociology, General Sociology Concentration

The General Sociology concentration is designed to provide students with a broad liberal arts education and a greater understanding and insight into the social systems and processes that bear upon everyday lives. Students will find the concentration helpful in enhancing their ability to grasp the complexities of the world so as to prepare them for a variety of jobs upon graduation. Opportunities for students with bachelor's degrees in Sociology are quite varied. Some go on to work for human service agencies; others work in the fields of criminal justice and urban planning; others enter graduate programs in sociology, education, law, medicine, or social work.

Requirements Effective Fall 2019

Each course used to satisfy requirements of the concentration requires a minimum grade of C (2.000), i.e. all SOC courses, STAT 2**, and each course taken to satisfy the Social and Behavioral Sciences electives.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
Select one course from the following:			3
SOC 100	General Sociology (GT-SS3)	3C	
SOC 105	Social Problems (GT-SS3)	3C	
SOC XXX			3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	3
Quantitative Reasoning[1]		1B	3
Social and Behavioral Sciences[2]			3
Electives			9
	Total Credits		30

Sophomore

SOC XXX			6
Advanced Writing		2	3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	4
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Social and Behavioral Sciences[2]			6
Elective			3
	Total Credits		31

Junior

Select one course from the following:			3
SOC 210	Quantitative Sociological Analysis		
STAT 2** Statistics[3]			
Select one course from the following:			3
SOC 301	Development of Sociological Thought		
SOC 302	Contemporary Sociological Theory		
SOC 3XX or SOC 4XX			3
Social and Behavioral Sciences[2]			12
Electives			8
	Total Credits		29

Senior

SOC 311	Methods of Sociological Inquiry	4A,4B	3
Select one course from the following:			3
SOC 314	Sociological Approaches to Quantitative Data		
SOC 315	Applications of Qualitative Research		
Select one group from the following:			3-4
Group A:			
SOC 403	Capstone Seminar	4C	
Group B:			
SOC 431	Community Dynamics and Development	4C	
Group C:			
SOC 487	Internship	4C	
SOC 492	Seminar	4C	
SOC 3XX or SOC 4XX			3
Electives[4]			17-18
	Total Credits		29-31
	Program Total Credits:		120

1 Select three credits of Quantitative Reasoning from category 1B of the All-University Core Curriculum (AUCC) except MATH 105 .

2 Select any AUCC 3C, AUCC 3D, and AUCC 3E courses not counted elsewhere in the program and excluding all SOC subject code courses.

3 Select STAT 201 or any statistics course 200-level or above.

4 Select enough elective credits to bring program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Each course used to satisfy requirements of the concentration requires a minimum grade of C (2.000), i.e. all SOC courses, STAT 2**, and each course taken to satisfy the Social and Behavioral Sciences electives.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
Social and Behavioral Sciences					3
Elective					3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:			X		3
SOC 100	General Sociology (GT-SS3)			3C	
SOC 105	Social Problems (GT-SS3)			3C	
SOC XXX					3
Quantitative Reasoning		X		1B	3
Electives					6
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	4
Historical Perspectives				3D	3
Social and Behavioral Sciences					6
	Total Credits				16

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
SOC XXX					6
Advanced Writing				2	3
Diversity and Global Awareness				3E	3
Elective					3
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
Social and Behavioral Sciences					6
Upper-Division Sociology					3
Electives					5
	Total Credits				14
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:		X			3
SOC 210	Quantitative Sociological Analysis				
STAT 2**					
Select one course from the following:		X			3
SOC 301	Development of Sociological Thought				
SOC 302	Contemporary Sociological Theory				
Social and Behavioral Sciences					6
Elective					3
	Total Credits				15

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
SOC 311	Methods of Sociological Inquiry	X		4A,4B	3
Select one course from the following:		X			3
SOC 314	Sociological Approaches to Quantitative Data				
SOC 315	Applications of Qualitative Research				
Upper-Division Sociology					3
Electives					6
SOC 210 must be completed by the end of Semester 7.		X			
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one group from the following:		X			3-4
Group A:					
SOC 403	Capstone Seminar			4C	
Group B:					
SOC 431	Community Dynamics and Development			4C	
Group C:					
SOC 487	Internship			4C	
SOC 492	Seminar			4C	
Electives		X			11-12
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				14-16
	Program Total Credits:				120

Minor in Criminology and Criminal Justice

The Department of Sociology offers a minor in Criminology and Criminal Justice for students from other departments who wish to have some experience in an area outside their majors. Minors require fewer credit hours to complete than majors. Through this minor, students will gain sociological understanding of a variety of issues related to crime, deviance, and criminal justice. This course work will help prepare students who wish to work in a variety of fields, including those related to the criminal justice system.

Department of Sociology
B258 Clark Building

Phone: (970) 491-6044

Requirements
Effective Fall 2019

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Students must receive a grade of C or higher for each course counting toward the minor.

Code	Title	Credits
Lower Division		
SOC 100	General Sociology (GT-SS3)	3
or SOC 105	Social Problems (GT-SS3)	
SOC 253	Intro to Criminology and Criminal Justice	3
Upper Division		
SOC 301	Development of Sociological Thought	3
or SOC 302	Contemporary Sociological Theory	
SOC 311	Methods of Sociological Inquiry	3
Choose one course from each of three of the following five groups:		9
Group A:		
SOC 352	Criminology	
SOC 372	Sociology of Deviance	
SOC 482B	Travel Abroad: Crime and Deviance	
Group B:		
SOC 354	Law Enforcement and Society	
Group C:		
POLS 413	U.S. Civil Rights and Liberties	
SOC 455	Sociology of Law	
Group D:		
SOC 357	Women, Crime, and Victimization	
SOC 358	Punishment and Society	
SOWK 371B	Social Work with Selected Populations: Juvenile Offenders	
SOWK 371C	Social Work with Selected Populations: Adult Offenders	
Group E:		
SOC 482A	Travel Abroad: Comparative Criminal Justice	
SOC 564	Environmental Justice	
Program Total Credits:		21

Minor in General Sociology

A minor in Sociology provides students in other majors with the opportunity to learn methodological skills as well the conceptual framework to examine and create solutions to address a variety of complex social problems.

Department of Sociology
B258 Clark Building

Phone: (970) 491-6044

Requirements
Effective Spring 2014

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Students must receive a grade of C or higher for each course counting toward the minor.

Code	Title	Credits
Lower Division		
SOC 100	General Sociology (GT-SS3)	3
or SOC 105	Social Problems (GT-SS3)	
Upper Division		
SOC 301	Development of Sociological Thought	3
or SOC 302	Contemporary Sociological Theory	
Select one from the following:		3
SOC 311	Methods of Sociological Inquiry	
Equivalent course work in social research		
Minimum of 12 credits in sociology courses beyond specific requirements chosen on the basis of relevance to student's program of study. A minimum of 9 credits must be upper-division (300- to 400-level).		12
Program Total Credits:		21

Warner College of Natural Resources

Office in Natural Resources Building, Room 101
(970) 491-6675
warnercnr.colostate.edu (http://warnercnr.colostate.edu)

Professor John Hayes, Dean

Undergraduate Majors

Ecosystem Science and Sustainability
Fire and Emergency Services Administration

Fish, Wildlife, and Conservation Biology
Forest and Rangeland Stewardship
Geology
Human Dimensions of Natural Resources
Natural Resource Tourism
Natural Resources Management
Restoration Ecology
Watershed Science

Undergraduate Minors

Ecological Restoration
Fishery Biology
Forestry
Geology
Geospatial Information Science for Natural Resources
Range Ecology
Spatial Information Management (No new students are being accepted into this minor.)
Watershed Science

Interdisciplinary Minor

Interdisciplinary Minor in Conservation Biology

For a complete list of departmental program offerings (including certificates), see individual department catalog pages.

College-Wide Graduate Programs

Graduate Certificate

Certificate in Sustainable Military Lands Management

The College offers studies and professional training in the management, administration, and scientific investigation of renewable and nonrenewable natural resources. Programs include the study of every component of natural systems with particular emphasis on fish, forests, minerals, range, watershed, wildlife, and outdoor recreation areas. Graduate areas of emphasis also include ecosystems and greenhouse gas management.

The Natural Resource Ecology Laboratory, housed in the College, is devoted to research and training in ecosystem science and management.

The College also houses the Center for Environmental Management of Military Lands, CEMML, (http://www.cemml.colostate.edu) which is a team of environmental professionals experienced in the conservation and sustainable management of natural and cultural resources on Department of Defense lands.

College Programs

Undergraduate Majors

The scope of the College's programs is more broadly based than most natural resources schools. There are ten undergraduate degree programs, most with specialized concentrations or designated areas of further study. Undergraduate majors in all five departments lead to the Bachelor of Science degree, which requires a minimum of 120 credits. A minimum of 42 credits in upper division courses is required for all majors.

Field Training Programs

Most undergraduate majors require the completion of a four or five-week summer field training program (five or six credits) *before* their junior or senior year. Summer field instruction is given at the CSU Mountain Campus (http://mountaincampus.colostate.edu) campus, 55 miles west of Fort Collins, and the geosciences department offers a summer field course in northern New Mexico and southern Colorado.

During interim or summer periods, some majors devote several weeks to advanced field training programs off campus. Students taking advanced ROTC should arrange their schedules with their advisors in their junior year to avoid conflicts during senior spring semester. It is recommended for all majors, and required for some, that students have a minimum of one summer of field experience before graduation.

International Education

International resources management is an increasingly important concern of the Warner College of Natural Resources. It is desirable that students in the College have opportunities to study abroad, just as students from abroad are encouraged to study here. CSU has agreements covering study abroad opportunities with institutions throughout the world. Students may complete one or two semesters of resources management education abroad. Students interested in studying abroad should plan far in advance by discussing opportunities with their academic advisor and by visiting the Office of International Programs (http://international.colostate.edu) in Laurel Hall.

Graduate Programs

Master of Science and Doctor of Philosophy degree programs are offered in each department. Four professional master's degrees are offered by departments in the college: the Master of Fish, Wildlife, and Conservation Biology, the Master of Greenhouse Gas Management and Accounting, the Master of Natural Resources Stewardship, and the Master of Tourism Management. Descriptions of the various graduate programs may be found in the Graduate and Professional Bulletin or on the departmental websites.

Admissions Information

Contact: Jake Aglietti, Warner College of Natural Resources Recruitment and Engagement Coordinator
(970) 491-4994
Jake.aglietti@colostate.edu (jill.putman@colostate.edu)

For High School Graduates

High school students are advised to take all the English, science, and mathematics courses possible to prepare for college-level work in natural resources.

Limitation on Transfer of Credits

Students planning to attend another college or community college prior to enrolling at CSU should follow the freshman program for their chosen major as closely as possible. To assure that they have the opportunity to complete all degree requirements in four years, they should plan to transfer to CSU no later than the beginning of their junior year. Credits which transfer but are not equivalent to specific curriculum requirements may be used as elective credits.

Transfer Students

Students are required to choose a major when enrolling. Transfer students, therefore, should follow the departmental curriculum closely. Check the individual major and concentration for specific courses.

Graduate Certificate in Sustainable Military Lands Management

The Graduate Certificate in Sustainable Military Lands Management at CSU is designed to enhance the knowledge and skills of current practitioners and managers, as well as new professionals interested in applying their education and background to the management of military lands. This knowledge and skill sets are transferable to professionals in a wide array of federal and state land management agencies. This online program is the first and only program of its kind in the U.S.

Effective Fall 2017

Additional coursework may be required due to prerequisites.

Code	Title	Credits
NR 550	Sustainable Military Lands Management	3
Select 2 courses from the following:		6
NR 551	Cultural Resource Management on Military Lands	
NR 552	Ecology of Military Lands	
NR 553	DoD Sustainable Building and Infrastructure	
Program Total Credits:		9

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Minor in Geospatial Information Science for Natural Resources

The minor in Geospatial Information Science for Natural Resources provides students with fundamental geospatial skills in natural resource science and management. Geographic information systems, global positioning systems, and remote sensing are key tools for the 21st century workforce.

This minor is designed for students desiring to gain technical skills and to increase their employment potential in an applied area. The minor in Geospatial Information Science has a broad interdisciplinary appeal due to the ability to adapt and use these technologies in many disciplines.

Requirements Effective Fall 2019

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Required Lower Division		
CS 152	Introduction to Programming (CS0)-Python	2
GR 220	Mapping, Cartography, and Spatial Thinking	3
Required Upper Division		
NR 322	Introduction to Geographic Information Systems	4
NR 323/GR 323	Remote Sensing and Image Interpretation	3
NR 423	Applications of Global Positioning Systems	1
NR 426	Programming for GIS I	2
Required Upper Division Applications – select one course from the following:		3-4
FW 477	Wildlife Habitat Use and Management	
NR 422	GIS Applications in Natural Resource Management	
NR 495	Independent Study [1]	
Upper Division Electives		2-3
GR 430	Land Change Science and Remote Sensing	
NR 427	Programming for GIS II	
NR 440	Applications in Conservation Planning	
NR 493	Seminar on GIS and Remote Sensing Applications	
NR 495	Independent Study [1]	
NRRT 431	Integrated Planning for Conservation	
Program Total Credits		21-22

[1] NR 495 Independent Study must include geospatial applications and be approved by the minor advisor.

Department of Ecosystem Science and Sustainability

Office: B205 Natural and Environmental Sciences Building
Phone: (970) 491-5589
Email: WCNR_ESS_info@Mail.ColoState.edu

Department Head: John C. Moore, Ph.D.

warnercnr.colostate.edu/ess/ (https://warnercnr.colostate.edu/ess)

Established in 2011, the Department of Ecosystem Science and Sustainability investigates the intricate physical, chemical, human, and biological interactions driving ecosystems.

The Department of Ecosystem Science and Sustainability currently offers the following degrees and certificates:

- Major in Ecosystem Science and Sustainability
- Major in Watershed Science
- Minor in Watershed Science
- Graduate Certificate in Water Resources
- Master of Science in Ecosystem Sustainability
- Master of Science in Watershed Science
- Master of Greenhouse Gas Management and Accounting
- Ph.D. in Ecosystem Sustainability
- Ph.D. in Watershed Science

Undergraduate Majors

- Major in Ecosystem Science and Sustainability
- Major in Watershed Science

Minor

- Minor in Watershed Science

Graduate

Graduate Programs in Ecosystem Science and Sustainability

The department offers master's and Ph.D. programs in Ecosystem Sustainability, Watershed Science, and Greenhouse Gas Management and Accounting. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the website for the Department of Ecosystem Science and Sustainability (http://warnercnr.colostate.edu/ess-home).

Certificate

- Water Resources

Master's Programs

- Master of Greenhouse Gas Management and Accounting, Plan C (M.G.M.A.)
- Master of Science in Ecosystem Sustainability, Plan A
- Master of Science in Watershed Science, Plan A
- Master of Science in Watershed Science, Plan B

Ph.D.

- Ph.D. in Ecosystem Sustainability
- Ph.D. in Watershed Science

Courses

Subjects in this department include: Ecosystem Science and Sustainability (ESS) and Watershed Science (WR).

Ecosystem Science and Sustainability (ESS)

ESS 120 Intro to Ecosystem and Watershed Sciences Credit: 1 (1-0-0)
Course Description: Exploration of the fields of Ecosystem Science and Sustainability and Watershed Science, including career pathways.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: This is a partial semester course. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ESS 129 Information Management for Sustainability Credit: 1 (1-0-0)
Course Description: Learn to access, retrieve, store, and manipulate information for natural resources and sustainability applications. Basic mapping, statistics, and graphing.
Prerequisite: None.
Registration Information: This is a partial semester course. Credit not allowed for both ESS 129 and ESS 180A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 130 Intro to Systems Theory for Sustainability Credit: 1 (1-0-0)
Course Description: Introduction to the concept of a "system," fundamental tenets of systems theory, and application of systems theory to the sustainability of social-ecological systems.
Prerequisite: ESS 129, may be taken concurrently.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 150 Imagining Sustainability Credits: 3 (3-0-0)
Also Offered As: ANTH 150.
Course Description: Science alone cannot imagine the revolutionary changes necessary to sustain future life on our planet. Explore key concepts and practices of sustainability as represented in contemporary fiction, film, and the news media. Interdisciplinary approach will be anthropological and historical, charting the development of sustainability thinking through different epochs of capitalism.
Prerequisite: None.
Registration Information: Credit allowed for only one of the following: ANTH 150, ANTH 181A1, ESS 150, or ESS 181A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 210 Physical Geography Credits: 3 (3-0-0)
Also Offered As: GR 210.
Course Description: Energy, mass budget, and human impacts on atmosphere, hydrosphere, and continental land surfaces.
Prerequisite: None.
Registration Information: Credit not allowed for both ESS 210 and GR 210.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 211 Foundations in Ecosystem Science Credits: 3 (3-0-0)
Course Description: Linkage between society and ecosystems services as foundation for sustainability of the coupled human-environmental system.
Prerequisite: GR 210 or ESS 210.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 220 Research Skills for Ecosystem Science I Credit: 1 (0-0-1)
Course Description: Fundamental skills for participating in ecosystem science research through hands-on learning modules.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 221 Research Methods for Ecosystem Science II Credit: 1 (0-0-1)
Course Description: Advanced topics in the practice of the scientific method and participation in research.
Prerequisite: ESS 220.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 298 Research Credits: Var[1-3] (0-0-0)
Course Description: Directed ecosystem science research.
Prerequisite: ESS 221, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 311 Ecosystem Ecology Credits: 3 (3-0-0)
Course Description: Principles of ecosystems ecology, emphasis on their application to coupled natural and human systems.
Prerequisite: (PH 121 or PH 141) and (LIFE 320).
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 312 Sustainability Science Credits: 3 (3-0-0)
Course Description: Synthesize multifaceted information across a wide range of disciplines, with the goal to develop potential solutions to complex human-societal-environmental challenges at multiple scales. Implement methods for understanding current issues, develop alternative scenarios to current practices and policies, and stage interventions to achieve more sustainable behaviors and practices.
Prerequisite: LIFE 320.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 320 Internship and Career Preparation Credit: 1 (0-0-1)
Course Description: Career-related skills and professional development in ecosystem science and sustainability (ESS) for majors.
Prerequisite: LIFE 320.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 330 Quantitative Reasoning for Ecosystem Science Credits: 3 (2-2-0)
Course Description: Understanding diverse approaches for using data and models to understand complex ecological systems.
Prerequisite: (ESS 211 or LIFE 320) and (MATH 155 or MATH 160) and (STAT 301 or STAT 307 or STAT 315).
Registration Information: Junior or senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 382A Study Abroad: Socio-Ecological Landscapes of Mongolia Credits: 6 (0-0-6)
Course Description: Travel to Mongolia for a field-based, place-based experience with Mongolian students and herders. Engage in research projects partnering with Mongolian counterparts for field data collection using ecological, social science, and geospatial tools. Examine the intersection of culture and environment through observational exercises and experiential learning. Experience nomadic culture through field trips and participatory community activity.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of instructor.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 400 Global Perspectives on Sustainabilty Credits: 3 (3-0-0)
Course Description: Explores the intersections between ecosystem science, communities and sustainability in the context of the global challenges of climate change focusing on the new global framework (The Paris Agreement), Sustainable Development Goals (SDGs), and ecological indicators.
Prerequisite: ESS 311.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 411 Earth Systems Ecology Credits: 3 (3-0-0)
Course Description: Earth as a system, stressing ecological interactions among energy, water, and biogeochemistry.
Prerequisite: ESS 311 and ESS 312.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 412 Sustainable Cities Credits: 3 (3-0-0)
Course Description: Explore the ecology of cities, evaluate the most innovative science developed for the city, and discuss with renowned researchers leading these efforts. Analyze sustainability plans from a variety of cities around the globe, and interact with the practitioners developing and implementing sustainable goals. Delve into sustainability theory, specifically "the sustainable city myth."
Prerequisite: ANTH 100 or ANTH 200 or GES 101 or GR 100 or GR 210 or LIFE 220 or LIFE 320 or NR 120A or NR 130 or SOC 220.
Registration Information: Junior standing. Credit not allowed for both ESS 412 and ESS 480A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 432 Microbial Ecology Credits: 3 (2-0-1)
Also Offered As: MIP 432.
Course Description: Principles of microorganism interactions with their living and non-living environments; implications for the environment, plants, and animals.
Prerequisite: MIP 300.
Registration Information: Must register for lecture and recitation. Credit not allowed for both ESS 432 and MIP 432.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ESS 433 Microbial Ecology Laboratory Credit: 1 (0-3-0)
Also Offered As: MIP 433.
Course Description: Experimental microbial ecology; the design, conduct and interpretation of experiments that illustrate basic principles of microbial ecology.
Prerequisite: MIP 300.
Registration Information: Must be taken concurrently with ESS 432 or MIP 432. Credit not allowed for both ESS 433 and MIP 433.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ESS 440 Practicing Sustainability Credits: 4 (2-0-2)
Course Description: Capstone integration of ecosystem science and sustainability, focused on case studies.
Prerequisite: ESS 311 and ESS 312.
Registration Information: Senior standing in WCNR. Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ESS 471 Special Topics in Ecosystem Sustainability Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: ESS 311.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 474 Limnology Credits: 3 (2-2-0)
Also Offered As: BZ 474.
Course Description: Biology, chemistry, and physics of lakes including limnological methods.
Prerequisite: LAND 220 or LIFE 220 or LIFE 320.
Registration Information: Must register for lecture and laboratory. Required field trips. Credit not allowed for both BZ 474 and ESS 474.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ESS 482A Study Abroad: Communities and Conservation in South Africa Credits: 6 (0-0-6)
Also Offered As: ANTH 482A.
Course Description: Travel to the wildest areas of savanna South Africa to work and learn from rural and urbanizing communities. Insights into the innovative forms of community-based natural resource management emerging in South Africa. Understand the new landscapes of conservation associated with post-apartheid South Africa. Explore the problems faced by the millions of people living in poverty at the edge of protected areas.
Prerequisite: None.
Registration Information: Written consent of instructor. Pre-South Africa: during the spring semester prior to the actual study abroad experience, students will meet in March and April for workshops and guest lectures on the CSU campus. In South Africa: travel approximately June 10 – July 2. Post-South Africa: students and instructors will schedule 20 hours of consulting time while students work on group projects over 6 weeks. Credit not allowed for both ANTH 482A and ESS 482A.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 486 Ecosystem Practicum Credits: 2 (0-0-4)
Course Description: One-week field practicum to examine ecosystem science and sustainability issues in Colorado landscapes.
Prerequisite: ESS 311.
Registration Information: Senior standing. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 487 Internship Credits: Var[1-6] (0-0-0)
Course Description: Supervised work experience in professional settings related to Ecosystem Science and Sustainability.
Prerequisite: ESS 320.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ESS 495 Independent Study in Ecosystem Science Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ESS 501 Principles of Ecosystem Sustainability Credits: 3 (3-0-0)
Course Description: Principles of ecosystem sustainability and threats to sustainability. Students will investigate and develop case studies.
Prerequisite: BZ 300 to 499 or ECOL 300 to 499 or CHEM 300 to 499.
Registration Information: Admission to graduate school. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 524 Foundations for Carbon/Greenhouse Gas Mgmt Credits: 3 (3-0-0)
Course Description: Foundations for understanding greenhouse gas emissions management and accounting.
Prerequisite: BZ 300 to 499 or ECOL 300 to 499 or CHEM 300 to 499.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 542 Greenhouse Gas Policies Credits: 2 (0-0-2)
Course Description: Rules, regulations and standards for greenhouse gas management and accounting.
Prerequisite: ESS 524.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 543 Current Topics in Climate Change Credits: 2 (2-0-0)
Also Offered As: ATS 543.
Course Description: Climate fundamentals and current topics in climate change.
Prerequisite: BZ 300 to 499 or ECOL 300 to 499 or LIFE 300 to 499 or CHEM 300 to 499.
Registration Information: Credit not allowed for both ESS 543 and ATS 543. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ESS 545 Applications in Greenhouse Gas Inventories Credits: 4 (2-6-0)
Course Description: Overview of methods for estimating greenhouse gas emissions and mitigation potential for agriculture and forestry activities.
Prerequisite: ESS 524 and STAT 511A.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 555 Life Cycle Assessment for Sustainability Credits: 3 (3-0-0)
Also Offered As: ENGR 555.
Course Description: The quantitative and qualitative measure of cradle-to-grave impacts of products and services on the environment, the economy, and society.
Prerequisite: BIOM 300 to 479 or BZ 300 to 379 or BZ 400 to 479 or CHEM 300 to 379 or CHEM 400 to 479 or CIVE 300 to 479 or ECOL 300 to 379 or ENGR 300 or MECH 300 to 379.
Registration Information: Sections may be offered: Online. Credit allowed for only one of the following: ENGR 555, ESS 555, ENGR 581A1, or ESS 581A1.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 565 Niche Models Credits: 4 (3-2-0)
Course Description: Concepts and application of niche models in ecosystem science.
Prerequisite: (BSPM 526 or BZ 526 or BZ 535 or BZ 548 or BZ 561 or ECOL 505 or ECOL 600 or ECOL 610 or ECOL 620 or FW 555 or FW 662) and (STAT 511A).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ESS 575 Models for Ecological Data Credits: 4 (3-2-0)
Course Description: Gaining insight about the operation of ecological processes using models and data.
Prerequisite: MATH 255 and STAT 340.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 587 Internship Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ESS 625 Ecology of Forest Production Credits: 3 (3-0-0)
Also Offered As: F 625.
Course Description: Develops student expertise in understanding carbon and nutrient flows in forests.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken a 300-level course in ECOL. Credit not allowed for both ESS 625 and F 625. Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ESS 655 Multivariate Analysis for Community Ecology Credits: 2 (2-0-0)
Course Description: Techniques and conceptual understanding for analyzing multivariate ecological data characteristic of community ecology, including ordination, classification, and permanova.
Prerequisite: (STAT 511A) and (BZ 500 to 679 - at least 3 credits or ECOL 500 to 679 - at least 3 credits or ESS 500 to 679 - at least 3 credits or FW 500 to 679 - at least 3 credits).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ESS 660 Biogeochemical Cycling in Ecosystems Credits: 3 (3-0-0)
Course Description: Biotic and abiotic processes responsible for distribution and fluxes of elements at ecosystem, landscape, and global scales.
Prerequisite: CHEM 245 and SOCR 240 and ECOL 300 to 699.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 692 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ESS 695 Independent Study in Ecosystem Science Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ESS 696 Group Study Credits: Var[1-6] (0-0-0)
Course Description: Group study projects on topics in ecosystem science and sustainability.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ESS 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ESS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ESS 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ESS 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Watershed Science (WR)

WR 304 Sustainable Watersheds Credits: 3 (3-0-0)
Also Offered As: GR 304.
Course Description: Effects of climate, land use, and water use on the sustainability of water quantity and quality.
Prerequisite: None.
Registration Information: Completion of the AUCC 1B Quantitative Reasoning requirement. Credit not allowed for both WR 304 and GR 304.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A.

WR 406 Seasonal Snow Environments Credits: 3 (2-3-0)
Course Description: Evaluation of the physical environment; characteristics of snow; methods of studying snow; snow safety.
Prerequisite: None.
Restriction: Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Junior or senior standing. Must register for lecture and laboratory. Required field trips.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

WR 416 Land Use Hydrology Credits: 3 (3-0-0)
Course Description: Fundamental concepts in hydrology and effects of land use on hydrologic processes.
Prerequisite: (GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150 or SOCR 240) and (CIVE 202 or STAT 201 or STAT 301 or STAT 307 or STAT 315) and (PH 110 or PH 121 or PH 141).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

WR 417 Watershed Measurements Credits: 3 (2-3-0)
Course Description: Instrument and field techniques in watershed science. Project design and data analysis.
Prerequisite: None.
Registration Information: Must have concurrent registration in WR 416. Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

WR 418 Land Use and Water Quality Credits: 3 (3-0-0)
Course Description: Physical, chemical, biological water quality parameters affecting land use; land management to maintain water quality; water quality standards, legislation.
Prerequisite: CHEM 103 and CHEM 104 or CHEM 107 and CHEM 108 or CHEM 111 and CHEM 112.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

WR 419 Water Quality Laboratory for Wildland Managers Credits: 2 (0-4-0)
Course Description: Sampling and determination of water quality parameters.
Prerequisite: None.
Registration Information: Must have concurrent registration in WR 418.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

WR 440 Watershed Problem Analysis Credits: 3 (2-2-0)
Course Description: Capstone integration of spatial watershed issues, focused on problem solving in watershed science.
Prerequisite: (NR 322 or NR 319) and (WR 416 and WR 418).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

WR 474 Snow Hydrology Credits: 3 (3-0-0)
Course Description: Snowfall, accumulation, distribution, physical processes in the snowpack, energy balance, ablation and runoff, measurement methods, runoff forecasting.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

WR 486 Watershed Field Practicum Credits: 2 (0-6-0)
Course Description: Field visits to watershed management projects and sites of significant field studies.
Prerequisite: None.
Restriction: Must be a: Junior.
Registration Information: Junior standing. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

WR 487 Internship Credits: Var[1-6] (0-0-0)
Course Description: Supervised work experience in professional settings related to Watershed Science.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

WR 492 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

WR 495 Independent Study-Watershed Resources Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

WR 510 Watershed Management in Developing Countries Credits: 2 (2-0-0)
Course Description: Watershed management problems, approaches, and solutions in developing countries.
Prerequisite: CIVE 322 or WR 416.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

WR 511 Water Resource Development Credits: 3 (3-0-0)
Course Description: Basic principles of water resource management including surface and subsurface flows.
Prerequisite: None.
Registration Information: Graduate standing. Offered as an online course only. Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WR 512 Water Law for Non-Lawyers Credits: 3 (0-0-3)
Course Description: Basics of water law and policy for Colorado, western states, and the U.S.
Prerequisite: None.
Registration Information: Graduate standing. Written consent of instructor. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WR 514 GIS and Data Analysis in Water Resources Credits: 3 (1-4-0)
Course Description: Exposure to multiple data analysis and GIS tools used to study water resources. Assess online data sources, download and pre-process digital data, and analyze water information.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Must register for lecture and laboratory. Offered as an online course only. Credit not allowed for both WR 514 and WR 581A1.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WR 516 Cumulative Effects and Watershed Analysis Credits: 3 (2-0-1)
Course Description: Definition, causal processes, and modeling of cumulative watershed effects; comparison and evaluation of current watershed analysis procedures.
Prerequisite: WR 416 and WR 417.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

WR 520 Evapotranspiration Credits: 2 (2-0-0)
Course Description: Theory, estimation, measurement, simulation, and application of evapotranspiration processes in hydrology.
Prerequisite: PH 122.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

WR 524 Modeling Watershed Hydrology Credits: 3 (2-2-0)
Also Offered As: CIVE 524.
Course Description: Development and application of watershed models: structure, calibration, evaluation, sensitivity analysis, simulation.
Prerequisite: (CIVE 322 or WR 416) and (CIVE 202 or STAT 301 or STAT 315).
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CIVE 524 and WR 524.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WR 574 Advanced Snow Hydrology Credits: 4 (3-0-1)
Course Description: Snow processes in hydrologic cycle; physical and conceptual methods of modeling; techniques for measuring different states and change rates.
Prerequisite: CIVE 322 or ENVE 322 or WR 416.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

WR 575 Snow Hydrology Field Methods Credit: 1 (0-2-0)
Course Description: Field course offering hands-on experience in snow hydrology.
Prerequisite: None.
Registration Information: Enrollment in a graduate program. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WR 616 Hillslope Hydrology and Runoff Processes Credits: 3 (1-0-2)
Course Description: Hillslope hydrology and runoff processes in different environments; implications for management and modeling.
Prerequisite: CIVE 322 or WR 416.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

WR 671 Advanced Topics in Watershed Science Credits: Var[1-6] (0-0-0)
Course Description: Explores advanced topics in watershed hydrology, biogeochemistry, and ecology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: May be repeated for a maximum of 9 credits.
Grade Mode: Traditional.
Special Course Fee: No.

WR 674 Data Issues in Hydrology Credits: 3 (3-0-0)
Course Description: Types of data, data sources, data quality, missing data, spatial data, data usage, sensitivity in models, error, presentation of data and results.
Prerequisite: WR 574.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

WR 692 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

WR 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

WR 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

WR 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

WR 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

WR 712 Watershed Systems Credits: 3 (2-2-0)
Course Description: Dynamic simulation of watershed behavior; application and evaluation of current hydrologic models.
Prerequisite: (CIVE 322 or WR 416) and (STAT 340).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

WR 714 Water Quality for Wildland Managers Credits: 3 (3-0-0)
Course Description: Sampling, statistics of sampling, concepts of ionic equilibrium, water quality modeling, instream flow requirements.
Prerequisite: WR 418.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

WR 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

WR 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Ecosystem Science and Sustainability

The major in Ecosystem Science and Sustainability provides a strong scientific foundation in ecosystem ecology integrated with a broad knowledge of the cultural, social, economic, and political issues that are shaping the issue of sustainability. Students in the major learn to integrate science into real-world decision making, with the goal of developing sustainable strategies to maintain ecosystem services around the globe. We provide students with a broad base of experiential and collaborative learning opportunities, opportunities for research through our affiliation with the Natural Resource Ecology Laboratory, and the latest scientific knowledge about sustainability science and how organisms interact with their environments to form complex ecosystems. Opportunities to join in research, internships, practical and group-based learning, and field experiences in the beautiful Rocky Mountains and beyond combine with an outstanding classroom education to build a solid foundation for applying sustainable resource management principles.

Learning Outcomes

Students in the major learn:

- How to help people use natural resources in a sustainable way.
- About environmental change at local to global scales.
- The amazing connections between different earth system components.

- How to conduct research or field work in a variety of settings addressing questions important to sustainability.

Potential Occupations

Completion of the undergraduate degree qualifies students for a wide variety of careers related to sustainability and natural resource science. Examples of possible careers include: sustainability coordinator, ecologist, environmental educator, invasive species specialist, biological science technician, climate change scientist, natural resource specialist, or corporate environmental consultant. Students completing the undergraduate degree in Ecosystem Science and Sustainability will also be well prepared to succeed in graduate education in a variety of disciplines.

Requirements Effective Fall 2019

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
ESS 120	Intro to Ecosystem and Watershed Sciences		1
ESS 129	Information Management for Sustainability		1
ESS 130	Intro to Systems Theory for Sustainability		1
Select one course from the following:			3
ANTH 100	Introductory Cultural Anthropology (GT-SS3)	3C	
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	
AREC 240/ECON 240	Issues in Environmental Economics (GT-SS1)	3C	
ECON 202	Principles of Microeconomics (GT-SS1)	3C	
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	
POLS 101	American Government and Politics (GT-SS1)	3C	
POLS 103	State and Local Government and Politics (GT-SS1)	3C	
SOC 100	General Sociology (GT-SS3)	3C	
SOC 105	Social Problems (GT-SS3)	3C	
Select one group from the following:			4
Group A:			
BZ 110	Principles of Animal Biology (GT-SC2)	3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	3A	
Group B:			
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
Select one group from the following:			5
Group A:			
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	
Group B:			
CHEM 111	General Chemistry I (GT-SC2)	3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	
Select one course from the following:			3-4
ANTH 150/ESS 150	Imagining Sustainability		
GES 101	Foundations of Environmental Sustainability		
NR 120A	Environmental Conservation (GT-SC2)	3A	
NR 120B	Environmental Conservation		
Select one course from the following:			4
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	
Arts and Humanities		3B	3
	Total Credits		28-29

Sophomore

ESS 210/GR 210	Physical Geography		3
LIFE 320	Ecology		3

Select one course from the following:			4
BZ 120	Principles of Plant Biology (GT-SC1)	3A	
LIFE 103	Biology of Organisms-Animals and Plants		
Select one course from the following:			5
PH 121	General Physics I (GT-SC1)	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	
Select one course from the following:			3
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Electives			4
	Total Credits		28
Junior			
ESS 311	Ecosystem Ecology		3
ESS 312	Sustainability Science		3
ESS 320	Internship and Career Preparation		1
ESS 330	Quantitative Reasoning for Ecosystem Science		3
GR 304/WR 304	Sustainable Watersheds	3A	3
NR 322	Introduction to Geographic Information Systems		4
Select one course from the following:			3
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
LB 300	Specialized Professional Writing	2	
Historical Perspectives		3D	3
Electives			8
	Total Credits		31
Summer			
Professional Development and Engagement Requirement (see list below)			5
The timeline to complete this requirement may vary – plan in consultation with advisor.			
	Total Credits		5
Senior			
ESS 440	Practicing Sustainability	4C	4
GR 323/NR 323	Remote Sensing and Image Interpretation		3
NR 400	Public Communication in Natural Resources		3
Select one course from the following:			3
ESS 400	Global Perspectives on Sustainabilty	4A,4B	
ESS 411	Earth Systems Ecology	4A,4B	
ESS Electives (see list below)			9
Electives[1]			5-6
	Total Credits		27-28
	Program Total Credits:		120

Professional Development and Engagement Requirement

The timeline to complete the Professional Development and Engagement may vary. Suggested completion of summer coursework (NR 220 and some department-approved study abroad programs) may occur between sophomore and junior years or between junior and senior years. ESS 487 has a prerequisite of ESS 320, so should be completed after junior year. ESS 220/ESS 221/ESS 298 may be completed during the academic year, ideally during junior or senior year, thus moving elective credits to freshman and sophomore years.

Code	Title	Credits
Select one group from the following:		
Group A:		5
NR 220	Natural Resource Ecology and Measurements	
Group B:		5
ESS 487	Internship	
Group C:		5
ESS 220	Research Skills for Ecosystem Science I	
ESS 221	Research Methods for Ecosystem Science II	
ESS 298	Research	
Group D:		5
Department-approved Study Abroad		

Ecosystem Science and Sustainability Electives

Select a minimum of 9 credits not taken elsewhere in the program from the list below. A minimum of 3 credits must be from the ESS subject code (and associated courses) short list below. Additional coursework may be required due to prerequisites.

Code	Title	Credits
Select a minimum of 3 credits from the following courses:		
ESS 400	Global Perspectives on Sustainabilty	3
ESS 411	Earth Systems Ecology	3
ESS 412	Sustainable Cities	3
ESS 432/MIP 432	Microbial Ecology	3
ESS 433/MIP 433	Microbial Ecology Laboratory	1
ESS 471	Special Topics in Ecosystem Sustainability	1-6
ESS 474/BZ 474	Limnology	3
ESS 486	Ecosystem Practicum	2
ESS 524	Foundations for Carbon/Greenhouse Gas Mgmt	3
ESS 542	Greenhouse Gas Policies	2
ESS 543	Current Topics in Climate Change	2
ESS 555/ENGR 555	Life Cycle Assessment for Sustainability	3
NR 353/BZ 353	Global Change Ecology, Impacts and Mitigation	3
Select 0-6 credits from the following courses:		
ANTH 329	Cultural Change	3
ANTH 330	Human Ecology	3
ANTH 414/ETST 414	Development in Indian Country	3
ANTH 415	Indigenous Ecologies and the Modern World	3
ANTH 417	Indigenous Environmental Stewardship	3
ANTH 453	Impacts on Ancient Environments	3
AREC 340/ECON 340	Introduction-Economics of Natural Resources	3
AREC 341	Environmental Economics	3
AREC 440	Advanced Environmental and Resource Economics	3
AREC 444/ECON 444	Economics of Energy Resources	3
ATS 350	Introduction to Weather and Climate	2
ATS 351	Introduction to Weather and Climate Lab	1
BSPM 302	Applied and General Entomology	2
BSPM 308	Ecology and Management of Weeds	3
BSPM 361	Elements of Plant Pathology	3
BSPM 365	Integrated Tree Health Management	4
BSPM 451	Integrated Pest Management	3
BZ 440	Plant Physiology	3
BZ 441	Plant Physiology Laboratory	2
BZ 450	Plant Ecology	4
BZ 471	Stream Biology and Ecology	3
BZ 472	Stream Biology and Ecology Laboratory	1
CHEM 338	Environmental Chemistry	3
ECON 304	Intermediate Macroeconomics	3
ECON 306	Intermediate Microeconomics	3
ECON 317	Population Economics	3
ERHS 448	Environmental Contaminants: Exposure and Fate	3
ETST 352/SOWK 352	Indigenous Women, Children, and Tribes	3
ETST 365	Global Environmental Justice Movements	3
ETST 444/SOC 444	Federal Indian Law and Policy	3
F 311	Forest Ecology	3
F 322	Economics of the Forest Environment	3
F 324	Fire Effects and Adaptations	3
F 466/HORT 466	Urban and Community Forestry	3
FW 204	Introduction to Fishery Biology	3
FW 260	Principles of Wildlife Management	3
FW 300	Biology and Diversity of Fishes	2
FW 301	Ichthyology Laboratory	1
FW 375	Field Wildlife Studies	3
FW 400	Conservation of Fish in Aquatic Ecosystems	3
FW 477	Wildlife Habitat Use and Management	3
GEOL 424/CIVE 424	Modern Gas and Oil	3
GES 470	Applications of Environmental Sustainability	3
GR 303	Mountain Geography	3
GR 348	Biogeography	3
GR 410	Climate Change: Science, Policy, Implications	3
GR 430	Land Change Science and Remote Sensing	3
GR 431	Land Change Science Lab	1
GR 448	Forest Biogeography and Climate Change	3
NR 300	Biological Diversity	3
NR 320	Natural Resources History and Policy	3
NR 326	Forest Vegetation Management	3
NR 330	Human Dimensions in Natural Resources	3
NR 370	Coastal Environmental Ecology	3
NR 421	Natural Resources Sampling	3
NR 422	GIS Applications in Natural Resource Management	4
NR 425	Natural Resource Policy and Sustainability	3
NRRT 231	Principles-Parks/Protected Area Management	3

NRRT 262	Principles of Environmental Communication	3
NRRT 270	Principles of Natural Resource Tourism	3
NRRT 320	International Issues-Recreation and Tourism	3
NRRT 330	Social Aspects of Natural Resource Management	3
NRRT 362	Environmental Conflict Management	3
NRRT 401	Collaborative Conservation	3
PHIL 320	Ethics of Sustainability	3
PHIL 330/AGRI 330	Agricultural and Food System Ethics	3
PHIL 345	Environmental Ethics	3
POLS 361	U.S. Environmental Politics and Policy	3
POLS 362	Global Environmental Politics	3
POLS 364	Air, Climate, and Energy Policy Analysis	3
POLS 442	Environmental Politics in Developing World	3
POLS 462	Globalization, Sustainability, and Justice	3
POLS 463	Urban Policy and Management	3
RS 300	Rangeland Conservation and Stewardship	3
RS 331	Wildland Plants and Plant Communities	3
RS 432	Rangeland Measurements and Monitoring	2
RS 452	Rangeland Herbivore Ecology and Management	3
RS 470	Rangeland Economics and Analysis	2
RS 471	Rangeland Planning and Grazing Management	2
RS 478	Ecological Restoration	3
SOC 320	Population-Natural Resources and Environment	3
SOC 321	Soil, Environment, and Society	3
SOC 322	Introduction to Environmental Justice	3
SOC 323	Soc. of Environmental Cooperation & Conflict	3
SOC 324	Food Justice	3
SOC 362	Social Change	3
SOC 364	Food, Agriculture and Global Society	3
SOC 460	Society and Environment	3
SOC 461	Water, Society, and Environment	3
SOCR 322	Principles of Microclimatology	3
SOCR 400	Soils and Global Change: Science and Impacts	3
SOCR 420	Crop and Soil Management Systems I	3
SOCR 441	Soil Ecology	3
SOCR 442	Forest and Range Soils	3
SOCR 455	Soil Microbiology	3
SOCR 456	Soil Microbiology Laboratory	1
SOCR 500	Environmental Measurement Laboratory	1
WR 416	Land Use Hydrology	3
WR 417	Watershed Measurements	3
WR 418	Land Use and Water Quality	3
WR 419	Water Quality Laboratory for Wildland Managers	2
WR 474	Snow Hydrology	3

[1] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
ESS 120	Intro to Ecosystem and Watershed Sciences				1
ESS 129	Information Management for Sustainability	X			1
Select one group from the following:			X		4
Group A:					
BZ 110	Principles of Animal Biology (GT-SC2)			3A	
BZ 111	Animal Biology Laboratory (GT-SC1)			3A	
Group B:					
LIFE 102	Attributes of Living Systems (GT-SC1)			3A	
Select one course from the following:					3-4
ANTH 150/ ESS 150	Imagining Sustainability				
GES 101	Foundations of Environmental Sustainability				
NR 120A	Environmental Conservation (GT-SC2)			3A	
NR 120B	Environmental Conservation				
Arts and Humanities				3B	3
	Total Credits				15-16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
ESS 130	Intro to Systems Theory for Sustainability	X			1
Select one group from the following:			X		5

Group A:					
CHEM 107	Fundamentals of Chemistry (GT-SC2)			3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)			3A	
Group B:					
CHEM 111	General Chemistry I (GT-SC2)			3A	
CHEM 112	General Chemistry Lab I (GT-SC1)			3A	
Select one course from the following:			X		4
MATH 155	Calculus for Biological Scientists I (GT-MA1)			1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)			1B	
Select one course from the following:					3
ANTH 100	Introductory Cultural Anthropology (GT-SS3)			3C	
AREC 202	Agricultural and Resource Economics (GT-SS1)			3C	
AREC 240/ ECON 240	Issues in Environmental Economics (GT-SS1)			3C	
ECON 202	Principles of Microeconomics (GT-SS1)			3C	
ECON 204	Principles of Macroeconomics (GT-SS1)			3C	
POLS 101	American Government and Politics (GT-SS1)			3C	
POLS 103	State and Local Government and Politics (GT-SS1)			3C	
SOC 100	General Sociology (GT-SS3)			3C	
SOC 105	Social Problems (GT-SS3)			3C	
CO 150, and AUCC 1B (Quantitative Reasoning) must be completed by the end of Semester 2.		X			
	Total Credits				13

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ESS 210/GR 210	Physical Geography	X			3
Select one course from the following:		X			4
BZ 120	Principles of Plant Biology (GT-SC1)			3A	
LIFE 103	Biology of Organisms-Animals and Plants				
Diversity and Global Awareness				3E	3
Electives					4
CHEM 107 and CHEM 108 or CHEM 111 and CHEM 112, as well as BZ 110/ BZ 111 and BZ 120 or LIFE 102/LIFE 103, must be completed by the end of Semester 3.		X			
	Total Credits				14

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
LIFE 320	Ecology				3
Select one course from the following:			X		5
PH 121	General Physics I (GT-SC1)			3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)			3A	
Select one course from the following:			X		3
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
Arts and Humanities				3B	3
	Total Credits				14

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
ESS 311	Ecosystem Ecology	X			3
GR 304/WR 304	Sustainable Watersheds			3A	3
NR 322	Introduction to Geographic Information Systems		X		4
Historical Perspectives				3D	3
Electives					3
	Total Credits				16

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
ESS 312	Sustainability Science	X			3
ESS 320	Internship and Career Preparation	X			1
ESS 330	Quantitative Reasoning for Ecosystem Science	X			3
Select one course from the following:					3
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
LB 300	Specialized Professional Writing			2	
Electives					5
	Total Credits				15
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Professional Development and Engagement Requirement (see list on Requirements tab)			X		5
The timeline to complete this requirement may vary – plan in consultation with advisor.					
	Total Credits				5
Senior					
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
GR 323/NR 323	Remote Sensing and Image Interpretation	X			3
Select one course from the following:			X		3
ESS 400 (Spring only)	Global Perspectives on Sustainabilty			4A,4B	
ESS 411	Earth Systems Ecology			4A,4B	
Ecosystem Science and Sustainability Elective (See Department List on Concentration Requirements tab)					6
Elective					3
	Total Credits				15
Semester 9		**Critical**	**Recommended**	**AUCC**	**Credits**
ESS 440	Practicing Sustainability	X		4C	4
NR 400	Public Communication in Natural Resources	X			3
Ecosystem Science and Sustainability Electives (See Department List on Concentration Requirements tab)		X			3
Elective		X			2-3
ESS 400 or ESS 411 MUST be completed by the end of Semester 9.		X			
The benchmark courses for the 9th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12-13
	Program Total Credits:				120

Major in Watershed Science

Why Watershed Science at CSU?

Sustainable management of freshwater resources is an increasingly important and complex challenge in Colorado and worldwide, and we need scientists who can address complex water issues. The Watershed Science program focuses on how water moves through the landscape, what factors affect its quality, and how to manage water resources. Students begin their program by building a strong foundation in the physical and natural sciences in preparation for upper-division coursework in land-use hydrology, snow hydrology, water quality, and watershed problem analysis. Students gain hands-on experience with water measurements outside and in the lab, and build technical and writing skills to prepare them for careers in hydrology and water resources.

Learning Outcomes

Students will demonstrate:

- An understanding of the key concepts in watershed science including surface and subsurface hydrology and water quality.
- An understanding of land use effects on fresh water resources.
- Field and lab-based watershed measurement and data analysis skills.
- Skills in watershed problem analysis, including the use of GIS and watershed models.
- Strong critical thinking, writing, and oral communication skills.

Potential Occupations

The B.S. in Watershed Science qualifies students for a wide variety of careers in hydrology and water resources management. Examples include: watershed scientist, hydrologist, water quality analyst, watershed manager, environmental consultant, watershed use specialist, and water conservation specialist. Employment opportunities for graduates are found in consulting firms, governmental agencies, international development and resource management agencies, non-governmental organizations, and private industry. Graduates are also well positioned for advanced science degrees. The B.S. curriculum includes all of the requirements for graduates to meet the U.S. governmental hydrologist certification.

Requirements Effective Fall 2019

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
ESS 120	Intro to Ecosystem and Watershed Sciences		1
ESS 129	Information Management for Sustainability		1
ESS 130	Intro to Systems Theory for Sustainability		1
Select one course from the following:			4
BZ 110 & BZ 111	Principles of Animal Biology (GT-SC2)	3A	
BZ 120	Principles of Plant Biology (GT-SC1)	3A	
LIFE 103[1]	Biology of Organisms-Animals and Plants		
Select one group from the following:			5
Group A:			
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	
Group B:			
CHEM 111	General Chemistry I (GT-SC2)	3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	
Select one course from the following:			3-4
GEOL 110	Introduction to Geology-Parks and Monuments (GT-SC2)	3A	
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)	3A	
GEOL 122	The Blue Planet - Geology of Our Environment (GT-SC2)	3A	
GEOL 124	Geology of Natural Resources (GT-SC2)	3A	
GEOL 150	Physical Geology for Scientists and Engineers	3A	
Select one course from the following:			4
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
	Total Credits		28-29

Sophomore

ESS 210/GR 210	Physical Geography		3
LIFE 320	Ecology		3
NR 322	Introduction to Geographic Information Systems		4
SOCR 240	Introductory Soil Science		4
WR 304/GR 304	Sustainable Watersheds	3A	3
Select one course from the following:			4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	
MATH 255	Calculus for Biological Scientists II	1B	
Select one course from the following:			5
PH 121	General Physics I (GT-SC1)	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	

Social and Behavioral Sciences		3C	3
	Total Credits		29
Summer			
NR 220	Natural Resource Ecology and Measurements		5
	Total Credits		5
Junior			
AREC 342	Water Law, Policy, and Institutions		3
ESS 320	Internship and Career Preparation		1
ESS 330	Quantitative Reasoning for Ecosystem Science		3
SOCR 470	Soil Physics		3
SOCR 471	Soil Physics Laboratory		1
WR 418[2]	Land Use and Water Quality		3
WR 419	Water Quality Laboratory for Wildland Managers		2
Select one course from the following:			3
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
LB 300	Specialized Professional Writing	2	
Select one course from the following:			3
STAT 301	Introduction to Statistical Methods		
STAT 315	Statistics for Engineers and Scientists		
Arts and Humanities		3B	3
Historical Perspectives		3D	3
	Total Credits		28
Senior			
WR 416[2]	Land Use Hydrology	4B	3
WR 417[2]	Watershed Measurements		3
WR 440	Watershed Problem Analysis	4A,4B,4C	3
WR 486	Watershed Field Practicum		2
Select one couse from the following:			3
SOCR 322	Principles of Microclimatology		
WR 474	Snow Hydrology		
Watershed Science Department List (see list below)			9
Electives[3]			6-7
	Total Credits		29-30
	Program Total Credits:		120

Watershed Science Department List

Select a minimum of 9 credits from courses not taken elsewhere in the program. Additional coursework may be required due to prerequisites.

Code	Title	Credits
AREC 442	Water Resource Economics	3
ATS 350	Introduction to Weather and Climate	2
ATS 351	Introduction to Weather and Climate Lab	1
BSPM 445	Aquatic Insects	4
BZ 440	Plant Physiology	3
BZ 441	Plant Physiology Laboratory	2
BZ 471	Stream Biology and Ecology	3
BZ 472	Stream Biology and Ecology Laboratory	1
BZ 474/ESS 474	Limnology	3
CHEM 338	Environmental Chemistry	3
CIVE 322	Basic Hydrology	3
CIVE 330	Ecological Engineering	3
CIVE 413	Environmental River Mechanics	3
CIVE 423	Groundwater Engineering	3
CIVE 424/GEOL 424	Modern Gas and Oil	3
CIVE 425	Soil and Water Engineering	3
CIVE 440	Nonpoint Source Pollution	3
ERHS 448	Environmental Contaminants: Exposure and Fate	3
ESS 311	Ecosystem Ecology	3
ESS 312	Sustainability Science	3
ESS 412	Sustainable Cities	3
ESS 471	Special Topics in Ecosystem Sustainability	1-6
F 311	Forest Ecology	3

F 324	Fire Effects and Adaptations	3
FW 300	Biology and Diversity of Fishes	2
FW 301	Ichthyology Laboratory	1
GES 470	Applications of Environmental Sustainability	3
GEOL 446	Environmental Geology	3
GEOL 452	Hydrogeology	4
GEOL 454	Geomorphology	4
GEOL 551	Groundwater Modeling	3
GEOL 552	Advanced Topics in Hydrogeology	2-3
GEOL 553	Use of Tracers in Hydrogeology	3
GR 410	Climate Change: Science, Policy, Implications	3
GRAD 592	Water Resources Seminar	1
NR 310	Ecosystem Services and Human Well-Being	3
NR 320	Natural Resources History and Policy	3
NR 323/GR 323	Remote Sensing and Image Interpretation	3
NR 370	Coastal Environmental Ecology	3
NR 422	GIS Applications in Natural Resource Management	4
NRRT 330	Social Aspects of Natural Resource Management	3
NRRT 362	Environmental Conflict Management	3
RS 478	Ecological Restoration	3
SOC 461	Water, Society, and Environment	3
SOCR 322	Principles of Microclimatology	3
SOCR 370	Irrigation Principles	2
SOCR 371	Irrigation of Field Crops	1
SOCR 440	Pedology	4
SOCR 500	Environmental Measurement Laboratory	1
WR 406	Seasonal Snow Environments	3
WR 474	Snow Hydrology	3
WR 492	Seminar	3
WR 575	Snow Hydrology Field Methods	1

1 LIFE 102 or equivalent is required to take LIFE 103.

2 Partially satisfies requirements of the Sustainable Water Interdisciplinary Minor.

3 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program: This program assumes that students will either test out of or take the prerequisite Mathematics courses (MATH 117, MATH 118, MATH 124, MATH 125, MATH 126) prior to the courses listed in this plan.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
ESS 120	Intro to Ecosystem and Watershed Sciences				1
ESS 129	Information Management for Sustainability	X			1
Select one from the following:					4
BZ 110 & BZ 111	Principles of Animal Biology (GT-SC2)	X		3A	
BZ 120	Principles of Plant Biology (GT-SC1)	X		3A	
LIFE 103	Biology of Organisms-Animals and Plants	X			
Select one course from the following:					3-4
GEOL 110	Introduction to Geology-Parks and Monuments (GT-SC2)		X	3A	
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)		X	3A	
GEOL 122	The Blue Planet - Geology of Our Environment (GT-SC2)		X	3A	
GEOL 124	Geology of Natural Resources (GT-SC2)		X	3A	
GEOL 150	Physical Geology for Scientists and Engineers		X	3A	
Arts and Humanities				3B	3
	Total Credits				15-16

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
ESS 130	Intro to Systems Theory for Sustainability	X			1
Select one group from the following:					5
Group A:					
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	X		3A	
Group B:					
CHEM 111	General Chemistry I (GT-SC2)	X		3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	
Select one course from the following:					4

MATH 155	Calculus for Biological Scientists I (GT-MA1)		X	1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)		X	1B	
Diversity and Global Awareness				3E	3
CO 150 and AUCC 1B (Quantitative Reasoning) requirement must be completed by the end of Semester 2.			X		
	Total Credits				13
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ESS 210/GR 210	Physical Geography		X		3
NR 322	Introduction to Geographic Information Systems		X		4
SOCR 240	Introductory Soil Science		X		4
Select one course from the following:					4
MATH 161	Calculus for Physical Scientists II (GT-MA1)		X	1B	
MATH 255	Calculus for Biological Scientists II		X	1B	
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
LIFE 320	Ecology		X		3
WR 304/GR 304	Sustainable Watersheds		X	3A	3
Select one course from the following:					5
PH 121	General Physics I (GT-SC1)		X	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)		X	3A	
Social and Behavioral Sciences				3C	3
SOCR 240 must be completed by the end of Semester 4.			X		
	Total Credits				14
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
NR 220	Natural Resource Ecology and Measurements		X	X	5
	Total Credits				5
Junior					
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
SOCR 470	Soil Physics		X		3
SOCR 471	Soil Physics Laboratory		X		1
Select one course from the following:					3
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)		X	2	
JTC 300	Professional and Technical Communication (GT-CO3)		X	2	
LB 300	Specialized Professional Writing		X	2	
Select one course from the following:					3
STAT 301	Introduction to Statistical Methods		X		
STAT 315	Statistics for Engineers and Scientists		X		
Arts and Humanities				3B	3
WR 304/GR 304 must be completed by the end of Semester 6.			X		
	Total Credits				13
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
AREC 342	Water Law, Policy, and Institutions		X		3
ESS 320	Internship and Career Preparation				1
ESS 330	Quantitative Reasoning for Ecosystem Science		X		3
WR 418	Land Use and Water Quality		X		3
WR 419	Water Quality Laboratory for Wildland Managers		X		2
Historical Perspectives				3D	3
	Total Credits				15
Senior					
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
WR 416	Land Use Hydrology		X	4B	3

WR 417	Watershed Measurements	X			3
WR 486	Watershed Field Practicum	X			2
Select one course from the following:					3
SOCR 322 (Spring only)	Principles of Microclimatology				
WR 474	Snow Hydrology				
Elective					3
	Total Credits				14
Semester 9		**Critical**	**Recommended**	**AUCC**	**Credits**
WR 440	Watershed Problem Analysis	X		4A,4B,4C	3
Watershed Science Department List selection (See Department List on Requirements tab).		X			9
Electives		X			3-4
SOCR 322 or WR 474 MUST be completed by the end of Semester 9.		X			
The benchmark courses for the 9th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15-16
	Program Total Credits:				120

Minor in Watershed Science

The minor in Watershed Science provides a background in core classes addressing land use hydrology and sustainable watersheds. Students also engage in experiential learning in the watershed practicum field course. The minor offers a broad and flexible selection of additional coursework options that emphasize physical, biogeochemical, and societal aspects of water resources and watershed management. Students can select the combination of courses that best fits their interests and complements their major.

Requirements

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Effective Fall 2017

Code	Title	Credits
Lower Division		
ESS 210/GR 210	Physical Geography	3-4
or GEOL 150	Physical Geology for Scientists and Engineers	
Upper Division		
WR 304	Sustainable Watersheds	3
WR 416	Land Use Hydrology	3
WR 486	Watershed Field Practicum	2
Select at least 10 credits from the following:		10
AREC 342	Water Law, Policy, and Institutions	
ATS 350	Introduction to Weather and Climate	
CIVE 322/ENVE 322	Basic Hydrology	
CIVE 413	Environmental River Mechanics	
CIVE 423	Groundwater Engineering	
CIVE 440	Nonpoint Source Pollution	
GEOL 452	Hydrogeology	
GEOL 454	Geomorphology	
SOCR 322	Principles of Microclimatology	
SOCR 470	Soil Physics	
SOCR 471	Soil Physics Laboratory	
SOC 461	Water, Society, and Environment	
WR 406	Seasonal Snow Environments	
WR 417	Watershed Measurements	
WR 418	Land Use and Water Quality	
WR 419	Water Quality Laboratory for Wildland Managers	
WR 474	Snow Hydrology	
Program Total Credits:		21-22

Graduate Certificate in Water Resources

Advance your career in water resources planning, management, and policy with this graduate certificate addressing an array of water issues in the western United States and around the world. Expand your knowledge with case studies, geospatial applications and exercises. The program of study emphasizes an understanding of the hydrologic cycle and the physical processes that drive it, how humans adapt water resources to their needs, techniques for sustainable management, the evolution of laws and policies governing water use, and basic spatial and temporal analysis of water data.

After completion of this water resources training program, apply your knowledge to a career in the public or private sector. Career opportunities may be found in forests, parks, wildlife refuges, public lands, special-purpose water districts, academia, water resources engineering and consulting firms, nonprofit organizations, and municipal, tribal, county, state, or federal agencies.

Curriculum: Three courses total, offered through the Department of Ecosystems Science and Sustainability and CSU Online, and geared towards professionals across disciplines. Courses can be taken in any order.

Effective Fall 2019

Additional coursework may be required due to prerequisites.

Code	Title	Credits
WR 511	Water Resource Development	3
or CIVE 544	Water Resources Planning and Management	
WR 512	Water Law for Non-Lawyers	3
WR 514	GIS and Data Analysis in Water Resources	3
Program Total Credits:		9

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Master of Greenhouse Gas Management and Accounting, Plan C (M.G.M.A)

Training in accurate quantification of greenhouse gas mitigation efforts is central to deployment of cleaner technologies and practices across all sectors of the economy. Every nation in the world has recognized the importance of limiting greenhouse gas emissions and agreed that emissions must be reduced. This goal cannot be achieved without a new class of technically adept professionals. CSU's Master of Greenhouse Gas Management and Accounting (MGMA) program provides students with knowledge, skills, and experience necessary to launch successful careers and tackle these challenges. The program leverages world-leading greenhouse gas and climate change expertise from across CSU and enables students from a wide variety of academic backgrounds, such as environmental studies, business, engineering, natural resources or agriculture, to develop the skills needed for emerging professions in greenhouse gas management and accounting.

The Master of Greenhouse Gas Management and Accounting is an affiliated Professional Science Master's (PSM) degree. Affiliation is administered by the Commission on Affiliation of PSM Programs (https://www.professionalsciencemasters.org) (formerly named PSM National Office) to ensure a strong and distinctive PSM brand. PSMs are designed for students who are seeking a graduate degree in science or mathematics and understand the need for developing workplace skills valued by top employers. The degree program also participates in the Western Regional Graduate Program (http://graduateschool.colostate.edu/for-faculty-and-staff/admissions-resources/wiche-process).

Requirements Effective Fall 2017

Code	Title	Credits
ESS 501	Principles of Ecosystem Sustainability	3
ESS 524	Foundations for Carbon/Greenhouse Gas Mgmt	3
ESS 542	Greenhouse Gas Policies	2
ESS 543/ATS 543	Current Topics in Climate Change	2
ESS 545	Applications in Greenhouse Gas Inventories	4
ESS 587	Internship	4
STAT 511A	Design and Data Analysis for Researchers I: R Software	4
or STAT 511B	Design and Data Analysis for Researchers I: SAS Software	
Quantitative Methods [1]		3
Greenhouse Gas Specialization [2]		6
Technical Tools and Skills [3]		6
Program Total Credits:		37

A minimum of 37 credits are required to complete this program.

1. Select courses with approval of advisor and graduate committee.
2. Select two courses in ANEQ, F, RS, SOCR, or other area of specialization with approval of advisor and graduate committee.
3. Select two courses from GIS and/or remote sensing with approval of advisor and graduate committee.

Master of Science in Ecosystem Sustainability, Plan A

Many physical, ecological and social factors interact to shape the future of our ecosystems and societies. CSU's innovative Master of Science in Ecosystem Sustainability enables students to develop core competencies in ecosystem science—the study of organisms and the environment—and apply that knowledge to address real-world issues. We help develop leaders in sustainability science: a new generation of practitioners able to address complex, integrated social-ecological problems, in collaborative partnerships with researchers, resource users and decision-makers.

Our graduates have the tools to understand complex scientific questions in sustainability, and the leadership and collaborative skills required to address current and future issues in sustainability. The program serves as a foundation for a wide range of careers, including academic and scholarly professions, and work in government agencies, non-governmental organizations, and corporate and entrepreneurial environments.

A focus on solutions

Students will work at the cutting edge of new research on ecosystem sustainability. Collaborating with some of the world's leading ecosystem and sustainability scientists, students will explore solutions to global problems related to natural and water resources, food supplies, energy, greenhouse gas management, land use change, climate change, and environmental justice, among others.

What students can expect to gain

In the course of the degree, students will acquire:

- Detailed knowledge of quantitative and qualitative methods
- An understanding of complex ecosystem functioning
- A transdisciplinary understanding of social-ecological processes
- The ability to work in teams across disciplines and with decision makers, resource users and team members outside of academia
- The skills to conduct integrated assessments using systems approaches, conceptual, mathematical, geospatial, and statistical models, and innovative collaborative processes
- The ability to apply critical thinking in the development of sustainable systems at local and global scales
- Advanced training in the methods of urban ecology, and on managing the sustainable cities of the future

Local and Global Relevance

Our graduate community benefits from a highly networked program with close working links to the city governments of Fort Collins, Boulder, and Denver, and to local agencies, farming communities, and non-profits across the Front Range. We work at the highest elevations of the Rockies, and in the lowest short grass steppe regions, on cities and in neighborhoods. Our active research programs are spread around the globe: from northern, eastern, and southern Africa to China, Mongolia, Nepal, Tibet, Honduras, and Mexico.

Requirements Effective Fall 2019

Code	Title	Credits
Required Core Courses:		
ESS 501	Principles of Ecosystem Sustainability	3
ESS 692	Seminar	1
Areas – Select a minimum of 20 credits from the four Areas indicated below:		20
Ecosystem Science		
At least one course must be selected from the following (2-3 credits):		
ESS 524	Foundations for Carbon/Greenhouse Gas Mgmt	
ESS 543/ATS 543	Current Topics in Climate Change	
ESS 625/F 625	Ecology of Forest Production	
ESS 660	Biogeochemical Cycling in Ecosystems	
Additional courses may be selected from the following:		
ATS 753	Global Hydrologic Cycle	
ATS 760	Global Carbon Cycle	
BZ 572	Phytoremediation	
BZ 642	Plant Metabolism	
ECOL 505	Foundations of Ecology	
ECOL 600	Community Ecology	
ECOL 620	Applications in Landscape Ecology	
F 510	Ecophysiology of Trees	
F 624	Fire Ecology	
FW 555	Conservation Biology	
HORT 571	Soil-Plant-Water Relations/Water Stress	
RS 531	World Grassland Ecogeography	
RS 630	Ecology of Grasslands and Shrublands	
SOCR 522	Micrometeorology	
SOCR 540	Soil-Plant-Nutrient Relationships	
WR 574	Advanced Snow Hydrology	
WR 616	Hillslope Hydrology and Runoff Processes	
Ecosystem Sustainability		
The following course must be taken (2 credits):		
ESS 542	Greenhouse Gas Policies	
Additional courses may be selected from the following:		
AGRI 500	Advanced Issues in Agriculture	
AGRI 521	Emerging Issues and Challenges for Global Agr	
AGRI 602	Bioenergy Policy, Economics, and Assessment	
AGRI 632	Managing for Ecosystem Sustainability	
AGRI 635	Integrated Forage Management	
AGRI 637	Understanding Policy and Emerging Issues	
AGRI 638	Ecosystem Services on Agricultural Lands	
ANTH 529	Anthropology and Sustainable Development	
ANTH 530	Human-Environment Interactions	
ANEQ 548	Issues in Manure Management	
AREC 542	Applied Advanced Water Resource Economics	
AREC 566/ SOC 566	Contemporary Issues in Developing Countries	
ECOL 592	Interdisciplinary Seminar in Ecology	
GES 542	Biobased Fuels, Energy, and Chemicals	
NR 515	Natural Resources Policy and Biodiversity	
NR 535	Action for Sustainable Behavior	
NR 550	Sustainable Military Lands Management	
PHIL 565	Seminar in Environmental Philosophy	
POLS 670	Politics of Environment and Sustainability	
POLS 709	Environmental Politics in the U.S.	
POLS 729	Political Theory and the Environment	
POLS 739	International Environmental Politics	
POLS 749	Comparative Environmental Politics	
POLS 759	Environmental Policy and Administration	

RS 565	Riparian Ecology and Management
SOC 564	Environmental Justice
SOC 666	Globalization and Socioeconomic Restructuring
SOC 668	Environmental Sociology
SOC 669	Global Inequality and Change
WR 510	Watershed Management in Developing Countries
Quantitative Methods	
At least one course must be selected from the following (4 credits):	
ESS 545	Applications in Greenhouse Gas Inventories
ESS 565	Niche Models
ESS 575	Models for Ecological Data
Additional courses may be selected from the following:	
AREC 535/ ECON 535	Applied Econometrics
AREC 540/ ECON 540	Environmental and Natural Resource Economics
ECOL 620	Applications in Landscape Ecology
F 521	Advanced Quantitative Methods in Forestry II
GEOL 551	Groundwater Modeling
GEOL 562	Statistical Data Analysis in Earth Resources
LAND 520	Geographic Information Systems
NR 503/GR 503	Remote Sensing and Image Analysis
NR 504	Computer Analysis of Remote Sensing Data
NR 505	Concepts in GIS
NR 512	Spatial Statistical Modeling-Natural Resources
NR 523/STAT 523	Quantitative Spatial Analysis
NR 554/ANTH 554	Ecological and Social Agent-based Modeling
NR 565	Principles of Natural Resources Ecology
RS 532	Rangeland Ecosystem Sampling
SOCR 620	Modeling Ecosystem Biogeochemistry
SOCR 670	Terrestrial Ecosystems Isotope Ecology
STAA 551	Regression Models and Applications
STAA 552	Generalized Regression Models
STAA 553	Experimental Design
STAA 554	Mixed Models
STAA 561	Probability with Applications
STAA 562	Mathematical Statistics with Applications
STAA 565	Quantitative Reasoning
STAA 566	Data Visualization Methods
STAA 567	Computational and Simulation Methods
STAA 571	Survey Statistics
STAA 572	Nonparametric Methods
STAA 573	Analysis of Time Series
STAA 574	Methods in Multivariate Analysis
STAA 575	Applied Bayesian Statistics
STAA 576	Methods in Spatial Statistics
STAT 511A	Design and Data Analysis for Researchers I: R Software
STAT 511B	Design and Data Analysis for Researchers I: SAS Software
STAT 512	Design and Data Analysis for Researchers II
STAT 521	Stochastic Processes I
STAT 525	Analysis of Time Series I
STAT 540	Data Analysis and Regression
STAT 544/ ERHS 544	Biostatistical Methods for Quantitative Data
STAT 547/ CIVE 547	Statistics for Environmental Monitoring
STAT 560	Applied Multivariate Analysis
STAT 570	Nonparametric Statistics
STAT 600	Statistical Computing
STAT 605	Theory of Sampling Techniques
STAT 640	Design and Linear Modeling I
STAT 645	Categorical Data Analysis and GLIM
STAT 650	Design and Linear Modeling II
WR 524/CIVE 524	Modeling Watershed Hydrology
WR 575	Snow Hydrology Field Methods
WR 674	Data Issues in Hydrology
Communication/Collaboration	
At least one course must be selected from the following (1-3 credits):	
ECOL 693	Research Seminar
JTC 614	Public Communication Campaigns
JTC 660	Communication and Innovation
JTC 661	Information Design
JTC 662	Communicating Science and Technology
NR 501	Leadership and Public Communications
Research and Thesis (minimum credits required):	
ESS 698	Research 3
ESS 699	Thesis 3
Program Total Credits:	30

A minimum of 30 credits are required to complete this program.

Master of Science in Watershed Science, Plan A

Sustainable management of freshwater resources is an increasingly important and complex challenge in Colorado and worldwide, and we need scientists who can address complex water issues. The watershed science programs focus on how water moves through the landscape, what factors affect its quality, and how to manage water resources. Students in the M.S. in Watershed Science, Plan A program work closely with research scientists in the classroom, laboratory, and field on both basic and applied watershed science research. Students are exposed to cutting-edge field, data analysis, and modeling techniques through flexible programs of study and access to a breadth of water-related courses throughout the university. Students also have opportunities to participate in seminars, field courses, and practical internships.

The program emphasizes the advisor/student relationship. There is no core curriculum; rather, the advisor and student develop a program of study that best meets the requirements of the research to be undertaken and the needs of the student, culminating in the completion of a master's thesis.

The program has a strong record of employment and acceptance to leading doctoral programs after graduation, with graduates holding positions in federal, state, and local natural resource agencies, consulting firms, non-governmental organizations, industry, teaching, and research. Most students complete coursework that enables them to meet the U.S. governmental hydrologist certification.

Requirements

Program requirements are:

- 30 credits that meet graduate school requirements.
- Thesis
- Selected courses approved by advisor and committee -- Prefixes that can be used to meet course requirements: ANTH, AREC, ATS, BZ, CHEM, CIS, CIVE, ECOL, ECON, ENVE, ESS, FW, F, GR, GEOL, GRAD, HORT, MATH, NR, NRRT, RS, SOC, SOCR, STAA, STAT, WR.

Master of Science in Watershed Science, Plan B

Sustainable management of freshwater resources is an increasingly important and complex challenge in Colorado and worldwide, and we need scientists who can address complex water issues. The watershed science programs focus on how water moves through the landscape, what factors affect its quality, and how to manage water resources. Students in the M.S. in Watershed Science, Plan B program work closely with research scientists in the classroom, laboratory, and field on applied watershed science research. Students are exposed to cutting-edge field, data analysis, and modeling techniques through flexible programs of study and access to a breadth of water-related courses throughout the university. Additionally, students participate in seminars, field courses, and practical internships to further develop their skills. Advisors and student develop a program of study that best meets the requirements of the research to be undertaken and the needs of the student, culminating in the completion of a professional report.

The program has a strong record of employment, with graduates holding positions in federal, state, and local natural resource agencies, consulting firms, nongovernmental organizations, industry, teaching, and research. Most students complete coursework that enables them to meet the U.S. governmental hydrologist certification.

Requirements

Program requirements are:

- 30 credits that meet graduate school requirements.
- Professional Report
- Selected courses approved by advisor and committee -- Prefixes that can be used to meet course requirements: ANTH, AREC, ATS, BZ, CHEM, CIS, CIVE, ECOL, ECON, ENVE, ESS, FW, F, GR, GEOL, GRAD, HORT, MATH, NR, NRRT, RS, SOC, SOCR, STAA, STAT, WR.

Ph.D. in Ecosystem Sustainability

Many physical, ecological and social factors interact to shape the future of our ecosystems and societies. CSU's innovative Ph.D. in Ecosystem Sustainability enables students to develop core competencies in ecosystem science—the study of organisms and the environment—and apply that knowledge to address real-world issues. We help develop leaders in sustainability science: a new generation of practitioners able to address complex, integrated social-ecological problems, in collaborative partnerships with researchers, resource users and decision-makers.

Our graduates have the tools to understand complex scientific questions in sustainability, and the leadership and collaborative skills required to address current and future issues in sustainability. The program serves as a foundation for a wide range of careers, including academic and scholarly professions, and work in government agencies, non-governmental organizations, and corporate and entrepreneurial environments.

A focus on solutions

Students will work at the cutting edge of new research on ecosystem sustainability. Collaborating with some of the world's leading ecosystem and sustainability scientists, students will explore solutions to global problems related to natural and water resources, food supplies, energy, greenhouse gas management, land use change, climate change, and environmental justice, among others.

What students can expect to gain

In the course of the degree, students will acquire:

- Detailed knowledge of quantitative and qualitative methods
- An understanding of complex ecosystem functioning
- A transdisciplinary understanding of social-ecological processes
- The ability to work in teams across disciplines and with decision makers, resource users and team members outside of academia
- The skills to conduct integrated assessments using systems approaches, conceptual, mathematical, geospatial, and statistical models, and innovative collaborative processes
- The ability to apply critical thinking in the development of sustainable systems at local and global scales
- Advanced training in the methods of urban ecology, and on managing the sustainable cities of the future

Local and Global Relevance

Our graduate community benefits from a highly networked program with close working links to the city governments of Fort Collins, Boulder, and Denver, and to local agencies, farming communities, and non-profits across the Front Range. We work at the highest elevations of the Rockies, and in the lowest short grass steppe regions, on cities and in neighborhoods. Our active research programs are spread around the globe: from northern, eastern, and southern Africa to China, Mongolia, Nepal, Tibet, Honduras, and Mexico.

Requirements Effective Fall 2019

Code	Title	Credits
Required Core Courses:		
ESS 501	Principles of Ecosystem Sustainability	3

ESS 692	Seminar	1
Areas – Select a minimum of 20 credits from the four Areas indicated below:		20
Ecosystem Science		
At least one course must be selected from the following (2-3 credits):		
ESS 524	Foundations for Carbon/Greenhouse Gas Mgmt	
ESS 543/ATS 543	Current Topics in Climate Change	
ESS 625/F 625	Ecology of Forest Production	
ESS 660	Biogeochemical Cycling in Ecosystems	
Additional courses may be selected from the following:		
ATS 753	Global Hydrologic Cycle	
ATS 760	Global Carbon Cycle	
BZ 572	Phytoremediation	
BZ 642	Plant Metabolism	
ECOL 505	Foundations of Ecology	
ECOL 600	Community Ecology	
ECOL 620	Applications in Landscape Ecology	
F 510	Ecophysiology of Trees	
F 624	Fire Ecology	
FW 555	Conservation Biology	
HORT 571	Soil-Plant-Water Relations/Water Stress	
RS 531	World Grassland Ecogeography	
RS 630	Ecology of Grasslands and Shrublands	
SOCR 522	Micrometeorology	
SOCR 540	Soil-Plant-Nutrient Relationships	
WR 574	Advanced Snow Hydrology	
WR 616	Hillslope Hydrology and Runoff Processes	
Ecosystem Sustainability		
The following course must be taken (2 credits):		
ESS 542	Greenhouse Gas Policies	
Additional courses may be selected from the following:		
AGRI 500	Advanced Issues in Agriculture	
AGRI 521	Emerging Issues and Challenges for Global Agr	
AGRI 602	Bioenergy Policy, Economics, and Assessment	
AGRI 632	Managing for Ecosystem Sustainability	
AGRI 635	Integrated Forage Management	
AGRI 637	Understanding Policy and Emerging Issues	
AGRI 638	Ecosystem Services on Agricultural Lands	
ANTH 529	Anthropology and Sustainable Development	
ANTH 530	Human-Environment Interactions	
ANEQ 548	Issues in Manure Management	
AREC 542	Applied Advanced Water Resource Economics	
AREC 566/ SOC 566	Contemporary Issues in Developing Countries	
ECOL 592	Interdisciplinary Seminar in Ecology	
GES 542	Biobased Fuels, Energy, and Chemicals	
NR 515	Natural Resources Policy and Biodiversity	
NR 535	Action for Sustainable Behavior	
NR 550	Sustainable Military Lands Management	
PHIL 565	Seminar in Environmental Philosophy	
POLS 670	Politics of Environment and Sustainability	
POLS 709	Environmental Politics in the U.S.	
POLS 729	Political Theory and the Environment	
POLS 739	International Environmental Politics	
POLS 749	Comparative Environmental Politics	
POLS 759	Environmental Policy and Administration	
RS 565	Riparian Ecology and Management	
SOC 564	Environmental Justice	
SOC 666	Globalization and Socioeconomic Restructuring	
SOC 668	Environmental Sociology	
SOC 669	Global Inequality and Change	
WR 510	Watershed Management in Developing Countries	
Quantitative Methods		
At least one course must be selected from the following (4 credits):		
ESS 545	Applications in Greenhouse Gas Inventories	
ESS 565	Niche Models	
ESS 575	Models for Ecological Data	
Additional courses may be selected from the following:		
AREC 535/ ECON 535	Applied Econometrics	
AREC 540/ ECON 540	Environmental and Natural Resource Economics	
ECOL 620	Applications in Landscape Ecology	
F 521	Advanced Quantitative Methods in Forestry II	
GEOL 551	Groundwater Modeling	
GEOL 562	Statistical Data Analysis in Earth Resources	
LAND 520	Geographic Information Systems	
NR 503/GR 503	Remote Sensing and Image Analysis	
NR 504	Computer Analysis of Remote Sensing Data	
NR 505	Concepts in GIS	
NR 512	Spatial Statistical Modeling-Natural Resources	
NR 523/STAT 523	Quantitative Spatial Analysis	
NR 554/ANTH 554	Ecological and Social Agent-based Modeling	
NR 565	Principles of Natural Resources Ecology	
RS 532	Rangeland Ecosystem Sampling	
SOCR 620	Modeling Ecosystem Biogeochemistry	
SOCR 670	Terrestrial Ecosystems Isotope Ecology	
STAA 551	Regression Models and Applications	
STAA 552	Generalized Regression Models	
STAA 553	Experimental Design	
STAA 554	Mixed Models	
STAA 561	Probability with Applications	
STAA 562	Mathematical Statistics with Applications	

STAA 565	Quantitative Reasoning
STAA 566	Data Visualization Methods
STAA 567	Computational and Simulation Methods
STAA 571	Survey Statistics
STAA 572	Nonparametric Methods
STAA 573	Analysis of Time Series
STAA 574	Methods in Multivariate Analysis
STAA 575	Applied Bayesian Statistics
STAA 576	Methods in Spatial Statistics
STAT 511A	Design and Data Analysis for Researchers I: R Software
STAT 511B	Design and Data Analysis for Researchers I: SAS Software
STAT 512	Design and Data Analysis for Researchers II
STAT 521	Stochastic Processes I
STAT 525	Analysis of Time Series I
STAT 540	Data Analysis and Regression
STAT 544/ ERHS 544	Biostatistical Methods for Quantitative Data
STAT 547/ CIVE 547	Statistics for Environmental Monitoring
STAT 560	Applied Multivariate Analysis
STAT 570	Nonparametric Statistics
STAT 600	Statistical Computing
STAT 605	Theory of Sampling Techniques
STAT 640	Design and Linear Modeling I
STAT 645	Categorical Data Analysis and GLIM
STAT 650	Design and Linear Modeling II
WR 524/CIVE 524	Modeling Watershed Hydrology
WR 575	Snow Hydrology Field Methods
WR 674	Data Issues in Hydrology
Communication/Collaboration	
At least one course must be selected from the following (1-3 credits):	
ECOL 693	Research Seminar
JTC 614	Public Communication Campaigns
JTC 660	Communication and Innovation
JTC 661	Information Design
JTC 662	Communicating Science and Technology
NR 501	Leadership and Public Communications
Research and Dissertation (minimum credits required):	
ESS 798	Research 3
ESS 799	Dissertation 3
Additional credits required to complete this degree may include:	42
Master's Degree Credit (a maximum of 30 credits may be accepted from a master's degree)	
Additional courses not taken previously from the Areas listed above	
Additional credits completed under ESS 798 or ESS 799 beyond the minimum credits required above	
Program Total Credits:	72

A minimum of 72 credits are required to complete this program.

Ph.D. in Watershed Science

Sustainable management of freshwater resources is an increasingly important and complex challenge in Colorado and worldwide, and we need scientists who can address complex water issues. The watershed science programs focus on how water moves through the landscape, what factors affect its quality, and how to manage water resources. Students in the Ph.D. in Watershed Science program work closely with research scientists in the classroom, laboratory, and field on both basic and applied watershed science research. Students are exposed to cutting-edge field, data analysis and modeling techniques through flexible programs of study and access to a breadth of water-related courses throughout the university. Students also have opportunities to participate in seminars, field courses, and practical internships.

The Ph.D. in Watershed Science requires 72 credits, most of which are research credits. Coursework includes in-depth classes in the student's area of research, as well as classes that expand into other disciplines. Each student develops an individualized program of study with the guidance and approval of the student's graduate committee. Students in the Ph.D. program develop new contributions to the literature of the watershed science discipline.

Requirements

Effective Spring 2018

Code	Title	Credits
Required Foundation Courses		
GRAD 544	Ethical Conduct of Research	1
WR 692	Seminar	1
Discussion Courses		
Select at least 3 credits from the following:		3
WR 574	Advanced Snow Hydrology	
WR 616	Hillslope Hydrology and Runoff Processes	
Quantitative Courses		
Select at least 3 credits from the following:		3
NR 512	Spatial Statistical Modeling-Natural Resources	
NR 523/STAT 523	Quantitative Spatial Analysis	
STAT 511A	Design and Data Analysis for Researchers I: R Software	
STAT 511B	Design and Data Analysis for Researchers I: SAS Software	
STAT 512	Design and Data Analysis for Researchers II	
WR 674	Data Issues in Hydrology	
Skill Courses		
Select at least 3 credits from the following:		3
GEOL 551	Groundwater Modeling	
NR 503/GR 503	Remote Sensing and Image Analysis	
NR 505	Concepts in GIS	
WR 417	Watershed Measurements	
WR 419	Water Quality Laboratory for Wildland Managers	
WR 524/CIVE 524	Modeling Watershed Hydrology	

WR 575	Snow Hydrology Field Methods	
Depth and Breadth Courses		
Select at least 6 credits from the following:		6
AREC 542	Applied Advanced Water Resource Economics	
CIVE 413	Environmental River Mechanics	
CIVE 520	Physical Hydrology	
CIVE 544	Water Resources Planning and Management	
CIVE 613	River Restoration Design	
CIVE 622	Risk Analysis of Water/Environmental Systems	
CIVE 625	Quantitative Eco-Hydrology	
CIVE 626	Integrated Analysis of Coupled Water Issues	
ESS 501	Principles of Ecosystem Sustainability	
ESS 543/ATS 543	Current Topics in Climate Change	
ESS 660	Biogeochemical Cycling in Ecosystems	
GEOL 452	Hydrogeology	
GEOL 552	Advanced Topics in Hydrogeology	
GEOL 652	Fluvial Geomorphology	
NR 510	Ecosystem Services--Theory and Practice	
NR 577	Wetland Ecology and Restoration	
SOC 461	Water, Society, and Environment	
SOC 664	Sociology of Water Resources	
SOCR 522	Micrometeorology	
SOCR 540	Soil-Plant-Nutrient Relationships	
SOCR 670	Terrestrial Ecosystems Isotope Ecology	
WR 416	Land Use Hydrology	
WR 418	Land Use and Water Quality	
WR 510	Watershed Management in Developing Countries	
WR 511	Water Resource Development	
WR 512	Water Law for Non-Lawyers	
Research and Dissertation		
WR 798	Research	2
WR 799	Dissertation	2
Additional Credits (A maximum of 30 credits may be accepted from a master's degree toward the Ph.D.)		51
Program Total Credits:		72

A minimum of 72 credits are required to complete this program.

Department of Fish, Wildlife, and Conservation Biology

Office in Wagar Building, Room 109D
(970) 491-5020
warnercnr.colostate.edu/departments/fwcb (http://warnercnr.colostate.edu/departments/fwcb)

Professor Kathryn Stoner, Department Head

The Department of Fish, Wildlife, and Conservation Biology offers one major with three concentrations: Conservation Biology, Fisheries and Aquatic Sciences, and Wildlife Biology. We also offer a minor in Fishery Biology.

Students are encouraged to visit the the Department of Fish, Wildlife, and Conservation Biology (http://warnercnr.colostate.edu/departments/fwcb).

Undergraduate

Majors

- Major in Fish, Wildlife, and Conservation Biology
  - Conservation Biology Concentration
  - Fisheries and Aquatic Sciences Concentration
  - Wildlife Biology Concentration

Minors

- Minor in Fishery Biology

Graduate

Graduate Programs in Fish, Wildlife, and Conservation Biology

Graduate programs lead to a fish, wildlife, and conservation biology, Master of Science, and Doctor of Philosophy degrees. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Fish, Wildlife, and Conservation Biology (http://warnercnr.colostate.edu/fwcb-graduate-study/graduate-program).

Certificate

- Conservation Actions with Lands, Animals, and People

Master's Programs

- Master of Science in Fish, Wildlife, and Conservation Biology, Plan A*
- Master of Science in Fish, Wildlife, and Conservation Biology, Plan B*
- Master of Fish, Wildlife, and Conservation Biology, Plan C (M.F.W.C.B.)

Ph.D.

- Ph.D. in Fish, Wildlife, and Conservation Biology*

* Please see department for program of study.

Courses

Fish, Wildlife, and Conservation Biology (FW)

FW 104 Wildlife Ecology and Conservation (GT-SC2) Credits: 3 (3-0-0)
Course Description: Essentials of wildlife ecology as a foundation for understanding issues on the origins, management and conservation of biodiversity.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

FW 111 Basic Outdoor Skills in FWCB Credit: 1 (.5-1-0)
Course Description: Basic outdoor skills for FWCB and outdoor novices. History of wildlife conservation and reasons for declining outdoor participation.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. May be taken up to 3 times for a maximum of 3 credits. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 179 New-to-the-Major Seminar Credit: 1 (0-0-1)
Course Description: Introduces students new to the Fish, Wildlife, and Conservation Biology major to curriculum, faculty, research, key concepts, careers, professional development, and other students.
Prerequisite: None.
Registration Information: This is a partial semester course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 182A Study Abroad--Mexico: Outdoor Skills Credit: 1 (0-0-1)
Course Description: Introduction and development of basic outdoor skills important to fish, wildlife, and conservation biology (FWCB) in environments in Baja California Sur, Mexico (e.g., marine, coastal, tropical, desert). Skills are related to the basic history and philosophies of the FWCB profession. Focus learning through hands-on experience. Does not provide full competence in any skill area.
Prerequisite: None.
Registration Information: Required field trips. FW 111 and FW 182A may be repeated for a maximum of 3 credits for the two courses.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 204 Introduction to Fishery Biology Credits: 3 (2-3-0)
Course Description: Exposure to sampling techniques, agencies, and topics in fishery biology careers.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 260 Principles of Wildlife Management Credits: 3 (3-0-0)
Course Description: Ecology principles applied to conservation and management of fish/wildlife resources. Quantitative methods, socioeconomic factors, population dynamics.
Prerequisite: (MATH 124 or MATH 160) and (BZ 110 or LIFE 103).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 300 Biology and Diversity of Fishes Credits: 2 (2-0-0)
Course Description: Biology and zoology of fishes: anatomy, taxonomy, evolution, physiology, behavior, ecology, zoogeography, and conservation.
Prerequisite: BZ 111 or LIFE 103.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 301 Ichthyology Laboratory Credit: 1 (0-2-0)
Course Description: Anatomy, taxonomy, evolution and ecology of North American freshwater fishes.
Prerequisite: FW 300, may be taken concurrently.
Registration Information: Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 304 Conservation of Marine Megafauna Credits: 3 (3-0-0)
Course Description: The ecology, systematics, behavior and conservation of large marine animals including giant squid, bony fishes, sharks, sea turtles, seabirds, and marine mammals. Examines the relations between ocean dynamics and large marine animals, and provides insights in the roles that marine megafauna species play in ocean ecosystems. Study impacts of human activities, such as bycatch and climate change, and their effect on ocean species.
Prerequisite: BZ 101 or BZ 110 or LIFE 103.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FW 350 Teaching Shooting Responsibility Credits: 4 (3-2-0)
Course Description: Education and instructor certification course to develop knowledge, skills, behavior for teaching about firearms, shooting sports, and associated ethics.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 355 Hunter Education for Instructors. Credits: 2 (0-0-2)
Course Description: Principles of learning and teaching for instructors of state hunter education courses.
Prerequisite: None.
Registration Information: Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FW 370 Design of Fish and Wildlife Projects Credits: 3 (2-2-0)
Course Description: Design, analysis, and evaluation of wildlife projects; lab exercises in design and data analysis; preparation and presentation of project proposals.
Prerequisite: (LIFE 320 or LAND 220 or LIFE 220) and (FW 260 or FW 360) and (NR 220) and (MATH 155 or MATH 160) and (STAT 301 or STAT 307).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 373A Travel Abroad : Wildlife Conservation—Baja California Sur Credits: 3 (0-0-3)
Course Description: Study tour of various overseas ecosystems and natural resources conservation programs; discussions with local ecologists/managers.
Prerequisite: None.
Registration Information: Written consent of instructor. Students need a minimum of a 2.500 GPA per Education Abroad standards. Credit allowed for only one of the following: FW 373A, FW 382, or FW 382A.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 375 Field Wildlife Studies Credits: 3 (1-4-0)
Course Description: Field trips to see wildlife management and habitats and to discuss problems and practices with professional ecologists and resources managers.
Prerequisite: (LIFE 320 or LAND 220 or LIFE 220) and (FW 260).
Registration Information: Must register for lecture and laboratory. Required field trips.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FW 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description: Instruction and practice in laboratory instruction in lower-division departmental courses.
Prerequisite: None.
Registration Information: Written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 400 Conservation of Fish in Aquatic Ecosystems Credits: 3 (2-0-1)
Course Description: Ecological processes that create habitat and biotic template for fish in aquatic ecosystems; human effects; strategies for conserving fishes.
Prerequisite: LIFE 320 and FW 300.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 401 Fishery Science Credits: 3 (2-3-0)
Course Description: Theory, philosophy, and applications for study and management of fishery resources.
Prerequisite: (FW 300) and (STAT 301 or STAT 307 or ERHS 307) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Computer literacy. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

FW 402 Fish Culture Credits: 4 (3-2-0)
Course Description: Principles and practices to produce food, bait, and sport fishes.
Prerequisite: FW 300.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 405 Fish Physiology Credits: 3 (2-3-0)
Course Description: Physiological ecology of fish; functional adaptations and adjustments used to cope with environmental and physiological states.
Prerequisite: BZ 214 or FW 300.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both FW 405 and FW 605.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 430 Waterfowl Ecology and Management Credits: 3 (2-3-0)
Course Description: Apply concepts from life history theory, evolutionary ecology, population ecology, community ecology, and wildlife management to become familiar with the ecology and management of North American waterfowl across their migratory life cycles. Labs and field trips will develop practical field skills in waterfowl biology, conservation, and management in addition to data analysis and computing skills.
Prerequisite: FW 370 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Required field trips. Credit not allowed for both FW 430 and FW 481A1.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 455 Principles of Conservation Biology Credits: 3 (3-0-0)
Course Description: Review of efforts to study and conserve biological diversity, focused on fish and wildlife populations.
Prerequisite: (FW 260 and LIFE 320) and (STAT 301 or STAT 307).
Registration Information: Credit allowed for only one of the following: FW 455, FW 555, or NR 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 465 Managing Human-Wildlife Conflicts Credits: 3 (2-2-0)
Course Description: Methods for resolving conflicts caused by wildlife; integrating animal behavior, population dynamics, economics, and human dimensions into solutions.
Prerequisite: FW 260.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 467 Wildlife Disease Ecology Credits: 3 (2-0-1)
Course Description: Ecological, epidemiological, and evolutionary principles of disease in fish and wildlife populations; contemporary issues in disease ecology.
Prerequisite: LIFE 320.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 468 Wild Bird Management Credits: 3 (2-3-0)
Course Description: Ecology and management of game, pest, and rare bird populations and nongame bird communities.
Prerequisite: FW 260.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 469 Conservation and Management of Large Mammals Credits: 3 (3-0-0)
Course Description: Principles of behavior, ecology, population dynamics, and conservation related to large mammals.
Prerequisite: (BZ 330 and FW 260 and LIFE 320) and (STAT 301 or STAT 307).
Registration Information: Required field trips.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 471 Wildlife Data Collection and Analysis Credits: 4 (2-4-0)
Course Description: Analysis methods used in wildlife management and research; adaptive resource management with emphasis on learning through field and computer labs.
Prerequisite: FW 370 and NR 220.
Registration Information: Must register for lecture and laboratory. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 472 Issues in Animal Conservation and Management Credits: 3 (2-0-1)
Course Description: Current and emerging issues in fish and wildlife conservation and management at the state, national, and global scales.
Prerequisite: (FW 260) and (LIFE 320).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FW 473A Travel Abroad: Conserving Desert/Marine Animals Credits: 3 (0-0-3)
Course Description: Ecology and conservation of animals from desert, marine, intertidal, and shore ecosystems and application to problems of animal conservation in an international setting.
Prerequisite: LIFE 320.
Registration Information: Written consent of instructor. Students need a minimum of a 2.5 GPA per Education Abroad standards. Credit allowed for only one of the following: FW 473A, FW 482, or FW 482A.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 475 Conservation Decision Making Credits: 3 (3-0-0)
Course Description: Structured approaches to conservation and management of vertebrates; articulating objectives, developing management options, and predicting outcomes.
Prerequisite: (MATH 155 or MATH 160) and (STAT 301).
Registration Information: Junior or senior standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 477 Wildlife Habitat Use and Management Credits: 3 (1-3-1)
Course Description: Wildlife habitat evaluation, classification, and improvement; analysis of habitat use patterns; planning and implementation of management plans.
Prerequisite: (FW 260) and (NR 319 or NR 322).
Registration Information: Must register for lecture, lab, and recitation. Credit allowed for only one of the following courses: FW 477, FW 577, or FW 677. Required field trips.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 487 Internship Credits: Var[1-6] (0-0-0)
Course Description: Field experience in fish and wildlife management.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 492 Seminar-Wildlife Biology Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 495A Independent Study: Fishery Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: LIFE 320 or FW 104 or NR 220 or LAND 220 or LIFE 220.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 495B Independent Study: Wildlife Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: LAND 220 or LIFE 320 or FW 104 or NR 220 or LIFE 220.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 496A Group Study: Fishery Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: LAND 220 or LIFE 320 or FW 104 or NR 220 or LIFE 220.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 496B Group Study: Wildlife Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: LAND 220 or LIFE 320 or FW 104 or NR 220 or LIFE 220.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 540 Fisheries Ecology Credits: 3 (2-0-1)
Course Description: Population, community, and ecosystem management for fishes and other aquatic organisms in freshwater habitats.
Prerequisite: None.
Registration Information: One course in fishery science; one course in aquatic ecology. Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 544 Ecotoxicology Credits: 3 (2-0-1)
Course Description: Ecological effects of contaminants on populations, communities, and ecosystems.
Prerequisite: (LIFE 320 or LAND 220 or LIFE 220) and (STAT 301 or STAT 307).
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 551 Design of Fish and Wildlife Studies Credits: 3 (2-0-1)
Course Description: Principles, types of studies, and philosophy of science in design of experimental, observational, and sampling studies for wildlife investigations.
Prerequisite: STAT 301 or STAT 307 or ERHS 307.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FW 552 Applied Sampling for Wildlife/Fish Studies Credits: 3 (2-0-1)
Course Description: Survey sampling theory and techniques, including distance sampling, with emphasis on wildlife and fish studies.
Prerequisite: STAT 301 or STAT 307.
Registration Information: Must register for lecture and recitation. Graduate standing. Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 553 Adaptive Fish and Wildlife Management Credits: 3 (2-2-0)
Course Description: Formal approaches to making management decisions about wildlife and fish populations, using tools of decision analysis.
Prerequisite: (FW 104 or FW 260 or FW 555 or LIFE 320 or NR 300) and (STAT 301 or STAT 307).
Registration Information: Graduate standing. Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 555 Conservation Biology Credits: 3 (2-0-1)
Course Description: Ecological factors in conservation of biological diversity.
Prerequisite: (LIFE 320 or LAND 220 or LIFE 220) and (STAT 307).
Registration Information: Must register for lecture and recitation. Credit allowed for only one of the following: FW 455, FW 555, or NR 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 556 Leopold's Ethic for Wildlife and Land Credits: 3 (0-0-3)
Course Description: Philosophy, art, history, and science of wildlife and land management from writings of Aldo Leopold.
Prerequisite: None.
Registration Information: Bachelor's degree, or any level ecology or wildlife management course, or written consent of instructor. Offered online only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FW 557 Wildlife Habitat Management on Private Land Credits: 3 (0-0-3)
Course Description: Management of cover, food, and water for wildlife and fish in the Great Plains. Emphasis on practices compatible with other uses of private land.
Prerequisite: None.
Registration Information: Bachelor's degree, or any level ecology or wildlife management course, or written consent of instructor. Offered online only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FW 558 Conservation Genetics of Wild Populations Credits: 3 (2-0-1)
Course Description: Examine the background, concepts, and tools required to determine how genetic data can be used to evaluate wild vertebrate species and communities of conservation concern.
Prerequisite: (BZ 350 or LIFE 201A or LIFE 201B) and (LIFE 220 or LIFE 320) and (STAT 301 or STAT 307).
Registration Information: Graduate standing. Written consent of instructor. Must register for lecture and recitation. Offered as an online course only. Admission to a graduate program in Fish, Wildlife, and Conservation Biology.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 561A Advanced Topics: Fishery Biology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 561B Advanced Topics: Wildlife Biology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 561C Advanced Topics: Population Analysis Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 561E Advanced Topics: Vertebrate Management Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 562 Fish and Wildlife Population Dynamics Credits: 3 (2-0-1)
Course Description: Factors that influence population abundance and density, and how they change over time. It blends ecology, evolution, genetics, and mathematical modeling into a unified field. Concentrate on understanding single-species population growth models, including metapopulation concepts, as well as multi-species topics such as predation and competition.
Prerequisite: (MATH 155 or MATH 160) and (LIFE 220 or LIFE 320) and (STAT 301 or STAT 307).
Registration Information: Graduate standing. Must register for lecture and recitation. Written consent of instructor. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 563 Analyses for Managing Wild Populations Credits: 3 (2-0-1)
Course Description: Design of wildlife population studies and the analysis of mark-recapture and occupancy data. Discussion of scientific philosophy, statistical theory, sampling design, and the application of the latest quantitative approaches to the analysis of population data.
Prerequisite: FW 260 and STAT 301.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Must register for lecture and recitation. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FW 564 Science of Managing Human-Wildlife Conflicts Credits: 3 (2-0-1)
Course Description: Human-wildlife conflicts, and in particular, damage caused by wildlife, often termed wildlife damage. Topics such as animal behaviors, population dynamics, public attitudes, economics, and effective strategies in understanding the various types of conflicts and how to manage them.
Prerequisite: BZ 110 or LIFE 102 or LIFE 103 or LIFE 220 or LIFE 320 or FW 100 to 499 - at least 3 credits.
Registration Information: Must register for lecture and recitation. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 567 Wildlife Disease Ecology Credits: 3 (2-0-1)
Course Description: Ecological, epidemiological, and evolutionary principles of disease in fish and wildlife populations; contemporary issues in disease ecology.
Prerequisite: (LIFE 320) and (STAT 301 or STAT 307).
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 568 Sustaining River Ecosystems in Changing World Credits: 3 (3-0-0)
Also Offered As: BZ 568.
Course Description: Applying the concepts and principles of freshwater ecosystem structure and function to develop a multidisciplinary and integrated understanding of the approaches and methods for restoring and sustainably managing these systems in the face of increasing human demands and rapid climate change.
Prerequisite: None.
Registration Information: Senior standing. Credit allowed for only one of the following: BZ 568, BZ 680A2, FW 568, and FW 680A2.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 573 Travel Abroad-Wildlife Ecology/Conservation Credits: 3 (3-0-0)
Course Description: Study tour of various overseas ecosystems and natural resources conservation programs; discussions with local ecologists/managers.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FW 575 Wildlife Habitat Evaluation for Educators Credits: 3 (0-0-3)
Course Description: Teachers or leaders implement wildlife habitat evaluation procedures in classroom or community programs and evaluate performance of students.
Prerequisite: None.
Registration Information: Graduate standing. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FW 576 Wildlife Policy, Administration, and Law Credits: 3 (0-0-3)
Course Description: Evolution of policy affecting wildlife and humans using historical, current, philosophical, legal, and administrative constructs.
Prerequisite: None.
Registration Information: Required: one course in political science; one course in natural resources management. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FW 577 Management of Wildlife Habitat Credits: 3 (2-0-1)
Course Description: Identifying and implementing management techniques for evaluating, classifying , and improving wildlife habitat to sustain and conserve populations.
Prerequisite: (FW 260) and (GR 311 or GR 323 or NR 323 or GR 420 or NR 319 or NR 322 or NR 422 or SOCR 377).
Registration Information: Written consent of instructor. Must register for lecture and recitation. Offered as an online course only. Admission to graduate program in Fish, Wildlife, and Conservation Biology. Credit allowed for only one of the following courses: FW 477, FW 577, or FW 677.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 578 Conservation Decision Analysis Credits: 3 (2-0-1)
Course Description: Identifying decision making processes and adaptive management techniques used in conservation; consideration of objectives, options and outcomes.
Prerequisite: (MATH 155 or MATH 160) and (STAT 301).
Registration Information: Offered as an online course only. Written consent of instructor. Must register for lecture and recitation. Admission to a graduate program in Fish, Wildlife, and Conservation Biology.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 605 Advanced Physiological Ecology of Fishes Credits: 4 (2-3-1)
Course Description: Physiological ecology of fishes; functional adaptations and adjustments used to cope with environmental and physiological states.
Prerequisite: FW 300.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, lab, and recitation. Credit not allowed for both FW 605 and FW 405.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 662 Wildlife Population Dynamics Credits: 3 (1-2-1)
Course Description: Population models; experimental evidence and analysis of theories of population regulation; case studies.
Prerequisite: (FW 260 and STAT 301) and (MATH 155 or MATH 160).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, laboratory and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 663 Sampling & Analysis Vertebrate Populations Credits: 5 (3-3-1)
Course Description: Sampling and analysis of fish and wildlife populations, including survival estimation, capture-recapture sampling, and transect sampling.
Prerequisite: FW 260 and STAT 301.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, lab, and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 673 Hierarchical Modeling in Ecology Credits: 3 (3-0-0)
Also Offered As: STAT 673.
Course Description: Hierarchical ecological modeling using common forms of data in fish and wildlife studies and emphasizing spatial and temporal aspects of analysis.
Prerequisite: ESS 575 or STAT 420.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both FW 673 and STAT 673.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 677 Wildlife Habitat Management Credits: 3 (1-3-1)
Course Description: Habitat models; vegetation manipulation and monitoring for wildlife; extended field trips.
Prerequisite: FW 260.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, lab, and recitation. Credit allowed for only one of the following courses: FW 477, FW 577, or FW 677. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 684 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 692 Seminar: Fish, Wildlife, and Conservation Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 695A Independent Study: Fishery Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 695B Independent Study: Wildlife Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 696 Group Study: Fish, Wildlife, Conservation Biology Credits: Var[1-18] (0-0-0)
Course Description: Group study projects on topics in fish, wildlife, and conservation biology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 698A Research: Fishery Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 698B Research: Wildlife Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 699A Thesis: Fishery Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 699B Thesis: Wildlife Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 798A Research: Fishery Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 798B Research: Wildlife Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 799A Dissertation: Fishery Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 799B Dissertation: Wildlife Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Fish, Wildlife, and Conservation Biology

Professor Will Clements
Chair of the Undergraduate Major

The Fish, Wildlife, and Conservation Biology major is intended for students interested in understanding wildlife and the habitats in which they live. We offer three concentrations: Conservation Biology, Fisheries and Aquatic Sciences, and Wildlife Biology. The curriculum has a strong foundation in the biological, physical, and social sciences with the focus on solving current and future issues related to conservation and sustainability of wild animals and their habitats. The faculty offers a wide range of expertise with a keen interest in innovative teaching and research methods. Our program prepares students for professional careers involving fish, wildlife, and conservation that include federal and state agencies, nongovernmental organizations, the private sector, academic institutions, and graduate school. Numerous opportunities exist for students to gain experience through research and internships, including professional and career mentoring and involvement with professional societies to further their studies, practical experience, and career potential. Required natural science courses include general biology, vertebrate biology, botany, calculus, and statistics, while required courses in the major focus on wildlife ecology and conservation, principles of wildlife management, design of wildlife projects, conservation biology, fishery science, and wildlife data collection and analysis. Required courses in the concentrations as well as elective courses explore specific areas of fish, wildlife, and conservation biology. A summer field course at CSU's mountain campus is required and provides students with hands-on learning about natural resource ecology and measurements. Additional hands-on opportunities exist in courses and study abroad programs.Along with a strong science foundation, problem solving, communication skills and outreach, are important to resolve difficult issues faced by today's natural resource professionals.

Learning Outcomes

Students will:

- Demonstrate a mastery of ecological concepts and fundamental principles and techniques to manage and conserve fish and wildlife populations, and how they apply to current natural resource management issues
- Demonstrate mathematical, statistical, and study design knowledge and skills required for careers in fishery, wildlife, and conservation biology
- Become effective in oral and written communication about issues related to the environment and natural resources, including as members of multi-disciplinary teams
- Learn approaches to solving complex natural resource management issues, including planning, organizing, creating, and presenting group projects

Potential Occupations

Federal and state agencies that manage natural resources offer most employment opportunities in fish, wildlife, and conservation biology. Key federal agencies include the U.S. Forest Service, Fish and Wildlife Service, Bureau of Land Management, Geological Survey, National Park Service, Environmental Protection Agency, Bureau of Reclamation, National Marine Fisheries Service, and state departments of wildlife and natural resources. Non-governmental organizations, e.g., The Nature Conservancy, private companies, and environmental consultants also offer excellent opportunities. Participation in internships, independent study/research, volunteer activities, or cooperative education opportunities is highly recommended to enhance practical training and development. Undergraduates who go on for graduate-level studies can attain more advanced positions with the possibility of rising to top professional levels, e.g., researchers and teachers in academic institutions and scientists at natural resource agencies. Our degree is also excellent preparation for veterinary school.

Examples of career opportunities include, but are not limited to: fishery/wildlife/conservation biologist, ecologist, wildlife refuge or natural resource manager, environmental consultant, research scientist, and educator. Within these areas, a variety of specializations are possible including fish, wildlife, and conservation education and interpretation; endangered species; habitat enhancement and restoration; administration; research; law enforcement, fish and wildlife population assessment, statistical analyst, and human-wildlife conflicts.

Concentrations

- Conservation Biology Concentration
- Fisheries and Aquatic Sciences Concentration
- Wildlife Biology Concentration

Major in Fish, Wildlife, and Conservation Biology, Conservation Biology Concentration

The Conservation Biology concentration focuses on understanding the ecological processes necessary to conserve biological diversity, with an emphasis on fish and wildlife species and their habitats.

Requirements
Effective Fall 2019

A minimum grade of C (2.000) is required in all biological, mathematical/statistical, physical science, fish, wildlife, and conservation biology and natural resource courses used to meet graduation requirements for the fish, wildlife, and conservation biology major. The minimum applies to courses taken as substitutions for meeting these requirements.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
FW 104	Wildlife Ecology and Conservation (GT-SC2)	3A	3
FW 179	New-to-the-Major Seminar		1
Select one group from the following:			8
Group A:			
BZ 110	Principles of Animal Biology (GT-SC2)	3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	3A	
BZ 120	Principles of Plant Biology (GT-SC1)	3A	
Group B:			
LIFE 102[1]	Attributes of Living Systems (GT-SC1)	3A	
LIFE 103[1]	Biology of Organisms-Animals and Plants		
Select one set of chemistry and physics courses from the following:			13-15
Group A:			
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	
PH 121	General Physics I (GT-SC1)	3A	
PH 122	General Physics II (GT-SC1)	3A	
Group B:			

CHEM 111	General Chemistry I (GT-SC2)	3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	
CHEM 113	General Chemistry II		
CHEM 114	General Chemistry Lab II		
PH 110	Physics of Everyday Phenomena (GT-SC2)	3A	
PH 111	Physics of Everyday Phenomena Laboratory (GT-SC1)	3A	
Arts and Humanities		3B	3
	Total Credits		31-33

Sophomore

CHEM 245	Fundamentals of Organic Chemistry		4
CHEM 246	Fundamentals of Organic Chemistry Laboratory		1
FW 260	Principles of Wildlife Management		3
LIFE 320	Ecology		3
Select one course from the following:			3-4
BZ 220	Introduction to Evolution		
BZ 346[2]	Population and Evolutionary Genetics		
BZ 350	Molecular and General Genetics		
SOCR 330	Principles of Genetics		
Select one course from the following:			3
HONR 499[3]	Senior Honors Thesis		
SPCM 200[3]	Public Speaking		
Select one course from the following:			4
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	
Select one course from the following:			3
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
Arts and Humanities		3B	3
Social and Behavioral Sciences		3C	3
	Total Credits		30-31

Summer

NR 220	Natural Resource Ecology and Measurements		5
	Total Credits		5

Junior

FW 370	Design of Fish and Wildlife Projects	4A,4B	3
Select one group from the following:			4
Group A:			
BSPM 302	Applied and General Entomology		
BSPM 303A	Entomology Laboratory: General		
Group B:			
BSPM 445	Aquatic Insects		
Group C:			
BZ 212	Animal Biology-Invertebrates		
Select two courses or course pair for 6-7 credits not taken elsewhere from the following:			6-7
BZ 214	Animal Biology-Vertebrates		
BZ 329	Herpetology		
BZ 330	Mammalogy		
BZ 335	Ornithology		
FW 300 & FW 301[4]	Biology and Diversity of Fishes		

Select one Plant Biology course from the following:			3-4
BZ 223	Plant Identification		
BZ 325	Plant Systematics		
BZ 332	Introductory Phycology		
BZ 450	Plant Ecology		
F 310/RS 310	Forest and Rangeland Ecogeography		
F 311	Forest Ecology		
FW 430	Waterfowl Ecology and Management		
FW 568/BZ 568	Sustaining River Ecosystems in Changing World		
NR 326	Forest Vegetation Management		
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
Select one course from the following:			4
NR 319	Geospatial Applications in Natural Resources		
NR 322	Introduction to Geographic Information Systems		
Historical Perspectives		3D	3
Diversity and Global Awareness		3E	3
	Total Credits		29-31

Senior

Select one Aquatic Biology course or course pair not taken elsewhere from the following:			3-4
BSPM 445	Aquatic Insects		
BZ 415	Marine Biology		
BZ 471 & BZ 472	Stream Biology and Ecology		
BZ 474/ESS 474	Limnology		
FW 300 & FW 301	Biology and Diversity of Fishes		
FW 304	Conservation of Marine Megafauna		
FW 400	Conservation of Fish in Aquatic Ecosystems		
FW 401	Fishery Science		
FW 402	Fish Culture		
FW 405	Fish Physiology		
FW 430	Waterfowl Ecology and Management		
FW 568/BZ 568	Sustaining River Ecosystems in Changing World		
Select one Wildlife Course not taken elsewhere from the following:			3-4
FW 304	Conservation of Marine Megafauna		
FW 375	Field Wildlife Studies		
FW 430	Waterfowl Ecology and Management		
FW 455	Principles of Conservation Biology		
FW 465	Managing Human-Wildlife Conflicts		
FW 467	Wildlife Disease Ecology		
FW 469	Conservation and Management of Large Mammals		
FW 471	Wildlife Data Collection and Analysis	4C	
FW 472	Issues in Animal Conservation and Management		
FW 475	Conservation Decision Making		
FW 477	Wildlife Habitat Use and Management		

FW 544	Ecotoxicology		
FW 573	Travel Abroad-Wildlife Ecology/Conservation		
FW *** Travel Abroad upper-division course[5]			
Select one course from the following:			3-4
FW 401	Fishery Science	4C	
FW 471	Wildlife Data Collection and Analysis	4C	
Select one course from the following:			3
FW 455	Principles of Conservation Biology		
FW 472	Issues in Animal Conservation and Management		
Select two Human Dimensions courses not taken elsewhere from the following:			6
FW 472	Issues in Animal Conservation and Management		
HIST 355[2]	American Environmental History		
NR 320	Natural Resources History and Policy		
NR 400	Public Communication in Natural Resources		
NRRT 330	Social Aspects of Natural Resource Management		
NRRT 400[2]	Environmental Governance		
NRRT 440[2]	Applications in Environmental Communication		
PHIL 320	Ethics of Sustainability		
PHIL 345	Environmental Ethics		
POLS 361	U.S. Environmental Politics and Policy		
SOC 320	Population-Natural Resources and Environment		
SOC 322	Introduction to Environmental Justice		
SOC 460	Society and Environment		
SOC 461	Water, Society, and Environment		
Guided Electives [6]			6
Elective[7]			0-1
	Total Credits		24-27
	Program Total Credits:		120

1 Students taking this biology selection should choose a botany-related course in the department elective options to meet the botany/plant course requirements for certain federal positions related to wildlife, fisheries, and/or conservation biology.

2 Students may need to obtain a registration override from the appropriate department to take this course.

3 Students in the Honors Track 1 program must take HONR 499.

4 FW 300 and FW 301 count together as one selection in this choice.

5 Restricted to FW subject code, department travel abroad courses, taught by FWCB faculty. No transfer or substitute courses will be accepted.

6 Guided electives are courses intended to expand a student's depth and breadth in wildlife biology and include any 300- or 400-level regular course with a BC, BMS, BSPM, BZ, CHEM, ESS, F, FW, GES, MATH, MIP, NR, NRRT, PH, RS, SOCR, STAT, or WR subject code (excluding courses ending in -80 to -99); SOCR 240; other courses with prior approval by department and advisor. Courses may not double-count as Guided Electives and for other requirements in the major.

7 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

The curriculum for the Fish, Wildlife and Conservation Biology major – Conservation Biology concentration assumes students enter college prepared to take calculus. Students who have not met the prerequisites for calculus, will be required to successfully complete the prerequisites in their first year. A minimum grade of C (2.000) is required in all biological, mathematical / statistical, physical science, fish, wildlife, and conservation biology, and natural resources courses used to meet graduation requirements for the fish, wildlife, and conservation biology major. The minimum applies to courses taken as substitutions for meeting degree requirements. NR 220 is a summer course in which students reside at CSU's Mountain Campus. Students must choose ONE of two CHEM + PH paths: (Path A) CHEM 107/CHEM 108 and PH 121/PH 122 or (Path B) CHEM 111, CHEM 112, CHEM 113, CHEM 114 and PH 110/PH 111. Students must also choose ONE biology group A) BZ 110/BZ 111 or B) LIFE 102/LIFE 103.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
FW 104	Wildlife Ecology and Conservation (GT-SC2)			3A	3
FW 179	New-to-the-Major Seminar				1
Select one group from the following:		X			4
Group A:					
BZ 110	Principles of Animal Biology (GT-SC2)			3A	
BZ 111	Animal Biology Laboratory (GT-SC1)			3A	
Group B:					
LIFE 102	Attributes of Living Systems (GT-SC1)			3A	
Select one path from the following:		X			5
Path A:					
PH 121	General Physics I (GT-SC1)			3A	
Path B:					
CHEM 111	General Chemistry I (GT-SC2)			3A	
CHEM 112	General Chemistry Lab I (GT-SC1)			3A	
MATH 117, MATH 118, and MATH 124 must be completed by the end of Semester 1.		X			
	Total Credits				16

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:		X			4
BZ 120	Principles of Plant Biology (GT-SC1)			3A	
LIFE 103	Biology of Organisms-Animals and Plants				
Select one path from the following:		X			8-10
Path A:					
CHEM 107	Fundamentals of Chemistry (GT-SC2)			3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)			3A	
PH 122	General Physics II (GT-SC1)			3A	
Path B:					
CHEM 113	General Chemistry II				
CHEM 114	General Chemistry Lab II				
PH 110	Physics of Everyday Phenomena (GT-SC2)			3A	
PH 111	Physics of Everyday Phenomena Laboratory (GT-SC1)			3A	
Arts and Humanities				3B	3
CO 150, AUCC 1B (Quantitative Reasoning), and MATH 125 must be completed by the end of Semester 2.		X			
	Total Credits				15-17

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 245	Fundamentals of Organic Chemistry				4
CHEM 246	Fundamentals of Organic Chemistry Laboratory				1
FW 260	Principles of Wildlife Management		X		3
Select one course from the following:					3-4
BZ 220	Introduction to Evolution				
BZ 346	Population and Evolutionary Genetics				
BZ 350	Molecular and General Genetics				
SOCR 330	Principles of Genetics				
Select one course from the following:		X			4
MATH 155	Calculus for Biological Scientists I (GT-MA1)			1B	

MATH 160	Calculus for Physical Scientists I (GT-MA1)			1B	
	Total Credits				15-16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
LIFE 320	Ecology		X		3
Select one course from the following:					3
HONR 499	Senior Honors Thesis				
SPCM 200	Public Speaking				
Select one course from the following:			X		3
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
Arts and Humanities				3B	3
Social and Behavioral Sciences				3C	3
FW 260 must be completed by the end of Semester 4.		X			
	Total Credits				15
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
NR 220	Natural Resource Ecology and Measurements	X			5
	Total Credits				5
Junior					
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					4
NR 319	Geospatial Applications in Natural Resources				
NR 322	Introduction to Geographic Information Systems				
Select one course from the following:			X		3
CO 300	Writing Arguments (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)			2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)			2	
Select one group from the following:			X		4
Group A:					
BSPM 302	Applied and General Entomology				
BSPM 303A	Entomology Laboratory: General				
Group B:					
BSPM 445	Aquatic Insects				
Group C:					
BZ 212	Animal Biology-Invertebrates				
Select one group from the following:					3-4
Group A:					
BZ 214	Animal Biology-Vertebrates				
Group B:					
BZ 329	Herpetology				
Group C:					
BZ 330	Mammalogy				
Group D:					
BZ 335	Ornithology				
Group E:					
FW 300	Biology and Diversity of Fishes				
FW 301	Ichthyology Laboratory				
STAT 301 or STAT 307 and LIFE 320 must be completed by the end of Semester 6.		X			
	Total Credits				14-15

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
FW 370	Design of Fish and Wildlife Projects		X	4A,4B	3
Select one group from the following:					3-4
Group A:					
BZ 214	Animal Biology-Vertebrates				
Group B:					
BZ 329	Herpetology				
Group C:					
BZ 330	Mammalogy				
Group D:					
BZ 335	Ornithology				
Group E:					
FW 300	Biology and Diversity of Fishes				
FW 301	Ichthyology Laboratory				
Plant Biology Elective Course (See Department List on Concentration Requirements tab)					3-4
Diversity and Global Awareness				3E	3
Historical Perspectives				3D	3
Choose FW 300 / FW 301 if taking FW 401					
	Total Credits				15-16

Senior

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:		X			3-4
FW 471	Wildlife Data Collection and Analysis			4C	
FW 401	Fishery Science			4C	
Select one course from the following:			X		3
FW 455	Principles of Conservation Biology				
FW 472	Issues in Animal Conservation and Management				
Aquatic Biology Elective (See Department List on Concentration Requirements tab)					3-4
Human Dimensions Elective (See Department List on Concentration Requirements tab)					3
FW 370, BSPM 302 / BSPM 303A or BSPM 445 or BZ 212 must be completed by the end of Semester 8.		X			
	Total Credits				12-14

Semester 9		**Critical**	**Recommended**	**AUCC**	**Credits**
Human Dimensions Elective (See Department List on Concentration Requirements tab)		X			3
Wildlife Elective (See Department List on Concentration Requirements tab)		X			3-4
Upper Division Guided Elective (See Department List on Concentration Requirements tab)		X			6
Elective		X			0-1
The benchmark courses for the 9th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12-13
	Program Total Credits:				120

Major in Fish, Wildlife, and Conservation Biology, Fisheries and Aquatic Sciences Concentration

The Fisheries and Aquatic Sciences concentration allows students to focus on a strong background in basic fishery ecology, management, and conservation, which includes an understanding of the linkages between land and water.

Students choosing the Fisheries and Aquatic Sciences concentration are also required to complete at least 160 hours of paid or non-paid employment related to fishery and aquatic biology.

Requirements Effective Fall 2019

A minimum grade of C (2.000) is required in all biological, mathematical/statistical, physical science, fish, wildlife, and conservation biology, and natural resource courses used to meet graduation requirements for the fish, wildlife, and conservation biology major. The minimum applies to courses taken as substitutions for meeting these requirements. Students choosing the Fisheries and Aquatic Sciences concentration are also required to complete at least 80 clock hours in an internship experience related to fishery and aquatic biology.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
FW 104	Wildlife Ecology and Conservation (GT-SC2)	3A	3
FW 179	New-to-the-Major Seminar		1
Select one group from the following:			8
Group A:			
BZ 110	Principles of Animal Biology (GT-SC2)	3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	3A	
BZ 120	Principles of Plant Biology (GT-SC1)	3A	
Group B:			
LIFE 102[1]	Attributes of Living Systems (GT-SC1)	3A	
LIFE 103[1]	Biology of Organisms-Animals and Plants		
Select one group of chemistry and physics courses from the following:			13-15
Group A:			
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	
PH 121	General Physics I (GT-SC1)	3A	
PH 122	General Physics II (GT-SC1)	3A	
Group B:			
CHEM 111	General Chemistry I (GT-SC2)	3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	
CHEM 113	General Chemistry II		
CHEM 114	General Chemistry Lab II		
PH 110	Physics of Everyday Phenomena (GT-SC2)	3A	
PH 111	Physics of Everyday Phenomena Laboratory (GT-SC1)	3A	
Arts and Humanities		3B	3
	Total Credits		31-33

Sophomore

CHEM 245	Fundamentals of Organic Chemistry		4
CHEM 246	Fundamentals of Organic Chemistry Laboratory		1
FW 204	Introduction to Fishery Biology		3
FW 260	Principles of Wildlife Management		3
LIFE 320	Ecology		3
MATH 155 or 160	Calculus for Biological Scientists I (GT-MA1) Calculus for Physical Scientists I (GT-MA1)	1B,1B	4
STAT 301 or 307	Introduction to Statistical Methods Introduction to Biostatistics		3
Select one course from the following:			3-4
BZ 220	Introduction to Evolution		
BZ 346[2]	Population and Evolutionary Genetics		
BZ 350	Molecular and General Genetics		
SOCR 330	Principles of Genetics		
Select one course from the following:			3
HONR 499[3]	Senior Honors Thesis		

SPCM 200[3]	Public Speaking		
Social and Behavioral Sciences		3C	3
	Total Credits		30-31
Summer			
NR 220	Natural Resource Ecology and Measurements		5
	Total Credits		5
Junior			
FW 300	Biology and Diversity of Fishes		2
FW 301	Ichthyology Laboratory		1
FW 370	Design of Fish and Wildlife Projects	4A,4B	3
FW 487[4]	Internship		1
Select one group from the following:			4
Group A:			
BSPM 302	Applied and General Entomology		
BSPM 303A	Entomology Laboratory: General		
Group B:			
BSPM 445	Aquatic Insects		
Group C:			
BZ 212	Animal Biology-Invertebrates		
Select one course from the following:			3-4
BZ 214	Animal Biology-Vertebrates		
BZ 329	Herpetology		
BZ 330	Mammalogy		
BZ 335	Ornithology		
Select one Plant Biology course from the following:			3-4
BZ 223	Plant Identification		
BZ 325	Plant Systematics		
BZ 332	Introductory Phycology		
BZ 450	Plant Ecology		
F 310/RS 310	Forest and Rangeland Ecogeography		
F 311	Forest Ecology		
FW 430	Waterfowl Ecology and Management		
FW 568/BZ 568	Sustaining River Ecosystems in Changing World		
NR 326	Forest Vegetation Management		
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
Select four credits from the following:[5]			4
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)	3A	
GEOL 121	Introductory Geology Laboratory (GT-SC1)	3A	
GEOL 122	The Blue Planet - Geology of Our Environment (GT-SC2)	3A	
GEOL 124	Geology of Natural Resources (GT-SC2)	3A	
GEOL 150	Physical Geology for Scientists and Engineers	3A	
GR 304/WR 304	Sustainable Watersheds	3A	
NR 319	Geospatial Applications in Natural Resources		
NR 322	Introduction to Geographic Information Systems		
SOCR 240	Introductory Soil Science		

Historical Perspectives		3D	3
	Total Credits		27-29

Senior

FW 401	Fishery Science	4C	3
Select one group not taken elsewhere from the following:			3-4
Group A:			
BZ 471	Stream Biology and Ecology		
BZ 472	Stream Biology and Ecology Laboratory		
Group B:			
BZ 474/ESS 474	Limnology		
Group C:			
FW 304	Conservation of Marine Megafauna		
Group D:			
FW 430	Waterfowl Ecology and Management		
Group E:			
FW 568/BZ 568	Sustaining River Ecosystems in Changing World		
Group F:			
NR 370	Coastal Environmental Ecology		
Select two courses from the following:			6-7
FW 400[1]	Conservation of Fish in Aquatic Ecosystems		
FW 402	Fish Culture		
FW 405	Fish Physiology		
Select one Human Dimensions course not taken elsewhere from the following:			3
FW 472	Issues in Animal Conservation and Management		
HIST 355[2]	American Environmental History		
NR 320	Natural Resources History and Policy		
NR 400	Public Communication in Natural Resources		
NRRT 330	Social Aspects of Natural Resource Management		
NRRT 400[2]	Environmental Governance		
NRRT 440[2]	Applications in Environmental Communication		
PHIL 320	Ethics of Sustainability		
PHIL 345	Environmental Ethics		
POLS 361	U.S. Environmental Politics and Policy		
SOC 320	Population-Natural Resources and Environment		
SOC 322	Introduction to Environmental Justice		
SOC 460	Society and Environment		
SOC 461	Water, Society, and Environment		
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Guided Electives[6]			3
Electives[7]			0-3
	Total Credits		26-27
	Program Total Credits:		120

1. Students taking this biology selection should choose a botany-related course in the department elective options to meet botany/plant course requirements for certain federal positions related to wildlife, fisheries, and/or conservation biology.
2. Students will need to obtain a registration override from the appropriate department to take this course.
3. Students in the Honors Track 1 program must take HONR 499.
4. Take 1 credit of FW 487 during the semester in which you are completing the 80 h work experience requirement.
5. Students selecting GR 304/WR 304 only need select three credits. Students selecting one of the geosciences lecture courses (GEOL 120, GEOL 122, GEOL 124) also need to take GEOL 121.

[6] Guided Electives are courses intended to expand a student's depth and breadth in wildife biology and include any 300- or 400-level regular course with a BC, BMS, BSPM, BZ, CHEM, ESS, F, FW, GES, MATH, MIP, NR, NRRT, PH, RS, SOCR, STAT, or WR subject code (excluding courses ending in -80 to -99); SOCR 240; other courses with prior approval by department and advisor. Courses may not double-count as Guided Electives and for other requirements in the major.

[7] Select enough elective credits to bring the program total to 120, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program: The curriculum for the Fish, Wildlife and Conservation Biology major – Fisheries and Aquatic Sciences concentration assumes students enter college prepared to take calculus. Students who have not met the prerequisites for calculus, will be required to successfully complete the prerequisites in their first year. A minimum grade of C (2.000) is required in all biological, mathematical/ statistical, physical science, fish, wildlife, and conservation biology, and natural resource courses used to meet graduation requirements for the fish, wildlife, and conservation biology major. The minimum applies to courses taken as substitutions for meeting degree requirements. NR 220 is a summer course in which students reside at CSU's Mountain Campus. Students must choose ONE of two CHEM + PH paths: (Path A) CHEM 107/CHEM 108 and PH 121/PH 122 OR (Path B) CHEM 111, CHEM 112, CHEM 113, CHEM 114 and PH 110/PH 111. Students must also choose ONE biology group A) BZ 110/BZ 111/BZ 120 or B) LIFE 102/LIFE 103. Students choosing the Fisheries and Aquatic Sciences concentration are also required to complete at least 80 clock hours in an internship experience related to fishery and aquatic biology. Students must sign up for 1 credit of FW 487 during the semester in which they are completing their internship or work experience requirement.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
FW 104	Wildlife Ecology and Conservation (GT-SC2)			3A	3
FW 179	New-to-the-Major Seminar				1
Select one group from the following:		X			4
Group A:					
BZ 110	Principles of Animal Biology (GT-SC2)			3A	
BZ 111	Animal Biology Laboratory (GT-SC1)			3A	
Group B:					
LIFE 102	Attributes of Living Systems (GT-SC1)			3A	
Select one group from the following:		X			5
Group A:					
PH 121	General Physics I (GT-SC1)			3A	
Group B:					
CHEM 111	General Chemistry I (GT-SC2)			3A	
CHEM 112	General Chemistry Lab I (GT-SC1)			3A	
MATH 117, MATH 118, and MATH 124 must be completed by the end of Semester 1.		X			
	Total Credits				16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:		X			4
BZ 120	Principles of Plant Biology (GT-SC1)			3A	
LIFE 103	Biology of Organisms-Animals and Plants				
Select one group from the following:		X			8-10
Group A:					
CHEM 107	Fundamentals of Chemistry (GT-SC2)			3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)			3A	
PH 122	General Physics II (GT-SC1)			3A	
Group B:					
CHEM 113	General Chemistry II				
CHEM 114	General Chemistry Lab II				
PH 110	Physics of Everyday Phenomena (GT-SC2)			3A	
PH 111	Physics of Everyday Phenomena Laboratory (GT-SC1)			3A	
Arts and Humanities				3B	3

CO 150, AUCC 1B (Quantitative Reasoning), and MATH 125 must be completed by the end of Semester 2.		X			
	Total Credits				15-17
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 245	Fundamentals of Organic Chemistry				4
CHEM 246	Fundamentals of Organic Chemistry Laboratory				1
FW 204	Introduction to Fishery Biology		X		3
Select one course from the following:					3-4
BZ 220	Introduction to Evolution				
BZ 346	Population and Evolutionary Genetics				
BZ 350	Molecular and General Genetics				
SOCR 330	Principles of Genetics				
Select one course from the following:		X			4
MATH 155	Calculus for Biological Scientists I (GT-MA1)			1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)			1B	
	Total Credits				15-16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
FW 260	Principles of Wildlife Management		X		3
LIFE 320	Ecology		X		3
Select one course from the following:					3
HONR 499	Senior Honors Thesis				
SPCM 200	Public Speaking				
Select one course from the following:			X		3
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
Social and Behavioral Sciences				3C	3
	Total Credits				15
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
NR 220	Natural Resource Ecology and Measurements	X			5
	Total Credits				5
Junior					
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
FW 487	Internship				1
Select four credits from the following:					4
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)			3A	
GEOL 121	Introductory Geology Laboratory (GT-SC1)			3A	
GEOL 122	The Blue Planet - Geology of Our Environment (GT-SC2)			3A	
GEOL 124	Geology of Natural Resources (GT-SC2)			3A	
GEOL 150	Physical Geology for Scientists and Engineers			3A	
GR 304/ WR 304	Sustainable Watersheds			3A	
NR 319	Geospatial Applications in Natural Resources				
NR 322	Introduction to Geographic Information Systems				
SOCR 240	Introductory Soil Science				
Select one course from the following:			X		3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)			2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	

Select one group from the following:			X		4
Group A:					
BSPM 302	Applied and General Entomology				
BSPM 303A	Entomology Laboratory: General				
Group B:					
BSPM 445	Aquatic Insects				
Group C:					
BZ 212	Animal Biology-Invertebrates				
Plant Biology Elective (See Department List on Concentration Requirements tab)					3-4
STAT 301 or STAT 307, FW 260, and LIFE 320 must be completed by the end of Semester 6.		X			
	Total Credits				15-16
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
FW 300 (Spring only)	Biology and Diversity of Fishes	X			2
FW 301	Ichthyology Laboratory	X			1
FW 370	Design of Fish and Wildlife Projects		X	4A,4B	3
Select one course from the following:					3-4
BZ 214	Animal Biology-Vertebrates				
BZ 329	Herpetology				
BZ 330	Mammalogy				
BZ 335	Ornithology				
Historical Perspectives				3D	3
	Total Credits				12-13
Senior					
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
FW 401 (Fall only)	Fishery Science	X		4C	3
Select one group from the following:					3-4
Group A:					
BZ 471	Stream Biology and Ecology				
BZ 472	Stream Biology and Ecology Laboratory				
Group B:					
BZ 474/ ESS 474	Limnology				
Group C:					
FW 304	Conservation of Marine Megafauna				
Group D:					
FW 430	Waterfowl Ecology and Management				
Group E:					
FW 568/ BZ 568	Sustaining River Ecosystems in Changing World				
Group F:					
NR 370	Coastal Environmental Ecology				
Select one course from the following:					3-4
FW 400	Conservation of Fish in Aquatic Ecosystems				
FW 402 (Spring only)	Fish Culture				
FW 405 (Spring of odd years only)	Fish Physiology				
Human Dimensions Elective (See Department List on Concentration Requirements tab)					3

BSPM 302 /BSPM 303A, or BSPM 445, or BZ 212 must be completed by the end of Semester 8.

	Total Credits				12-14
Semester 9		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:		X			3-4
FW 400 (Fall only)	Conservation of Fish in Aquatic Ecosystems				
FW 402	Fish Culture				
FW 405 (Odd years only)	Fish Physiology				
Arts and Humanities		X		3B	3
Diversity and Global Awareness		X		3E	3
Guided Elective (See Department List on Concentration Requirements tab.)		X			3
Electives		X			0-3
The benchmark courses for the 9th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12-15
	Program Total Credits:				120

Major in Fish, Wildlife, and Conservation Biology, Wildlife Biology Concentration

The Wildlife Biology concentration focuses primarily on terrestrial vertebrates and their habitats, and builds a strong foundation in basic wildlife ecology, management, and conservation.

Requirements Effective Fall 2019

A minimum grade of C (2.000) is required in all biological, mathematical/statistical, physical science, fish, wildlife and conservation biology, and natural resource courses used to meet graduation requirements for the Fish, Wildlife, and Conservation Biology major. The minimum applies to courses taken as substitutions for meeting these requirements.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
FW 104	Wildlife Ecology and Conservation (GT-SC2)	3A	3
FW 179	New-to-the-Major Seminar		1
Select one group of courses from the following:			8
Group A:			
BZ 110	Principles of Animal Biology (GT-SC2)	3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	3A	
BZ 120	Principles of Plant Biology (GT-SC1)	3A	
Group B:			
LIFE 102[1]	Attributes of Living Systems (GT-SC1)	3A	
LIFE 103[1]	Biology of Organisms-Animals and Plants		
Select one set of chemistry and physics courses from the following:			13-15
Group A:			
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	
PH 121	General Physics I (GT-SC1)	3A	
PH 122	General Physics II (GT-SC1)	3A	
Group B:			
CHEM 111	General Chemistry I (GT-SC2)	3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	
CHEM 113	General Chemistry II		
CHEM 114	General Chemistry Lab II		
PH 110	Physics of Everyday Phenomena (GT-SC2)	3A	

PH 111	Physics of Everyday Phenomena Laboratory (GT-SC1)	3A	
Arts and Humanities		3B	3
	Total Credits		31-33

Sophomore

BZ 223	Plant Identification		3
CHEM 245	Fundamentals of Organic Chemistry		4
CHEM 246	Fundamentals of Organic Chemistry Laboratory		1
FW 260	Principles of Wildlife Management		3
LIFE 320	Ecology		3
MATH 155 or 160	Calculus for Biological Scientists I (GT-MA1) Calculus for Physical Scientists I (GT-MA1)	1B	4
STAT 301 or 307	Introduction to Statistical Methods Introduction to Biostatistics		3
Select one from the following:			3
HONR 499[2]	Senior Honors Thesis		
SPCM 200[2]	Public Speaking		
Arts and Humanities		3B	3
Social and Behavioral Sciences		3C	3
	Total Credits		30

Summer

NR 220	Natural Resource Ecology and Measurements		5
	Total Credits		5

Junior

BZ 330 or 335	Mammalogy Ornithology		3
FW 370	Design of Fish and Wildlife Projects	4A,4B	3
Select one group from the following:			4
Group A:			
BSPM 302	Applied and General Entomology		
BSPM 303A	Entomology Laboratory: General		
Group B:			
BSPM 445	Aquatic Insects		
Group C:			
BZ 212	Animal Biology-Invertebrates		
Select one course or course pair not taken elsewhere from the following:[3]			3-4
BZ 214	Animal Biology-Vertebrates		
BZ 329	Herpetology		
BZ 330	Mammalogy		
BZ 335	Ornithology		
FW 300 & FW 301[3]	Biology and Diversity of Fishes		
Select one course from the following:			3-4
BZ 220	Introduction to Evolution		
BZ 346[4]	Population and Evolutionary Genetics		
BZ 350	Molecular and General Genetics		
SOCR 330	Principles of Genetics		
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	

CO 301D	Writing in the Disciplines: Education (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
Select one course from the following:			4
NR 319	Geospatial Applications in Natural Resources		
NR 322	Introduction to Geographic Information Systems		
Historical Perspectives		3D	3
Diversity and Global Awareness		3E	3
	Total Credits		29-31

Senior

FW 471	Wildlife Data Collection and Analysis	4C	4
Select one Biology/Botany course not taken elsewhere from the following:			3-4
Biology Options			
ANEQ 320[4]	Principles of Animal Nutrition		
BZ 220	Introduction to Evolution		
BZ 300	Animal Behavior		
BZ 310	Cell Biology		
BZ 346	Population and Evolutionary Genetics		
BZ 401	Comparative Animal Physiology		
BZ 415	Marine Biology		
BZ 471	Stream Biology and Ecology		
BZ 474/ESS 474	Limnology		
FW 400	Conservation of Fish in Aquatic Ecosystems		
FW 430	Waterfowl Ecology and Management		
FW 568/BZ 568	Sustaining River Ecosystems in Changing World		
MIP 300	General Microbiology		
MIP 315	Pathology of Human and Animal Disease		
NR 367	Concepts in Vertebrate Nutrition		
NR 370	Coastal Environmental Ecology		
Botany Options			
BZ 325	Plant Systematics		
BZ 331	Developmental Plant Anatomy		
BZ 332	Introductory Phycology		
BZ 333	Introductory Mycology		
BZ 440	Plant Physiology		
BZ 450	Plant Ecology		
F 310/RS 310	Forest and Rangeland Ecogeography		
F 311	Forest Ecology		
Select one Wildlife course not taken elsewhere from the following:			3-4
FW 304	Conservation of Marine Megafauna		
FW 375	Field Wildlife Studies		
FW 430	Waterfowl Ecology and Management		
FW 455	Principles of Conservation Biology		
FW 465	Managing Human-Wildlife Conflicts		
FW 467	Wildlife Disease Ecology		
FW 469	Conservation and Management of Large Mammals		
FW 471	Wildlife Data Collection and Analysis		
FW 472	Issues in Animal Conservation and Management		
FW 475	Conservation Decision Making		
FW 477	Wildlife Habitat Use and Management		
FW 544	Ecotoxicology		
FW 573	Travel Abroad-Wildlife Ecology/Conservation		

FW *** Travel Abroad Upper-Division[5]		
Select one Human Dimensions course not taken elsewhere from the following:		3
FW 472	Issues in Animal Conservation and Management	
HIST 355[4]	American Environmental History	
NR 320	Natural Resources History and Policy	
NR 400	Public Communication in Natural Resources	
NRRT 330	Social Aspects of Natural Resource Management	
NRRT 400[4]	Environmental Governance	
NRRT 440[4]	Applications in Environmental Communication	
PHIL 320	Ethics of Sustainability	
PHIL 345	Environmental Ethics	
POLS 361	U.S. Environmental Politics and Policy	
SOC 320	Population-Natural Resources and Environment	
SOC 322	Introduction to Environmental Justice	
SOC 460	Society and Environment	
SOC 461	Water, Society, and Environment	
Guided Electives[6]		9
Elective[7]		0-3
	Total Credits	24-25
	Program Total Credits:	120

1. Students taking this biology selection should choose a botany-related course in the department elective options to meet botany/plant course requirements for certain federal positions related to wildlife, fisheries, and/or conservation biology.
2. Students in the Honors Track 1 program must take HONR 499.
3. FW 300 and FW 301 count together as one selection in this choice.
4. Students will need to obtain a registration override from the appropriate department to take this course.
5. Restricted to FW subject code, department travel abroad courses, taught by FWCB faculty. No transfer or substitute courses will be accepted.
6. Guided Electives are courses intended to expand a student's depth and breadth in wildife biology and include any 300- or 400-level regular course with a BC, BMS, BSPM, BZ, CHEM, ESS, F, FW, GES, MATH, MIP, NR, NRRT, PH, RS, SOCR, STAT, or WR subject code (excluding courses ending in -80 to -99); SOCR 240; other courses with prior approval by department and advisor. Courses may not double-count as Guided Electives and for other requirements in the major.
7. Select enough elective credits to bring program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program: The curriculum for the Fish, Wildlife and Conservation Biology major – Wildlife Biology concentration assumes students enter college prepared to take calculus. Students who have not met the prerequisites for calculus, will be required to successfully complete the prerequisites in their first year. A minimum grade of C (2.000) is required in all biological, mathematical/ statistical, physical science, fish, wildlife, and conservation biology, and natural resource courses used to meet graduation requirements for the fish, wildlife, and conservation biology major. The minimum applies to courses taken as substitutions for meeting degree requirements. NR 220 is a summer course in which students reside at CSU's Mountain Campus. Students must choose ONE of two CHEM + PH paths: (Path A) CHEM 107/CHEM 108 and PH 121/PH 122 or (Path B) CHEM 111, CHEM 112, CHEM 113, CHEM 114 and PH 110/PH 111. Students must also choose ONE biology group A) BZ 110/BZ 111/BZ 120 or B) LIFE 102/LIFE 103.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
Select one group from the following:		X			4
Group A:					
BZ 110	Principles of Animal Biology (GT-SC2)			3A	
BZ 111	Animal Biology Laboratory (GT-SC1)			3A	
Group B:					
LIFE 102	Attributes of Living Systems (GT-SC1)			3A	
Select one path from the following:		X			5
Path A:					

PH 121	General Physics I (GT-SC1)			3A	
Path B:					
CHEM 111	General Chemistry I (GT-SC2)			3A	
CHEM 112	General Chemistry Lab I (GT-SC1)			3A	
FW 104	Wildlife Ecology and Conservation (GT-SC2)			3A	3
FW 179	New-to-the-Major Seminar				1
MATH 117, MATH 118, and MATH 124 must be completed by the end of Semester 1.		X			
	Total Credits				16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:		X			4
BZ 120	Principles of Plant Biology (GT-SC1)			3A	
LIFE 103	Biology of Organisms-Animals and Plants				
Select one path from the following:		X			8-10
Path A:					
CHEM 107	Fundamentals of Chemistry (GT-SC2)			3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)			3A	
PH 122	General Physics II (GT-SC1)			3A	
Path B:					
CHEM 113	General Chemistry II				
CHEM 114	General Chemistry Lab II				
PH 110	Physics of Everyday Phenomena (GT-SC2)			3A	
PH 111	Physics of Everyday Phenomena Laboratory (GT-SC1)			3A	
Arts and Humanities				3B	3
CO 150, AUCC 1B (Quantitative Reasoning) and MATH 125 must be completed by the end of Semester 2.		X			
	Total Credits				15-17
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 223	Plant Identification				3
CHEM 245	Fundamentals of Organic Chemistry				4
CHEM 246	Fundamentals of Organic Chemistry Laboratory				1
FW 260	Principles of Wildlife Management		X		3
Select one course from the following:		X			4
MATH 155	Calculus for Biological Scientists I (GT-MA1)			1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)			1B	
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
LIFE 320	Ecology		X		3
Select one course from the following:					3
HONR 499	Senior Honors Thesis				
SPCM 200	Public Speaking				
Select one course from the following:			X		3
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
Arts and Humanities				3B	3
Social and Behavioral Sciences				3C	3
FW 260 must be completed by the end of Semester 4.		X			
	Total Credits				15
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
NR 220	Natural Resource Ecology and Measurements	X			5
	Total Credits				5

Junior

Semester 6		Critical	Recommended	AUCC	Credits
Select one course from the following:					4
NR 319	Geospatial Applications in Natural Resources				
NR 322	Introduction to Geographic Information Systems				
Select one course from the following:			X		3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)			2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
Select one group from the following:			X		4
Group A:					
BSPM 302	Applied and General Entomology				
BSPM 303A	Entomology Laboratory: General				
Group B:					
BSPM 445	Aquatic Insects				
Group C:					
BZ 212	Animal Biology-Invertebrates				
BZ 330	Mammalogy				
Historical Perspectives				3D	3
STAT 301 or STAT 307 and LIFE 320 must be completed by the end of Semester 6.		X			
	Total Credits				14

Semester 7		Critical	Recommended	AUCC	Credits
FW 370	Design of Fish and Wildlife Projects		X	4A,4B	3
BZ 335	Ornithology				3
Select one group from the following:					3-4
Group A:					
BZ 214	Animal Biology-Vertebrates				
Group B:					
BZ 329	Herpetology				
Group C:					
BZ 330	Mammalogy				
Group D:					
BZ 335	Ornithology				
Group E:					
FW 300	Biology and Diversity of Fishes				
FW 301	Ichthyology Laboratory				
Select one course from the following:					3-4
BZ 220	Introduction to Evolution				
BZ 346	Population and Evolutionary Genetics				
BZ 350	Molecular and General Genetics				
SOCR 330	Principles of Genetics				
Diversity and Global Awareness				3E	3
	Total Credits				15-17

Senior

Semester 8		Critical	Recommended	AUCC	Credits
FW 471	Wildlife Data Collection and Analysis		X	4C	4
Wildlife Elective (See Department List on Concentration Requirements tab)					3-4

Upper Division Guided Elective (See Department List on Concentration Requirements tab)				5
BSPM 302 / BSMP 303A, or BSPM 445, or BZ 212, and FW 370 must be completed by the end of Semester 8.	X			
Total Credits				12-13
Semester 9	**Critical**	**Recommended**	**AUCC**	**Credits**
Human Dimensions Elective (See Department List on Concentration Requirements tab)	X			3
Upper Division Guided Elective (See Department List on Concentration Requirements tab)	X			4
Biology or Botany Elective (See Department List on Concentration Requirements tab)	X			3-4
Elective	X			0-3
The benchmark courses for the 9th semester are the remaining courses in the entire program of study.	X			
Total Credits				12-13
Program Total Credits:				120

Minor in Fishery Biology

Students majoring in Watershed Science, Forestry, Rangeland Ecology, Zoology, and others may find that a minor in Fishery Biology will increase employment opportunities. The requirements for this minor provide a solid base for work in fishery and aquatic science.

Requirements
Effective Spring 2011

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Lower Division		
LAND 220/LIFE 220	Fundamentals of Ecology (GT-SC2)	3
or LIFE 320	Ecology	
Select one group from the following:		8
Group A:		
BZ 110	Principles of Animal Biology (GT-SC2)	
BZ 111	Animal Biology Laboratory (GT-SC1)	
BZ 120	Principles of Plant Biology (GT-SC1)	
Group B:		
LIFE 102	Attributes of Living Systems (GT-SC1)	
LIFE 103	Biology of Organisms-Animals and Plants	
Lower or Upper Division		
Select one course from the following:		3
FW 204	Introduction to Fishery Biology	
FW 260	Principles of Wildlife Management	
FW 370	Design of Fish and Wildlife Projects	
Upper Division		
FW 300	Biology and Diversity of Fishes	2
FW 301	Ichthyology Laboratory	1
Select two courses from the following:		6-7
FW 400	Conservation of Fish in Aquatic Ecosystems	
FW 401	Fishery Science	
FW 402	Fish Culture	
Advisor-approved aquatic course		3-4
Program Total Credits:		26-28

Graduate Certificate in Conservation Actions with Lands, Animals, and People

The course content and applied assignments in this graduate certificate seek to integrate a holistic approach for sustainable practices with lands, animals, and people in private and public sectors using history, philosophy, policy, management techniques, leadership, education, and communications to improve environmental management, human interactions, and social/environmental justice.

Students will gain critical insights into issues, uses, and management of natural resources. Students will gain an understanding and develop skills to review situations and viewpoints that impact public and private debate, and use assignments that may influence decisions in conservation. Upon completion of this certificate, students will have foundations to be stronger leaders, better communicators, and more active members of their communities.

Effective Fall 2017

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Select a minimum of 4 courses in consultation with advisor:		12
FW 556	Leopold's Ethic for Wildlife and Land	
FW 557	Wildlife Habitat Management on Private Land	
FW 576	Wildlife Policy, Administration, and Law	
NR 501	Leadership and Public Communications	
NR 515	Natural Resources Policy and Biodiversity	

NR 535	Action for Sustainable Behavior	
Program Total Credits:		12

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Master of Fish, Wildlife, and Conservation Biology, Plan C (M.F.W.C.B.)

The Master of Fish, Wildlife, and Conservation Biology degree provides the training and credentials natural resource professionals need to effectively guide studies, decisions, and policies related to fish and wildlife management. The degree is geared towards natural resource professionals with at least 2 years of experience and is an intensive, coursework-only master's degree that is primarily taught through online courses. Courses focus on the skills and tools needed to analyze, communicate, and make decisions about conservation issues. Students will broaden their critical thinking on current issues and receive the training to be successful and advance in careers at natural resources agencies, firms, and non-government organizations.

Requirements Effective Fall 2019

Code	Title	Credits
Core Courses		
Select 21 credits from the following:		21
FW 551	Design of Fish and Wildlife Studies	
FW 552	Applied Sampling for Wildlife/Fish Studies	
FW 553	Adaptive Fish and Wildlife Management	
FW 555	Conservation Biology	
FW 562	Fish and Wildlife Population Dynamics	
FW 564	Science of Managing Human-Wildlife Conflicts	
FW 577	Management of Wildlife Habitat	
NR 515	Natural Resources Policy and Biodiversity	
Select at least 9 additional credits from the following:		9
Core course not taken above		
FW 544	Ecotoxicology	
FW 558	Conservation Genetics of Wild Populations	
FW 563	Analyses for Managing Wild Populations	
FW 567	Wildlife Disease Ecology	
FW 576	Wildlife Policy, Administration, and Law	
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

Department of Forest and Rangeland Stewardship

Office in Forestry Building, Room 123
(970) 491-6911
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Dr. Linda Nagel, Department Head
Denise Parcesepe, Assistant to the Department Head
Tiara Marshall, Undergraduate Program Coordinator and Academic Advisor
Megan Mardesen, Academic Support Coordinator (ASC)
Rebekah Pichotta, Fire and Emergency Services Administration (FESA) Academic Advisor
Sonya Le Febre, Graduate Program Coordinator

Undergraduate Majors

- Major in Fire and Emergency Services Administration
- Major in Forest and Rangeland Stewardship
  - Major in Forest and Rangeland Stewardship, Forest Biology Concentration
  - Major in Forest and Rangeland Stewardship, Forest Fire Science Concentration
  - Major in Forest and Rangeland Stewardship, Forest Management Concentration
  - Major in Forest and Rangeland Stewardship, Rangeland and Forest Management Concentration
  - Major in Forest and Rangeland Stewardship, Rangeland Conservation and Management Concentration
- Major in Natural Resources Management
- Major in Restoration Ecology

Minors

- Minor in Ecological Restoration
- Minor in Forestry
- Minor in Range Ecology
- Minor in Spatial Information Management (No new students are being accepted into this minor.)

Interdisciplinary Minor

- Interdisciplinary Minor in Conservation Biology

Graduate

Graduate Programs in Forest and Rangeland Stewardship

The department offers graduate programs leading to Master of Science and Doctor of Philosophy degrees in Forest Sciences and Rangeland Ecosystem Science, and to Master of Natural Resources Stewardship with specializations in Ecological Restoration, Forest Sciences, and Rangeland Ecosystems. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Forest and Rangeland Stewardship (http://warnercnr.colostate.edu/frs-graduate-study/graduate-program).

Master's Programs

- Master of Science in Forest Sciences, Plan A*
- Master of Science in Forest Sciences, Plan B*
- Master of Natural Resources Stewardship, Plan C, Ecological Restoration Specialization
- Master of Natural Resources Stewardship, Plan C, Forest Sciences Specialization
- Master of Natural Resources Stewardship Plan C, Rangeland Ecology and Management Specialization
- Master of Science in Rangeland Ecosystem Science, Plan A*
- Master of Science in Rangeland Ecosystem Science, Plan B*

Ph.D.

- Ph.D. in Forest Sciences*
- Ph.D. in Rangeland Ecosystem Science*

* Please see department for program of study.

Courses

Subjects in this department include: Fire and Emergency Service Administration (FESA), Forest and Rangeland Stewardship (F), select Natural Resources (NR), and Rangeland Ecosystem Science (RS).

Fire and Emergency Service Administration (FESA)

FESA 310 Fire Service Leadership Credits: 3 (0-0-3)
Course Description: Theory, practice, and application of ethical leadership in public safety; developing personal ethics and leadership skills and abilities.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 330 Industrial Processes and Fire Protection Credits: 3 (0-0-3)
Course Description: Industrial processes and fire protection managed by fire and safety personnel.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Summer (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 331 Structure Influence on Tactics and Strategy Credits: 3 (3-0-0)
Course Description: How construction type, alterations, design and materials influence a building's reaction to fire. Fireground influence on tactics and strategy.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 333 Proposals/Reports in Fire Service Management Credits: 3 (0-0-3)
Course Description: Process of preparing reports and developing a proposal supported by research. Introduction to research techniques, Internet and library use; conventions of documentation.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 334 Orientation to Experiential Learning Credit: 1 (0-0-1)
Course Description: Demonstration of knowledge, skill, and professional experience for the purpose of enhancing documentation and career development skills.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 335 Trends in Fire Science Technologies Credits: 3 (0-0-3)
Course Description: Analytical tools designed to evaluate, align, select, and implement emerging fire science technologies.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 336 Fire Emergency Services Administration Credits: 3 (0-0-3)
Course Description: Fire and emergency service administrative structures and processes. Examination of management and leadership models and applications.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 337 Policy and Public Administration Credits: 3 (3-0-0)
Course Description: Political and legal foundations of fire and emergency services. Public administration concepts, decision making and policy development.
Prerequisite: FESA 334.
Registration Information: Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 338 Essentials of Emergency Management Credits: 3 (3-0-0)
Course Description: Emergency management theory; mitigation, planning, response, and recovery in large-scale incidents. Development/operation of emergency operation centers.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 339 Incident Command Systems Credits: 3 (0-0-3)
Course Description: Theory and application of incident command systems (ICS) to the command and coordination of major emergency operations.
Prerequisite: FESA 334.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 341 Fire Officer I-A Credits: 3 (3-0-0)
Course Description: Fire officer competencies at the supervisory level of performance, as confirmed by NFPA Standard 1021, Level I, 4.1 to 4.4.
Prerequisite: None.
Registration Information: Enrollment in FESA program or written consent of instructor. Offered as an online course only.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 342 Fire Officer I-B Credits: 3 (3-0-0)
Course Description: Fire officer competencies at the supervisory level of performance, as confirmed by NFPA Standard 1021, Level II, 4.5 to 4.7.
Prerequisite: FESA 341 with a minimum grade of C.
Registration Information: Offered as an online course only.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 431 Emergency Medical Services Management Credits: 3 (0-0-3)
Course Description: Emergency medical service models, design implementation, evaluation. Interactions with health care systems, public policy and public health systems.
Prerequisite: FESA 432 and FESA 433.
Registration Information: Offered as an online course only.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 432 Fire and Emergency Services Budgeting Credits: 3 (3-0-0)
Course Description: Application of emergency service budgeting systems with emphasis on revenues, public financial controls, capital funding and performance measures.
Prerequisite: FESA 333 and FESA 336.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 433 Fire and Emergency: Human Resources Credits: 3 (3-0-0)
Course Description: Theory, practice, and models of human resources applied to emergency organizations; workforce development, HR functions, and labor relation.
Prerequisite: FESA 333 and FESA 336.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 434 Training Program Management Credits: 3 (0-0-3)
Course Description: Development of agency training and education programs. Utilization of training and education practices, resources, facilities and technologies.
Prerequisite: FESA 432 and FESA 433.
Registration Information: Offered as an online course only.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 435 Volunteer/Combination Organization Management Credits: 3 (0-0-3)
Course Description: Development and management of fire and emergency service organizations with volunteer and combination resources.
Prerequisite: FESA 432 and FESA 433.
Registration Information: Offered as an online course only.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 436 Fire Protection Through Model Building Codes Credits: 3 (0-0-3)
Course Description: Overview of the most current fire codes that are used across the United States. Discussion of fire inspection methodology and enforcement practices.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 437 Fire and Emergency: Legal Considerations Credits: 3 (0-0-3)
Course Description: Fire Service in relation to the complex legal system of the United States, individual states and local jurisdictions.
Prerequisite: FESA 432 and FESA 433.
Registration Information: Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 438 Prevention Program Management Credits: 3 (3-0-0)
Course Description: Design, implementation, and evaluation of fire and risk prevention programs using education, engineering, and enforcement approaches.
Prerequisite: FESA 432 and FESA 433.
Registration Information: Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 441 Fire Officer II-A Credits: 3 (3-0-0)
Course Description: Fire officer competencies at the supervisory/managerial level of performance, as confirmed by NFPA Standard 1021, Level II, 5.1 to 5.4.
Prerequisite: FESA 342 with a minimum grade of C.
Registration Information: Offered as an online course only.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 442 Fire Officer II-B Credits: 3 (3-0-0)
Course Description: Fire officer competencies at the supervisory/managerial level of performance, as confirmed by NFPA Standard 1021, Level II, 5.5 to 5.7.
Prerequisite: FESA 441 with a minimum grade of C.
Registration Information: Offered as an online course only.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 467 Integrated Management Simulation Credits: 3 (0-0-3)
Course Description: Integration management and administrative knowledge and skills in the development of a fire and emergency service management simulation.
Prerequisite: FESA 432 and FESA 433.
Registration Information: Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 492 Seminar Credits: Var[1-3] (0-0-0)
Course Description: Discussion and documentation of professional experience in fire and emergency services.
Prerequisite: None.
Registration Information: Written consent of instructor. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FESA 495 Independent Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to the FESA B.S. program; written consent of instructor. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Forest and Rangeland Stewardship (F)

F 224 Wildland Fire Measurements Credit: 1 (0-2-0)
Course Description: Wildland fire control and use measurements: fuels, weather, topography, fire behavior, and fire ecology.
Prerequisite: None.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

F 230 Forestry Field Measurements Credits: 2 (0-4-0)
Course Description: Develop field skills using maps, compasses, and aerial photos; photo interpretation; tree and stand measurements; stand volume and value estimates.
Prerequisite: None.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

F 310 Forest and Rangeland Ecogeography Credits: 3 (2-2-0)
Also Offered As: RS 310.
Course Description: Distribution of wildland plant communities and identification of important grasses, forbs, shrubs, and trees common in North America.
Prerequisite: BZ 101 or BZ 104 or BZ 110 or BZ 120 or LIFE 102.
Registration Information: Must have concurrent registration in F 312. Must register for lecture and laboratory. Credit not allowed for both F 310 and RS 310.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

F 311 Forest Ecology Credits: 3 (3-0-0)
Course Description: Relationships of ecological concepts to the dynamics of forest ecosystems.
Prerequisite: LIFE 320 or LAND 220 or LIFE 220.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

F 312 Dendrology Lab Credit: 1 (0-2-0)
Course Description: Identification of characteristic trees common to North American forests.
Prerequisite: None.
Registration Information: Must have concurrent registration in F 310.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

F 321 Forest Biometry Credits: 3 (2-2-0)
Course Description: Measurement and estimation of timber in logs, trees, and stands. Sampling with varying probabilities.
Prerequisite: (NR 220 and F 230) and (STAT 201 or STAT 301) and (MATH 141 or MATH 155).
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

F 322 Economics of the Forest Environment Credits: 3 (3-0-0)
Course Description: Economic principles and techniques applied to forested environments.
Prerequisite: AREC 202 or ECON 202 or ECON 240 or AREC 240.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

F 324 Fire Effects and Adaptations Credits: 3 (3-0-0)
Course Description: Introduction to fire ecology including fire history, ecosystem effects, and organism responses.
Prerequisite: LIFE 320 or LAND 220 or LIFE 220.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

F 325 Silviculture Credits: 3 (3-0-0)
Course Description: Principles of silviculture and their application to major forest types of United States.
Prerequisite: F 230 and F 311 and NR 220.
Registration Information: Credit not allowed for both F 325 and NR 326.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

F 326 Wildland Fire Behavior and Management Credits: 3 (3-0-0)
Course Description: Physical and managerial principles influencing fire, how fires shape our forests and approaches used to manage wildland fire.
Prerequisite: LAND 220 or LIFE 220 or LIFE 320.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

F 330 Timber Harvesting and the Environment Credits: 3 (2-2-0)
Course Description: Principles of timber harvesting and effects of logging on the environment.
Prerequisite: F 230 or F 321.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

F 331 Wood Products in Society Credits: 3 (2-2-0)
Course Description: Role of wood products in society; spectrum of wood products; some field trips.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

F 421 Forest Stand Management Credits: 4 (3-3-0)
Course Description: Forest management plan preparation: forest condition and health assessment; evaluation of silvicultural treatments; implementation and monitoring.
Prerequisite: F 230 and F 321 and F 322 and F 325.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

F 422 Quantitative Methods in Forest Management Credits: 3 (2-2-0)
Course Description: Design and analysis of optimization and nonoptimization models in forest managerial operations.
Prerequisite: F 321 and F 322.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

F 425 Advanced Wildland Fire Behavior and Management Credits: 3 (3-0-0)
Course Description: Advanced strategies, tools, and techniques for wildland fire management: prediction, prevention, suppression, and use for resource benefit.
Prerequisite: F 326 and NR 319.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

F 430 Forestry Field Practices Credits: 3 (1-4-0)
Course Description: Forestry field course, S212 saw certification, collect stand inventory data, develop and implant stand prescription, and harvest and process trees.
Prerequisite: F 330 and F 421.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

F 466 Urban and Community Forestry Credits: 3 (3-0-0)
Also Offered As: HORT 466.
Course Description: Policies and management of publicly and privately owned community forests in urbanized areas.
Prerequisite: F 310 or RS 310 or HORT 221.
Registration Information: Credit not allowed for both F 466 and HORT 466.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

F 487 Professional Forestry Internship Credits: Var[3-12] (0-0-0)
Course Description: Professional-level field experience with forestry organization.
Prerequisite: None.
Registration Information: Written consent of department chair.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

F 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

F 510 Ecophysiology of Trees Credits: 3 (2-3-0)
Course Description: Environmental factors affecting physiology of woody plants; emphasis on water relations in trees and importance of water in physiological processes.
Prerequisite: BZ 440.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

F 520 Advanced Quantitative Methods in Forestry I Credits: 3 (3-0-0)
Course Description: Design and analysis of optimization models in forest management operations: linear, goal, and dynamic programming.
Prerequisite: F 322 and MATH 160.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

F 521 Advanced Quantitative Methods in Forestry II Credits: 3 (2-2-0)
Course Description: Analysis of forest inventory information; dynamic and stochastic models oriented to decision making and research in forestry.
Prerequisite: F 520.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

F 522 Advanced Forest Economics Credits: 3 (3-0-0)
Course Description: Analysis of forestry issues: financial maturity, management intensity, federal policy, taxation, natural environments, and silviculture.
Prerequisite: ECON 306.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

F 524 Forest Fire Meteorology and Behavior Credits: 3 (2-2-0)
Course Description: Effects of atmospheric processes on wild and prescribed fires; interrelationships of weather, fuels, and topography on forest and range fires.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

F 525 Silvicultural Practices Credits: 4 (3-0-1)
Course Description: Comprehensive coverage of silvicultural practices as applied in US forestry.
Prerequisite: F 311.
Registration Information: Must register for lecture and recitation. Credit not allowed for both F 525 and F 526.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

F 526 Multiple Resources Silviculture Credits: 3 (3-0-0)
Course Description: Concepts and techniques of silviculture and their application to forest ecology to meet a wide range of desired conditions and resource objectives. Develops knowledge of ecological applications directed at the management of forests with multiple considerations, including wildlife, recreation, forest health, and timber production.
Prerequisite: F 311 or LIFE 320 or NR 565 or NR 578.
Registration Information: Offered as an online course only. Credit allowed for only one of the following: F 525, F 526, or F 581A3.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

F 540 Fuels, Vegetation, and Fire Management Credits: 3 (2-3-0)
Course Description: Develop, test and display the impact of alternative fuels and vegetation treatments on vegetation development, fuels and fire behavior.
Prerequisite: None.
Registration Information: Admission to the Continuing Education in Fuels Management program through the Office of Conference Services.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

F 571 Applied Forest Ecology Credits: 2 (2-0-0)
Course Description: Concepts and theory of stand dynamics in relation to advanced ecological concepts within the Rocky Mountain Region and Intermountain West and applications of these concepts to natural disturbance-based management.
Prerequisite: (LAND 220 or LIFE 220 or LIFE 320) and (F 311).
Restriction: Must be a: Graduate.
Registration Information: Bachelor's degree required. Offered as an online course only.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

F 572 Advanced Silviculture Practices Credits: 3 (3-0-0)
Course Description: Application of forest ecology principles and silvicultural techniques to meet a wide range of desired conditions and resource objectives.
Prerequisite: F 325.
Restriction: Must be a: Graduate.
Registration Information: Bachelor's degree required. Offered as an online course only.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

F 574 Climate Adaptive Forest Management Credit: 1 (1-0-0)
Course Description: Application of climate science and adaptive silviculture strategies to real-world forest management scenarios.
Prerequisite: F 325.
Restriction: Must be a: Graduate.
Registration Information: Bachelor's degree required. This is a partial semester course. Offered as an online course only.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

F 575 Monitoring for Advanced Silviculture Credits: 2 (2-0-0)
Course Description: Best practices and principles for evaluating forest management effectiveness at various scales across the landscape.
Prerequisite: F 230 and F 421.
Restriction: Must be a: Graduate.
Registration Information: Bachelor's degree required. Offered as an online course only.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

F 576 Advanced Silviculture Capstone Credits: 3 (3-0-0)
Course Description: Application of ecological principles, climate change science, and regional silvicultural principles to the management of a local forest stand.
Prerequisite: (F 572) and (F 325).
Restriction: Must be a: Graduate.
Registration Information: Bachelor's degree required. Offered as an online course only.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

F 592 Advanced Silviculture Seminar Credit: 1 (0-0-1)
Course Description: Forestry professionals and faculty present different aspects of advanced silviculture skills to prepare students for the rigor of online, graduate-level courses and to create a plan and portfolio for their final project at the culmination of the certificate.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Bachelor's degree required. This is a partial semester course. Offered as an online course only.
Term Offered: Fall (odd years).
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

F 593 Seminar-Fire Science Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

F 610 Advanced Forest Ecology Credits: 3 (1-0-2)
Course Description: Patterns of tree mortality and their consequences for ecological communities, disturbance regimes, and ecosystem processes. The literature included is diverse ranging from ecophysiology to dendroecology to climate science, and the goal is to integrate this diverse literature to understand the ecological consequences of climate variability on forest ecosystems of the southern Rocky Mountains and globally.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: At least one undergraduate or graduate course in ecology. Must register for lecture and recitation. Required field trips. Credit not allowed for both F 610 and F 680A1.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

F 624 Fire Ecology Credits: 3 (3-0-0)
Course Description: Fire in forest and range ecosystems; principles and techniques for evaluating fire effects on vegetation, soils, watersheds, and wildlife.
Prerequisite: ECOL 505 or F 310 or F 311 or LIFE 320 or NR 565 or NR 578 or RS 300 or RS 310 or RS 452.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

F 625 Ecology of Forest Production Credits: 3 (3-0-0)
Also Offered As: ESS 625.
Course Description: Develops student expertise in understanding carbon and nutrient flows in forests.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have completed one 300-level course in ECOL. Credit not allowed for both F 625 and ESS 625. Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

F 693 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

F 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

F 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

F 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

F 721 Forest Policy Credits: 3 (3-0-0)
Course Description: Policies and institutions affecting management of forest lands in U.S.
Prerequisite: NR 567.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

F 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

F 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Natural Resources (NR)

NR 565 Principles of Natural Resources Ecology Credits: 3 (3-0-0)
Course Description: Overview of ecological fundamentals examined from the perspective of forest, rangeland, wildlife and fisheries science and management.
Prerequisite: None.
Registration Information: Admission to the Master of Natural Resources Stewardship or written consent of instructor. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 566 Natural Resource Inventory and Data Analysis Credits: 3 (3-0-0)
Course Description: Sampling designs, implementation and analysis for inventory and monitoring of forests, rangelands, wetlands and streams.
Prerequisite: STAT 301 or STAT 311 or STAT 312.
Registration Information: Admission to the Master of Natural Resources Stewardship or written consent of instructor. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 568 Economics of Forests, Restoration and Fire Credits: 3 (3-0-0)
Course Description: Overview of basic microeconomics principles as applied to forestry, restoration, and wildland fire management.
Prerequisite: None.
Registration Information: Admission to the Master of Natural Resources Stewardship or written consent of instructor. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 578 Ecology of Disturbed Lands Credits: 3 (3-0-0)
Course Description: Analysis of basic and applied ecological principles involved in the restoration of drastically disturbed lands.
Prerequisite: (LAND 220 or LIFE 220 or LIFE 320 or NR 565) and (SOCR 240).
Registration Information: Sections may be offered: Online. Credit not allowed for both NR 578 and RS 578.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Rangeland Ecosystem Science (RS)

RS 300 Rangeland Conservation and Stewardship Credits: 3 (3-0-0)
Course Description: Conservation and management of rangeland-ecosystem values using sustainable practices.
Prerequisite: BZ 120 or LIFE 102.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RS 310 Rangeland and Forest Ecogeography Credits: 3 (2-2-0)
Also Offered As: F 310.
Course Description: Distribution of wildland plant communities and identification of important grasses, forbs, shrubs, and trees common to North America.
Prerequisite: BZ 101 or BZ 104 or BZ 110 or BZ 120 or LIFE 102.
Registration Information: Must have concurrent registration in RS 312. Must register for lecture and laboratory. Credit not allowed for both RS 310 and F 310.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RS 312 Rangeland Plant Identification Lab Credit: 1 (0-2-0)
Course Description: Identification of characteristic grasses, forbs, and shrubs common to North American rangelands.
Prerequisite: None.
Registration Information: Must have concurrent registration in RS 310.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

RS 329 Rangeland Assessment Credit: 1 (0-3-0)
Course Description: Five-day intensive field-based course on principles of rangeland ecosystem assessment.
Prerequisite: (F 310 or RS 310) and (RS 300 and SOCR 240).
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

RS 331 Wildland Plants and Plant Communities Credits: 3 (2-2-0)
Course Description: Distribution of non-forested wildland plant communities and important plant species in the western United States.
Prerequisite: BZ 223 or NR 220.
Registration Information: Must register for lecture and laboratory. Required field trips. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RS 351 Wildland Ecosystems in a Changing World Credits: 3 (2-2-0)
Course Description: Understanding and conserving non-forested wildland ecosystems, processes, and services under changing environmental conditions.
Prerequisite: (LIFE 320 or LAND 220 or LIFE 220) and (SOCR 240).
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RS 378 Disturbance Ecology Credits: 2 (2-0-0)
Course Description: Foundational knowledge of ecological disturbances, the role of disturbance in biotic communities and ecosystems, and how various communities and ecosystems recover from disturbances.
Prerequisite: LAND 220 or LIFE 220 or LIFE 320.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RS 400 Rangeland Improvements Credits: 2 (2-0-0)
Course Description: Improvement of rangelands through biological and cultural methods; management of improved rangelands.
Prerequisite: RS 300 or SOCR 320.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RS 420 Grass Taxonomy Credits: 3 (1-4-0)
Course Description: Anatomy, morphology, and identification of grasses.
Prerequisite: BZ 223.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RS 432 Rangeland Measurements and Monitoring Credits: 2 (1-3-0)
Course Description: Vegetation sampling and field measurements emphasizing applications for monitoring and adaptive management.
Prerequisite: (NR 220 and RS 300, may be taken concurrently) and (STAT 201 or STAT 301 or STAT 307).
Registration Information: Credit not allowed for both RS 432 and RS 532.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

RS 452 Rangeland Herbivore Ecology and Management Credits: 3 (3-0-0)
Course Description: Ecology and management of large ungulate herbivores including consumer functions at organismal and ecosystem levels.
Prerequisite: (RS 300) and (LAND 220 or LIFE 220 or LIFE 320).
Registration Information: Voluntary field trips. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RS 470 Rangeland Economics and Analysis Credits: 2 (2-0-0)
Course Description: Economics of rangeland resource use; analytical techniques for allocation of rangeland resources.
Prerequisite: (AREC 202 or ECON 202) and (RS 300).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RS 471 Rangeland Planning and Grazing Management Credits: 2 (2-0-0)
Course Description: Definition of grazing management, grazing systems. Synthesis of animal, plant responses to grazing management. Structure, function of rangeland planning.
Prerequisite: RS 300 or SOCR 320.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RS 472 Rangeland Ecosystem Planning Credits: 4 (1-6-0)
Course Description: Range allotment, ranch, and restoration planning.
Prerequisite: RS 471.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RS 478 Ecological Restoration Credits: 3 (3-0-0)
Course Description: Analysis of environmental factors influencing restoration of disturbed lands and practices for successful restoration of disturbed ecosystems.
Prerequisite: (BZ 450 or LAND 220 or LIFE 220 or LIFE 320) and (SOCR 240).
Registration Information: Credit not allowed for both RS 478 and NR 678.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RS 495 Independent Study-Rangeland Ecosystems Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 496 Group Study-Rangeland Ecosystem Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 500 Advanced Rangeland Management Credits: 3 (3-0-0)
Course Description: Rangeland management concepts.
Prerequisite: LAND 220 or LIFE 320 or NR 220 or LIFE 220.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

RS 531 World Grassland Ecogeography Credits: 3 (2-3-0)
Course Description: Distribution, climate, and structure of the world's major grasslands with emphasis on North America.
Prerequisite: BZ 223.
Registration Information: Must register for lecture and laboratory. Required field trips. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RS 532 Rangeland Ecosystem Sampling Credits: 3 (1-3-1)
Course Description: Measurement, analysis techniques for rangeland vegetation. Applications to management emphasized.
Prerequisite: (STAT 301) and (LAND 220 or LIFE 320 or NR 220 or LIFE 220).
Registration Information: Must register for lecture, lab, and recitation. Required field trips. Credit not allowed for both RS 532 and RS 432.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

RS 552 Range Animal Production and Management Credits: 4 (3-0-1)
Course Description: Biological and ecological basis for production of meat from rangelands.
Prerequisite: LAND 220 or LIFE 320 or NR 220 or LIFE 220.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

RS 565 Riparian Ecology and Management Credits: 3 (2-2-0)
Course Description: Analysis of interactions among biotic and abiotic processes as relates to the ecology and management of riparian systems, emphasizing case studies.
Prerequisite: LAND 220 or LIFE 220 or LIFE 320.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RS 630 Ecology of Grasslands and Shrublands Credits: 3 (3-0-0)
Course Description: Distributions and climatic controls on grassland and shrubland plant communities.
Prerequisite: NR 565 or NR 578.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RS 693 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 695 Independent Study-Rangeland Ecosystem Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 696 Group Study-Rangeland Ecosystem Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 793 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 795 Independent Study-Rangeland Ecosystem Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Fire and Emergency Services Administration

The fire and emergency services have a long and proud history of serving their communities with a wide variety of fire protection, prevention, emergency medical, and public education services. The fire and emergency services administrators of the future need advanced administration, management, and leadership skills to address the ever-

evolving nature of emergency services. The major prepares students for managerial and officer positions in emergency and fire service organizations.

The major is a degree completion program for students to gain advanced knowledge of emergency service related subjects. The coursework builds upon technical skills and experiences earned in First Responder associate degree programs and on-the-job training. Students will explore key administrative and management areas such as emergency operations, public service budgeting, human resources, prevention, and incident command. The major is focused on the administration and management of First Responder organizations.

All fire and emergency services administration courses are upper-division and offered online via distance education only through the Division of Continuing Education/CSU Online (http://www.online.colostate.edu).

Learning Outcomes

Students will demonstrate their ability to:

- Effectively integrate academic knowledge into fire and emergency services administrative and managerial roles within current and future employment situations.
- Collaborate with peers to solve fire and emergency services organizational problems. Effective collaboration includes the ability to organize and synthesize ideas, develop a persuasive argument, interact with individuals and groups, and use applicable presentation aids.
- Apply their knowledge, skills, and competencies in the fire and emergency services field to fire and emergency services organizations. Examples include knowledge of proposal and report writing, trends in emergency management and incident command systems, and comprehension of public service administration practices.
- Interact with professional First Responders nationally and internationally.

Potential Occupations

Students in the Fire and Emergency Services Administration major should have work experience in the fire and emergency services field. Typical students are employed as career or volunteer firefighters, wildland firefighters, paramedics, emergency medical technicians, inspectors, or trainers. Graduates can expect positions as fire chiefs, company officers, public administrators, fire marshals, or educators.

Requirements
Effective Spring 2015

Students must complete an additional 60 credits including All-University Core Curriculum (AUCC) Categories 1-3.

Freshman			
		AUCC	**Credits**
Credits transferred from another institution			30
	Total Credits		30
Sophomore			
Credits transferred from another institution			30
	Total Credits		30
Junior			
FESA 310	Fire Service Leadership		3
FESA 331	Structure Influence on Tactics and Strategy		3
FESA 333	Proposals/Reports in Fire Service Management	4A	3
FESA 334	Orientation to Experiential Learning		1
FESA 335	Trends in Fire Science Technologies		3
FESA 336	Fire Emergency Services Administration		3
FESA 338	Essentials of Emergency Management		3
Electives			11
	Total Credits		30
Senior			
Select 6 credits from the following:			6
FESA 330	Industrial Processes and Fire Protection		
FESA 337	Policy and Public Administration		
FESA 339	Incident Command Systems		
FESA 431	Emergency Medical Services Management		
FESA 434	Training Program Management		
FESA 435	Volunteer/Combination Organization Management		
FESA 436	Fire Protection Through Model Building Codes		

FESA 438	Prevention Program Management		
FESA 432	Fire and Emergency Services Budgeting		3
FESA 433	Fire and Emergency: Human Resources	4B	3
FESA 437	Fire and Emergency: Legal Considerations		3
FESA 467	Integrated Management Simulation	4C	3
Electives[1]			12
	Total Credits		30
	Program Total Credits:		120

[1] Select enough credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major in Forest and Rangeland Stewardship

Forests and rangelands are always changing, sometimes very slowly as a result of long-term processes, followed by rapid changes as a result of fires, timber harvesting, or grazing. Rangelands occupy nearly fifty percent of the earth's land surface and consist of natural grasslands, savannas, shrublands, riparian areas, deserts, tundra, and coastal marshes. Sustaining forests and rangelands in the modern world requires managers who understand ecosystem changes, and how forests and rangelands connect to global, ecological, and social systems. State and federal land management agencies, private landowners, consultants, and conservation organizations employ graduates of the Forest and Rangeland Stewardship (FRS) major. The curriculum includes a balanced mix of courses in plant and animal biology, integrated resource management, and the physical sciences. Colorado is an ideal setting for the study of forestry and rangeland ecology and management with shortgrass steppe to the east and high elevation grasslands, forests, woodlands, and riparian areas to the west. Students learn about ecosystem productivity, policy, conservation, and the latest in computer-based management tools. Students also gain an understanding of economics related to recognizing alternatives and analytical and decision-making skills, as well as developing communication, political and interpersonal skills to make their education effective, and contribute to their respective fields fully upon graduation.

The forestry-specific concentrations within the FRS major are accredited by the Society of American Foresters, with curricula meeting the Office of Personnel Management (OPM) requirements for the forestry series (0460) and the forestry technician series (0462). The range-specific concentrations in the FRS major are accredited by the Society for Range Management and students generally meet the OPM requirements for the Rangeland Management Series (0454) and Soil Conservation Series (0457).

Students in the FRS major will gain an understanding of and learn how to manage the animal, soil, and vegetation resources on rangelands or in forests for state and federal land management agencies as well as a variety of private landowners and non-governmental agencies. With a few additional courses, graduates meet OPM requirements for the Ecology Series (0408). Students develop an in-depth understanding of basic plant and animal biology; a basic understanding of the physical sciences as they relate to rangeland ecology; and knowledge of important concepts of ecology and range management.

The FRS major includes summer field courses. All FRS students take a 4-week summer field course at the CSU Mountain Campus for field studies in forest and rangeland ecology and management, wildlife, watershed and human dimensions of natural resources. Students in the forestry concentrations take another 2-week summer field course at the Mountain Campus that focuses on forestry field measurements. Students in the rangeland concentrations take a 1-week summer field course focused on rangeland inventory and assessment that is normally held in shortgrass steppe or foothills rangelands close to Fort Collins.

Careers in forestry and natural resources are exceptionally varied, challenging, and personally satisfying. Opportunities are available in rural and urban settings worldwide. Positions are available in industry, education, consulting, public service, and government agencies. Some examples of career opportunities include, but are not limited to: forest manager, forest/park ranger, environmental policy and conservation consultant, fire fighter/manager, natural resource journalist, naturalist, land use planner, geospatial information systems specialist, forest products business person, researcher/professor.

Examples of career opportunities in range management include, but are not limited to restoration ecologist, rangeland scientist, rangeland management specialist, soil conservationist, soil scientist, rangeland conservationist, plant ecologist, riparian ecologist, ranch manager, researcher, commercial sales and service representative, consultants, mine rehabilitation specialist, real estate/land manager, and international rangeland specialist.

Concentrations

- Major in Forest and Rangeland Stewardship, Forest Biology Concentration
- Major in Forest and Rangeland Stewardship, Forest Fire Science Concentration
- Major in Forest and Rangeland Stewardship, Forest Management Concentration
- Major in Forest and Rangeland Stewardship, Rangeland and Forest Management Concentration
- Major in Forest and Rangeland Stewardship, Rangeland Conservation and Management Concentration

Major in Forest and Rangeland Stewardship, Forest Biology Concentration

The Forest Biology concentration in the Forest and Rangeland Stewardship major provides forestry education that spans the entire range of experiences necessary to understand and manage forests. Curricula include a background in the biological, physical, social, and management sciences, followed by professional forestry courses. The curriculum also focuses on forest biology, forest ecology, natural resource management, and the physical sciences. More specifically,

this concentration is intended for students interested in forest ecology and tree biology and it prepares students for graduate studies in forest biological sciences and eventual careers in teaching or research.

Requirements Effective Fall 2019

Freshman			
		AUCC	**Credits**
BZ 120	Principles of Plant Biology (GT-SC1)	3A	4
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	4
NR 193	FRS First Semester Seminar		1
SPCM 200	Public Speaking		3
Arts and Humanities		3B	6
Historical Perspectives		3D	3
	Total Credits		29
Sophomore			
CHEM 245	Fundamentals of Organic Chemistry		4
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
F 310/RS 310	Forest and Rangeland Ecogeography		3
F 312	Dendrology Lab		1
LIFE 320	Ecology		3
PH 121	General Physics I (GT-SC1)	3A	5
SOCR 240	Introductory Soil Science		4
STAT 301	Introduction to Statistical Methods		3
Diversity and Global Awareness		3E	3
	Total Credits		29
Summer			
F 230	Forestry Field Measurements		2
NR 220	Natural Resource Ecology and Measurements		5
	Total Credits		7
Junior			
BZ 440	Plant Physiology		3
F 311	Forest Ecology		3
F 321	Forest Biometry		3
F 322	Economics of the Forest Environment		3
F 325	Silviculture		3
GR 304/WR 304	Sustainable Watersheds	3A	3
JTC 300	Professional and Technical Communication (GT-CO3)	2	3
NR 319	Geospatial Applications in Natural Resources		4
NR 320	Natural Resources History and Policy		3
RS 300	Rangeland Conservation and Stewardship		3
	Total Credits		31
Senior			
BSPM 365	Integrated Tree Health Management	4A	4
F 326	Wildland Fire Behavior and Management		3
F 421	Forest Stand Management	4A,4C	4
NR 425	Natural Resource Policy and Sustainability	4B	3
Select a minimum of 10 credits from the following Biology courses:			10

BC 351	Principles of Biochemistry	
BSPM 302	Applied and General Entomology	
BSPM 361	Elements of Plant Pathology	
BZ 223	Plant Identification	
BZ 331	Developmental Plant Anatomy	
BZ 338	Comparative Morphology of Vascular Plants	
BZ 346	Population and Evolutionary Genetics	
BZ 441	Plant Physiology Laboratory	
BZ 450	Plant Ecology	
CHEM 341	Modern Organic Chemistry I	
CHEM 343	Modern Organic Chemistry II	
CHEM 344	Modern Organic Chemistry Laboratory	
F 324	Fire Effects and Adaptations	
FW 477	Wildlife Habitat Use and Management	
NR 300	Biological Diversity	
RS 351	Wildland Ecosystems in a Changing World	
RS 452	Rangeland Herbivore Ecology and Management	
SOCR 330	Principles of Genetics	
SOCR 440	Pedology	
SOCR 467	Soil and Environmental Chemistry	
SOCR 470	Soil Physics	
SOCR 471	Soil Physics Laboratory	
	Total Credits	24
	Program Total Credits:	120

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 120	Principles of Plant Biology (GT-SC1)	X		3A	4
CO 150	College Composition (GT-CO2)	X		1A	3
NR 193	FRS First Semester Seminar				1
Arts and Humanities				3B	3
Historical Perspectives				3D	3
MATH 124 and MATH 125 must be completed by the end of Semester 1.		X			
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)			3A	1
MATH 155	Calculus for Biological Scientists I (GT-MA1)	X		1B	4
SPCM 200	Public Speaking				3
Arts and Humanities				3B	3
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 245	Fundamentals of Organic Chemistry				4
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
PH 121	General Physics I (GT-SC1)			3A	5
Diversity and Global Awareness				3E	3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
F 310/RS 310	Forest and Rangeland Ecogeography				3

F 312	Dendrology Lab				1
LIFE 320	Ecology	X			3
SOCR 240	Introductory Soil Science				4
STAT 301	Introduction to Statistical Methods	X			3
	Total Credits				14
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
F 230	Forestry Field Measurements	X			2
NR 220	Natural Resource Ecology and Measurements	X			5
	Total Credits				7
Junior					
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
F 311	Forest Ecology	X			3
F 321	Forest Biometry	X			3
GR 304/WR 304	Sustainable Watersheds			3A	3
NR 320	Natural Resources History and Policy	X			3
RS 300	Rangeland Conservation and Stewardship				3
	Total Credits				15
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 440	Plant Physiology				3
F 322	Economics of the Forest Environment	X			3
F 325	Silviculture	X			3
JTC 300	Professional and Technical Communication (GT-CO3)			2	3
NR 319	Geospatial Applications in Natural Resources	X			4
	Total Credits				16
Senior					
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BSPM 365	Integrated Tree Health Management	X		4A	4
F 326	Wildland Fire Behavior and Management	X			3
F 421	Forest Stand Management	X		4A,4C	4
Biology Electives (See Department List on Concentration Requirements tab)					1
	Total Credits				12
Semester 9		**Critical**	**Recommended**	**AUCC**	**Credits**
NR 425	Natural Resource Policy and Sustainability	X		4B	3
Biology Electives (See Department List on Concentration Requirements tab)		X			9
The benchmark courses for the 9th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12
	Program Total Credits:				120

Major in Forest and Rangeland Stewardship, Forest Fire Science Concentration

The Forest Fire Science concentration in the Forest and Rangeland Stewardship major provides forestry education that spans the entire range of experiences necessary to understand and manage forests. Curricula include a background in the biological, physical, social, and management sciences, followed by professional forestry courses. More specifically, this concentration is the study of fire as an ecological process and its application as a forest management tool. Students learn how to control wildfires and how prescribed fires can enhance habitat, prepare seedbeds, control forest insects and disease, and reduce fuel hazards.

Requirements Effective Fall 2019

Freshman

		AUCC	Credits
BZ 120	Principles of Plant Biology (GT-SC1)	3A	4
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
MATH 141[1]	Calculus in Management Sciences (GT-MA1)	1B	3
NR 193	FRS First Semester Seminar		1
PH 110	Physics of Everyday Phenomena (GT-SC2)	3A	3
SPCM 200	Public Speaking		3
Arts and Humanities		3B	3
Historical Perspectives		3D	3
	Total Credits		28

Sophomore

ATS 350	Introduction to Weather and Climate		2
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
F 310/RS 310	Forest and Rangeland Ecogeography		3
F 312	Dendrology Lab		1
LIFE 320	Ecology		3
RS 300	Rangeland Conservation and Stewardship		3
SOCR 240	Introductory Soil Science		4
STAT 301	Introduction to Statistical Methods		3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
	Total Credits		28

Summer

F 230	Forestry Field Measurements		2
NR 220	Natural Resource Ecology and Measurements		5
	Total Credits		7

Junior

BSPM 365	Integrated Tree Health Management		4
CO 300	Writing Arguments (GT-CO3)	2	3
F 311	Forest Ecology		3
F 321	Forest Biometry		3
F 322	Economics of the Forest Environment		3
F 324	Fire Effects and Adaptations		3
F 325	Silviculture		3
F 330	Timber Harvesting and the Environment		3
NR 319	Geospatial Applications in Natural Resources		4
NR 320	Natural Resources History and Policy		3
	Total Credits		32

Senior

F 326	Wildland Fire Behavior and Management		3
F 421	Forest Stand Management	4A,4C	4
F 422	Quantitative Methods in Forest Management		3
F 425	Advanced Wildland Fire Behavior and Management		3
GR 304/WR 304	Sustainable Watersheds	3A	3
NR 425	Natural Resource Policy and Sustainability	4B	3

NR 444	Fire Economics and Policy	3
Elective[2]		3
	Total Credits	25
	Program Total Credits:	120

1 Students considering graduate study in forest fire science should substitute MATH 155-MATH 255 or MATH 160-MATH 161 for MATH 141.

2 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
Students considering graduate school in Forest Fire Science should substitute MATH 155 / MATH 255 or MATH 160 / MATH 161 (with proper prerequisites) for MATH 141.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 120	Principles of Plant Biology (GT-SC1)	X		3A	4
CO 150	College Composition (GT-CO2)	X		1A	3
MATH 141	Calculus in Management Sciences (GT-MA1)	X		1B	3
NR 193	FRS First Semester Seminar				1
PH 110	Physics of Everyday Phenomena (GT-SC2)			3A	3
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)			3A	1
SPCM 200	Public Speaking				3
Arts and Humanities				3B	3
Historical Perspectives				3D	3
	Total Credits				14

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ATS 350	Introduction to Weather and Climate				2
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
LIFE 320	Ecology	X			3
RS 300	Rangeland Conservation and Stewardship				3
Diversity and Global Awareness				3E	3
	Total Credits				14
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
F 310/RS 310	Forest and Rangeland Ecogeography				3
F 312	Dendrology Lab				1
SOCR 240	Introductory Soil Science				4
STAT 301	Introduction to Statistical Methods	X			3
Arts and Humanities				3B	3
	Total Credits				14
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
F 230	Forestry Field Measurements	X			2
NR 220	Natural Resource Ecology and Measurements	X			5
	Total Credits				7

Junior

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
BSPM 365	Integrated Tree Health Management				4
CO 300	Writing Arguments (GT-CO3)			2	3
F 311	Forest Ecology	X			3
F 321	Forest Biometry	X			3

NR 319	Geospatial Applications in Natural Resources				4
	Total Credits				17
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
F 322	Economics of the Forest Environment	X			3
F 324	Fire Effects and Adaptations				3
F 325	Silviculture	X			3
F 330	Timber Harvesting and the Environment				3
NR 320	Natural Resources History and Policy	X			3
	Total Credits				15
Senior					
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
F 326	Wildland Fire Behavior and Management	X			3
F 421	Forest Stand Management	X		4A,4C	4
F 422	Quantitative Methods in Forest Management	X			3
GR 304/WR 304	Sustainable Watersheds		X	3A	3
NR 319 must be completed by the end of Semester 8.		X			
	Total Credits				13
Semester 9		**Critical**	**Recommended**	**AUCC**	**Credits**
F 425	Advanced Wildland Fire Behavior and Management	X			3
NR 425	Natural Resource Policy and Sustainability	X		4B	3
NR 444	Fire Economics and Policy	X			3
Elective		X			3
The benchmark courses for the 9th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12
	Program Total Credits:				120

Major in Forest and Rangeland Stewardship, Forest Management Concentration

The Forest Management concentration in the Forest and Rangeland Stewardship major provides forestry education that spans the entire range of experiences necessary to understand and manage forests. Curricula include a background in the biological, physical, social, and management sciences, followed by professional forestry courses. More specifically, this concentration is designed to instill an understanding of the basic principles of forest ecology and forest management. Although many students go on to graduate studies, the program is primarily intended for students interested in managing forestlands.

Requirements Effective Fall 2019

Freshman

		AUCC	Credits
BZ 120	Principles of Plant Biology (GT-SC1)	3A	4
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
NR 193	FRS First Semester Seminar		1
SPCM 200	Public Speaking		3
Arts and Humanities		3B	6
Diversity and Global Awareness		3E	3
	Total Credits		28

Sophomore

ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
F 310/RS 310[1]	Forest and Rangeland Ecogeography		3

F 312	Dendrology Lab		1
GR 304/WR 304	Sustainable Watersheds	3A	3
LIFE 320	Ecology		3
SOCR 240	Introductory Soil Science		4
STAT 301	Introduction to Statistical Methods		3
Historical Perspectives		3D	3
Elective			3
	Total Credits		26
Summer			
F 230	Forestry Field Measurements		2
NR 220	Natural Resource Ecology and Measurements		5
	Total Credits		7
Junior			
F 311	Forest Ecology		3
F 321	Forest Biometry		3
F 322	Economics of the Forest Environment		3
F 325	Silviculture		3
F 330	Timber Harvesting and the Environment		3
JTC 300	Professional and Technical Communication (GT-CO3)	2	3
NR 319	Geospatial Applications in Natural Resources		4
NR 320	Natural Resources History and Policy		3
RS 300	Rangeland Conservation and Stewardship		3
Directed Electives (Select a minimum of 3 credits from the following):			3
F 425	Advanced Wildland Fire Behavior and Management		
F 430	Forestry Field Practices		
FW 260	Principles of Wildlife Management		
GR 323/NR 323	Remote Sensing and Image Interpretation		
HIST 355	American Environmental History		
HORT 464A	Arboriculture		
NR 400	Public Communication in Natural Resources		
NR 421	Natural Resources Sampling		
NR 423	Applications of Global Positioning Systems		
NR 444	Fire Economics and Policy		
PHIL 345	Environmental Ethics		
POLS 361	U.S. Environmental Politics and Policy		
RS 312[1]	Rangeland Plant Identification Lab		
RS 329	Rangeland Assessment		
RS 351	Wildland Ecosystems in a Changing World		
RS 432	Rangeland Measurements and Monitoring		
RS 452	Rangeland Herbivore Ecology and Management		
RS 478	Ecological Restoration		
SOC 320	Population-Natural Resources and Environment		
SOCR 440	Pedology		
	Total Credits		31
Senior			
BSPM 365	Integrated Tree Health Management		4
F 326	Wildland Fire Behavior and Management		3
F 421	Forest Stand Management	4A,4C	4
F 422	Quantitative Methods in Forest Management		3
NR 425	Natural Resource Policy and Sustainability	4B	3

Directed Electives (Select three credits from list in junior year not previously taken)	3
Electives[2]	8
Total Credits	28
Program Total Credits:	120

[1] RS 312 (see selection of courses listed in the junior year) must be taken concurrently with F 310/RS 310, which is required in the sophomore year.

[2] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 120	Principles of Plant Biology (GT-SC1)	X		3A	4
CO 150	College Composition (GT-CO2)		X	1A	3
NR 193	FRS First Semester Seminar				1
Arts and Humanities				3B	3
Diversity and Global Awareness				3E	3
MATH 117 and MATH 118 must be completed by the end of Semester 1.		X			
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)			3A	1
MATH 141	Calculus in Management Sciences (GT-MA1)	X		1B	3
SPCM 200	Public Speaking				3
Arts and Humanities				3B	3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				14

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
F 310/RS 310	Forest and Rangeland Ecogeography				3
F 312	Dendrology Lab				1
LIFE 320	Ecology	X			3
Elective					3
	Total Credits				13
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
GR 304/WR 304	Sustainable Watersheds			3A	3
SOCR 240	Introductory Soil Science				4
STAT 301	Introduction to Statistical Methods	X			3
Historical Perspectives				3D	3
	Total Credits				13
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
F 230	Forestry Field Measurements	X			2
NR 220	Natural Resource Ecology and Measurements	X			5
	Total Credits				7

Junior

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
F 311	Forest Ecology	X			3
F 321	Forest Biometry	X			3
JTC 300	Professional and Technical Communication (GT-CO3)			2	3
NR 320	Natural Resources History and Policy	X			3

RS 300	Rangeland Conservation and Stewardship				3
	Total Credits				15
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
F 322	Economics of the Forest Environment	X			3
F 325	Silviculture	X			3
F 330	Timber Harvesting and the Environment	X			3
NR 319	Geospatial Applications in Natural Resources				4
Directed Electives (See List on Concentration Requirements Tab)					3
	Total Credits				16
Senior					
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BSPM 365	Integrated Tree Health Management	X			4
F 326	Wildland Fire Behavior and Management	X			3
F 421	Forest Stand Management	X		4A,4C	4
F 422	Quantitative Methods in Forest Management	X			3
	Total Credits				14
Semester 9		**Critical**	**Recommended**	**AUCC**	**Credits**
NR 425	Natural Resource Policy and Sustainability	X		4B	3
Directed Electives (See List on Concentration Requirements Tab)		X			3
Electives		X			8
The benchmark courses for the 9th semester are the remaining courses in the entire program of study.		X			
	Total Credits				14
	Program Total Credits:				120

Major in Forest and Rangeland Stewardship, Rangeland and Forest Management Concentration

The Rangeland and Forest Management concentration in the Forest and Rangeland Stewardship major emphasizes interdisciplinary study, research, and management of the world's rangelands. More specifically, this concentration prepares students in multiple-use principles to manage and administer both rangeland and forest resources for federal and state government agencies or private business.

Requirements Effective Fall 2019

Freshman

		AUCC	**Credits**
BZ 120	Principles of Plant Biology (GT-SC1)	3A	4
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	3
NR 193	FRS First Semester Seminar		1
Arts and Humanities		3B	6
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
	Total Credits		28

Sophomore

AREC 202 or ECON 202	Agricultural and Resource Economics (GT-SS1) Principles of Microeconomics (GT-SS1)	3C	3
BZ 223	Plant Identification		3
F 310/RS 310	Forest and Rangeland Ecogeography		3
F 312	Dendrology Lab		1

LIFE 320	Ecology		3
RS 300	Rangeland Conservation and Stewardship		3
RS 312	Rangeland Plant Identification Lab		1
SOCR 240	Introductory Soil Science		4
SPCM 200	Public Speaking		3
STAT 301	Introduction to Statistical Methods		3
	Total Credits		27
Summer			
F 230	Forestry Field Measurements		2
NR 220	Natural Resource Ecology and Measurements		5
	Total Credits		7
Junior			
F 311	Forest Ecology		3
F 321	Forest Biometry		3
F 322	Economics of the Forest Environment		3
F 325	Silviculture		3
GR 304/WR 304	Sustainable Watersheds	3A	3
NR 319 or 322	Geospatial Applications in Natural Resources Introduction to Geographic Information Systems		4
NR 320	Natural Resources History and Policy		3
RS 351	Wildland Ecosystems in a Changing World	4A,4B	3
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
	Total Credits		28
Summer			
RS 329	Rangeland Assessment		1
	Total Credits		1
Senior			
ANEQ 472 or 478	Sheep Systems Beef Systems		3
F 326	Wildland Fire Behavior and Management		3
NR 420	Integrated Ecosystem Management	4C	4
RS 432	Rangeland Measurements and Monitoring		2
RS 452	Rangeland Herbivore Ecology and Management	4B	3
RS 478	Ecological Restoration		3
Select one course from the following:			3-4
BZ 440	Plant Physiology		
F 324	Fire Effects and Adaptations		
SOCR 440	Pedology		
SOCR 442	Forest and Range Soils		
Select one course from the following:			3-4
BSPM 308	Ecology and Management of Weeds		
BSPM 365	Integrated Tree Health Management		
F 330	Timber Harvesting and the Environment		
F 421	Forest Stand Management		
F 422	Quantitative Methods in Forest Management		

Electives[1]		5
	Total Credits	29
	Program Total Credits:	120

[1] Select enough elective credits must be taken to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

The curriculum for Forest and Rangeland Stewardship - Rangeland and Forest Management concentration assumes students enter the program calculus ready. Please see the advisor in the department about any unmet prerequisites.

Major Completion Maps

Distinctive Requirements for Degree Program:

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 120	Principles of Plant Biology (GT-SC1)	X		3A	4
MATH 141	Calculus in Management Sciences (GT-MA1)	X		1B	3
NR 193	FRS First Semester Seminar				1
Arts and Humanities				3B	3
Diversity and Global Awareness				3E	3
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)			3A	1
CO 150	College Composition (GT-CO2)	X		1A	3
Arts and Humanities				3B	3
Historical Perspectives				3D	3
	Total Credits				14

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 223	Plant Identification				3
F 310/RS 310	Forest and Rangeland Ecogeography	X			3
F 312	Dendrology Lab	X			1
LIFE 320	Ecology	X			3
RS 300	Rangeland Conservation and Stewardship	X			3
RS 312	Rangeland Plant Identification Lab	X			1
STAT 301 or STAT 307 must be completed by the end of Semester 3.		X			
	Total Credits				14
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
SOCR 240	Introductory Soil Science	X			4
SPCM 200	Public Speaking				3
STAT 301	Introduction to Statistical Methods	X			3
Select one course from the following:		X			3
AREC 202	Agricultural and Resource Economics (GT-SS1)			3C	
ECON 202	Principles of Microeconomics (GT-SS1)			3C	
	Total Credits				13
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
F 230	Forestry Field Measurements	X			2
NR 220	Natural Resource Ecology and Measurements	X			5
	Total Credits				7

Junior

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
F 311	Forest Ecology	X			3
F 321	Forest Biometry				3

NR 320	Natural Resources History and Policy	X			3
RS 351	Wildland Ecosystems in a Changing World			4A,4B	3
Select one course from the following:					4
NR 319	Geospatial Applications in Natural Resources				
NR 322	Introduction to Geographic Information Systems				
F 312 must be completed by the end of Semester 6.		X			
	Total Credits				16
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
F 322	Economics of the Forest Environment	X			3
F 325	Silviculture	X			3
GR 304/WR 304	Sustainable Watersheds			3A	3
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
	Total Credits				12
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
RS 329	Rangeland Assessment	X			1
	Total Credits				1
Senior					
Semester 9		**Critical**	**Recommended**	**AUCC**	**Credits**
F 326	Wildland Fire Behavior and Management	X			3
RS 432	Rangeland Measurements and Monitoring	X			2
Select one course from the following:			X		3
ANEQ 472	Sheep Systems				
ANEQ 478	Beef Systems				
Select one course from the following:					3-4
BSPM 308	Ecology and Management of Weeds				
BSPM 365	Integrated Tree Health Management				
F 330	Timber Harvesting and the Environment				
F 421	Forest Stand Management				
F 422	Quantitative Methods in Forest Management				
Select one course from the following:					3-4
BZ 440	Plant Physiology				
F 324	Fire Effects and Adaptations				
SOCR 440	Pedology				
SOCR 442	Forest and Range Soils				
	Total Credits				14
Semester 10		**Critical**	**Recommended**	**AUCC**	**Credits**
NR 420	Integrated Ecosystem Management	X		4C	4
RS 452	Rangeland Herbivore Ecology and Management	X		4B	3
RS 478	Ecological Restoration	X			3
Electives		X			5
The benchmark courses for the 10th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Forest and Rangeland Stewardship, Rangeland Conservation and Management Concentration

The Rangeland Conservation and Management concentration in the Forest and Rangeland Stewardship major emphasizes interdisciplinary study, research, and management of the world's rangelands. More specifically, this concentration focuses on the stewardship of rangelands for multiple uses. These uses include both consumptive and non-consumptive activities such as recreation, preservation of wildlife habitat, providing for aesthetic beauty, livestock grazing, and ranching.

Requirements Effective Fall 2019

Freshman

		AUCC	Credits
BZ 120	Principles of Plant Biology (GT-SC1)	3A	4
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
NR 193	FRS First Semester Seminar		1
Select 3 credits from the following:			3
MATH 117	College Algebra in Context I (GT-MA1)	1B	
MATH 118	College Algebra in Context II (GT-MA1)	1B	
MATH 125	Numerical Trigonometry (GT-MA1)	1B	
MATH 141[1]	Calculus in Management Sciences (GT-MA1)	1B	
Arts and Humanities		3B	6
Diversity and Global Awareness		3E	3
Elective			3
	Total Credits		28

Sophomore

BZ 223	Plant Identification		3
RS 300	Rangeland Conservation and Stewardship		3
SOCR 240	Introductory Soil Science		4
Select one course from the following:			3
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	
ECON 202	Principles of Microeconomics (GT-SS1)	3C	
Select one course from the following:			3
FW 104	Wildlife Ecology and Conservation (GT-SC2)	3A	
NR 300	Biological Diversity		
Select one course from the following:			3
LAND 220/LIFE 220	Fundamentals of Ecology (GT-SC2)	3A	
LIFE 320	Ecology		
Select one course from the following:			3
NRRT 262[2]	Principles of Environmental Communication		
SPCM 200	Public Speaking		
Select one course from the following:			3
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
Historical Perspectives		3D	3
	Total Credits		28

Summer

NR 220	Natural Resource Ecology and Measurements		5
	Total Credits		5

Junior

BSPM 308	Ecology and Management of Weeds		3
BZ 440	Plant Physiology		3
F 310/RS 310	Forest and Rangeland Ecogeography		3
F 311	Forest Ecology		3
GR 304/WR 304	Sustainable Watersheds	3A	3
NR 320	Natural Resources History and Policy		3
RS 312	Rangeland Plant Identification Lab		1
RS 351	Wildland Ecosystems in a Changing World	4A,4B	3
RS 432	Rangeland Measurements and Monitoring		2
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
Select one course from the following:			4
NR 319	Geospatial Applications in Natural Resources		
NR 322	Introduction to Geographic Information Systems		
	Total Credits		31

Summer

RS 329	Rangeland Assessment		1
	Total Credits		1

Senior

AREC 305[3]	Agricultural and Resource Enterprise Analysis		3
F 326	Wildland Fire Behavior and Management		3
NR 420	Integrated Ecosystem Management	4C	4
RS 452	Rangeland Herbivore Ecology and Management	4B	3
RS 478	Ecological Restoration		3
Select one course from the following:			3
ANEQ 472	Sheep Systems		
ANEQ 478	Beef Systems		
Select one course from the following:			3-4
BZ 353/NR 353	Global Change Ecology, Impacts and Mitigation		
BZ 450	Plant Ecology		
BZ 471	Stream Biology and Ecology		
LAND 444	Ecology of Landscapes		
SOCR 440	Pedology		
SOCR 442	Forest and Range Soils		
Select one course from the following:			3
NR 400	Public Communication in Natural Resources		
NRRT 362	Environmental Conflict Management		
Elective[4]			1-2
	Total Credits		27
	Program Total Credits:		120

1 Students planning to take LIFE 320 in the sophomore year should take MATH 141 in the freshman year.

2 Students planning to take NRRT 362 in the senior year should choose NRRT 262 in the sophomore year.

3 Students will need an appropriate override from the department of Agricultural and Resource Economics to take this course.

4 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 120	Principles of Plant Biology (GT-SC1)	X		3A	4
NR 193	FRS First Semester Seminar				1
Select one group from the following:					3
Group A:					
MATH 117	College Algebra in Context I (GT-MA1)			1B	
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	
MATH 125	Numerical Trigonometry (GT-MA1)			1B	
Group B:					
MATH 141	Calculus in Management Sciences (GT-MA1)			1B	
Arts and Humanities				3B	3
Diversity and Global Awareness				3E	3
Take MATH 141 if planning to take LIFE 320.					
	Total Credits				14

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)			3A	1
CO 150	College Composition (GT-CO2)	X		1A	3
Arts and Humanities				3B	3
Elective					3
AUCC 1B (Quantitative Reasoning) must be completed by the end of Semester 2.					
	Total Credits				14

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 223	Plant Identification				3
RS 300	Rangeland Conservation and Stewardship	X			3
SOCR 240	Introductory Soil Science	X			4
Select one course from the following:		X			3
LAND 220/ LIFE 220	Fundamentals of Ecology (GT-SC2)			3A	
LIFE 320	Ecology				
	Total Credits				13

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
AREC 202	Agricultural and Resource Economics (GT-SS1)	X		3C	
ECON 202	Principles of Microeconomics (GT-SS1)			3C	
Select one course from the following:					3
FW 104	Wildlife Ecology and Conservation (GT-SC2)			3A	
NR 300	Biological Diversity				
Select one course from the following:					3
NRRT 262	Principles of Environmental Communication				
SPCM 200	Public Speaking				
Select one course from the following:		X			3
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
Historical Perspectives				3D	3
Take NRRT 262 if planning to take NRRT 360 or NRRT 362.					
	Total Credits				15

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
NR 220	Natural Resource Ecology and Measurements	X			5
	Total Credits				5
Junior					
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
BSPM 308	Ecology and Management of Weeds				3
F 310/RS 310	Forest and Rangeland Ecogeography	X			3
RS 312	Rangeland Plant Identification Lab	X			1
RS 351	Wildland Ecosystems in a Changing World			4A,4B	3
RS 432	Rangeland Measurements and Monitoring				2
Select one course from the following:					4
NR 319	Geospatial Applications in Natural Resources				
NR 322	Introduction to Geographic Information Systems				
	Total Credits				16
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 440	Plant Physiology				3
F 311	Forest Ecology				3
GR 304/WR 304	Sustainable Watersheds			3A	3
NR 320	Natural Resources History and Policy	X			3
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
RS 329	Rangeland Assessment	X			1
	Total Credits				1
Senior					
Semester 9		**Critical**	**Recommended**	**AUCC**	**Credits**
F 326	Wildland Fire Behavior and Management	X			3
Select one course from the following:					3
ANEQ 472	Sheep Systems				
ANEQ 478	Beef Systems				
Select one course from the following:					3-4
BZ 353/ NR 353	Global Change Ecology, Impacts and Mitigation				
BZ 450	Plant Ecology				
BZ 471	Stream Biology and Ecology				
LAND 444	Ecology of Landscapes				
SOCR 440	Pedology				
SOCR 442	Forest and Range Soils				
Select one course from the following:		X			3
NR 400	Public Communication in Natural Resources				
NRRT 362	Environmental Conflict Management				
Elective					1-2
	Total Credits				14
Semester 10		**Critical**	**Recommended**	**AUCC**	**Credits**
AREC 305	Agricultural and Resource Enterprise Analysis	X			3
NR 420	Integrated Ecosystem Management	X		4C	4
RS 452	Rangeland Herbivore Ecology and Management	X		4B	3
RS 478	Ecological Restoration	X			3

The benchmark courses for the 10th semester are the remaining courses in the entire program of study.	X	
Total Credits		13
Program Total Credits:		120

Major in Natural Resources Management

The goal of the Natural Resources Management major is to provide students with a broad-based understanding of the interconnectedness of social, political, and ecological systems. This knowledge will enable students to design sustainable solutions to address natural resource conservation and management problems. Students will learn about natural resource stewardship in both theory and practice, with an eye toward designing systems that are adaptable and resilient in light of the social and ecological complexity and change that characterize today's challenges. Using an integrative approach, students will learn how to develop local solutions that are sustainable and ethical at larger, global scales. Environmental issues such as land-use change and planning, conservation biology, energy use, climate change, renewable resource management, and citizen engagement in place-based conservation will be addressed. Field measurements and field skills are important components of this major, and students are required to attend a four-week summer field course in ecological investigations and resource management.

Specific objectives are to provide each student with:

1. a science-based core curriculum in biological, physical, and social sciences;
2. a broad foundation in natural resources science and environmental management; and
3. specialization in a subject relevant to natural resources management.

The breadth of the major allows students to specialize in a wide range of topics, including conservation biology, geographic information systems, forest management, rangeland ecology, restoration ecology, natural resource policy, recreation resources, watershed management, wildlife management, or other topics related to natural resources management. This specialization is accomplished by coupling the major with a required minor, typically declared by a student's junior year.

Students are encouraged to participate in internships and obtain related work experience. Participating in seasonal and voluntary work, internships, and cooperative education opportunities will enhance your chances for permanent full-time employment. The department offers numerous opportunities to become engaged in these kinds of endeavors. At the completion of the program, students should have the technical and communication skills that are critical to resolving important natural resource management problems.

Learning Outcomes

Students will:

- Demonstrate knowledge of a wide range of natural resource topics spanning ecological, social and physical aspects of wildland ecosystems
- Demonstrate proficiency in an area of specialization through completion of a minor in an area complementary to natural resource management. Some minors that students find well-suited to develop a proficiency are Global Environmental Sustainability, Forestry, Rangeland Ecology, Ecological Restoration, Watershed Science, Conservation Biology, or Environmental Affairs, though there are many additional options
- Be able to apply their broad natural resources knowledge to create sustainable solutions at local, national, and global scales
- Accurately communicate their knowledge of natural resources, both verbally and in written form

Potential Occupations

Opportunities are available with a wide array of local, national, and international organizations and institutions involved in natural resource management. Graduates apply their education in science, technology, social science, and policy to solving today's critical natural resource and environmental problems. Positions are found with federal, state, and local government agencies, industry, and education and advocacy organizations. Some natural resource professionals are employed in environmental consulting firms and corporate environmental departments. The nonprofit sector provides a variety of environmentally-related jobs, ranging from science application to policy development, education, and collaborative conservation.

Examples of available career choices include, but are not limited to: natural resource manager; professional forester; land use planner; geographic information system (GIS) or remote sensing specialist; fishery/wildlife manager; environmental policy analyst; environmental advocate; environmental consultant; resources/environmental lawyer (with continued education); youth agency administrator; natural resource communications specialist; law enforcement officer; natural resources/environmental educator; restoration specialist; multiple resource use planner; regulatory compliance enforcement officer.

Requirements Effective Fall 2019

Freshman

		AUCC	Credits
BZ 110	Principles of Animal Biology (GT-SC2)	3A	3
BZ 120	Principles of Plant Biology (GT-SC1)	3A	4
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3

MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 125	Numerical Trigonometry (GT-MA1)	1B	1
NR 193	FRS First Semester Seminar		1
SPCM 200	Public Speaking		3
Arts and Humanities		3B	6
	Total Credits		28

Sophomore

ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
F 310/RS 310	Forest and Rangeland Ecogeography		3
GEOL 121	Introductory Geology Laboratory (GT-SC1)	3A	1
SOCR 240	Introductory Soil Science		4
STAT 301	Introduction to Statistical Methods		3
Select one course from the following:			1
F 312	Dendrology Lab		
RS 312	Rangeland Plant Identification Lab		
Select one course from the following:			3
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)	3A	
GEOL 124	Geology of Natural Resources (GT-SC2)	3A	
Select one course from the following:			3
LAND 220/LIFE 220	Fundamentals of Ecology (GT-SC2)	3A	
LIFE 320	Ecology		
Minor[1]			3
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
	Total Credits		30

Summer

NR 220	Natural Resource Ecology and Measurements		5
	Total Credits		5

Junior

F 322	Economics of the Forest Environment		3
GR 304/WR 304	Sustainable Watersheds	3A	3
NR 319	Geospatial Applications in Natural Resources		4
NR 320	Natural Resources History and Policy		3
NR 326	Forest Vegetation Management		3
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
Select one course from the following:			3
F 311	Forest Ecology		
RS 351	Wildland Ecosystems in a Changing World		
Minor[1]			6
Elective			1
	Total Credits		29

Senior

F 326	Wildland Fire Behavior and Management		3
NR 400	Public Communication in Natural Resources	4A,4B	3
NR 420	Integrated Ecosystem Management	4C	4
NR 421	Natural Resources Sampling		3

RS 300	Rangeland Conservation and Stewardship	3
Minor[1]		12
	Total Credits	28
	Program Total Credits:	120

At least 200 hours of acceptable professional work experience in the student's field prior to graduation is highly recommended. This can include summer/seasonal/school semester employment in natural resource management through paid summer jobs, an approved internship, volunteer positions, or work study experience. Acceptable work experience includes (but is not limited to) working for federal, state, non-governmental, private, and university organizations that research or manage natural resources, or are responsible for public policy or public relations related to natural resources.

[1] Students must complete the requirements for a minor in any discipline, or the interdisciplinary minor in either Conservation Biology or Environmental Affairs.

Major Completion Map

At least 200 hours of acceptable professional work experience in the student's field prior to graduation is highly recommended. This can include summer/seasonal/school semester employment in natural resource management through paid summer jobs, an approved internship, volunteer positions, or work study experience. Acceptable work experience includes (but is not limited to) working for federal, state, non-governmental, private, and university organizations that research or manage natural resources, or are responsible for public policy or public relations related to natural resources.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 120	Principles of Plant Biology (GT-SC1)	X		3A	4
CO 150	College Composition (GT-CO2)			1A	3
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 125	Numerical Trigonometry (GT-MA1)	X		1B	1
NR 193	FRS First Semester Seminar				1
Arts and Humanities				3B	3
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 110	Principles of Animal Biology (GT-SC2)	X		3A	3
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)			3A	1
SPCM 200	Public Speaking				3
Arts and Humanities				3B	3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				14

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
F 310/RS 310	Forest and Rangeland Ecogeography				3
SOCR 240	Introductory Soil Science	X			4
Select one course from the following:					1
F 312	Dendrology Lab				
RS 312	Rangeland Plant Identification Lab				
Select one course from the following:		X			3
LAND 220/ LIFE 220	Fundamentals of Ecology (GT-SC2)			3A	
LIFE 320	Ecology				
	Total Credits				14
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
GEOL 121	Introductory Geology Laboratory (GT-SC1)			3A	1
STAT 301	Introduction to Statistical Methods	X			3
Select one course from the following:					3

GEOL 120	Exploring Earth - Physical Geology (GT-SC2)			3A	
GEOL 124	Geology of Natural Resources (GT-SC2)			3A	
Diversity and Global Awareness				3E	3
Historical Perspectives				3D	3
Minor Course					3
	Total Credits				16
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
NR 220	Natural Resource Ecology and Measurements	X			5
	Total Credits				5
Junior					
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
NR 319	Geospatial Applications in Natural Resources				4
NR 326	Forest Vegetation Management				3
Select one course from the following:					3
F 311	Forest Ecology				
RS 351	Wildland Ecosystems in a Changing World				
Minor Course					3
Elective					1
Geospatial minors take NR 322 instead of NR 319.					
Forestry minors take F 325 instead of NR 326.					
	Total Credits				14
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
F 322	Economics of the Forest Environment				3
GR 304/WR 304	Sustainable Watersheds	X		3A	3
NR 320	Natural Resources History and Policy	X			3
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
Minor Course					3
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Professional Work Experience					
	Total Credits				0
Senior					
Semester 9		**Critical**	**Recommended**	**AUCC**	**Credits**
F 326	Wildland Fire Behavior and Management				3
NR 400	Public Communication in Natural Resources	X		4A,4B	3
RS 300	Rangeland Conservation and Stewardship				3
Minor Courses					6
	Total Credits				15
Semester 10		**Critical**	**Recommended**	**AUCC**	**Credits**
NR 420	Integrated Ecosystem Management	X		4C	4
NR 421	Natural Resources Sampling	X			3
Minor Courses		X			6
The benchmark courses for the 10th semester are the remaining courses in the entire program of study.		X			
	Total Credits				13
	Program Total Credits:				120

Major in Restoration Ecology

The Major in Restoration Ecology emphasizes interdisciplinary study, research, and restoration of damaged, degraded or destroyed rangelands and forested ecosystems of the world. More specifically, this major focuses on the restoration of rangelands and forests for multiple uses. These uses include both consumptive and non-consumptive activities such as recreation, preservation of wildlife habitat, providing for aesthetic

beauty, livestock grazing, and timber production. Forests and rangelands occupy the vast majority of the earth's land surface and Colorado is an ideal setting for the study of restoration ecology with many different types of rangeland and forest ecosystems in close proximity.

Students in this program will gain the important knowledge and skills necessary to restore damaged ecosystems. They will learn how to manipulate soil, water, vegetation and animal resources in order to implement successful restoration for local, state and federal land management agencies as well as for a variety of private entities, landowners and non-governmental agencies. Students develop an in-depth understanding of basic plant and animal biology; a basic understanding of the physical sciences as they relate to restoration ecology; knowledge of important concepts of ecology and natural resources management; an understanding of economics related to evaluating alternatives; and analytical and decision-making skills. Students also develop communication, political and interpersonal skills to make their education effective. Examples of career opportunities include, but are not limited to restoration ecologist, soil conservationist, plant ecologist, riparian ecologist, researcher, commercial sales and service representative, consultants, and mine reclamation specialist.

Requirements Effective Fall 2019

Freshman

		AUCC	Credits
BZ 120	Principles of Plant Biology (GT-SC1)	3A	4
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
NR 193	FRS First Semester Seminar		1
Select 3 credits from the following:			3
MATH 117	College Algebra in Context I (GT-MA1)	1B	
MATH 118	College Algebra in Context II (GT-MA1)	1B	
MATH 125	Numerical Trigonometry (GT-MA1)	1B	
MATH 141[1]	Calculus in Management Sciences (GT-MA1)	1B	
Arts and Humanities		3B	6
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
	Total Credits		28

Sophomore

BZ 223	Plant Identification		3
RS 300	Rangeland Conservation and Stewardship		3
SOCR 240	Introductory Soil Science		4
SPCM 200	Public Speaking		3
Select one course from the following:			3
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	
ECON 202	Principles of Microeconomics (GT-SS1)	3C	
Select one course from the following:			3
FW 104	Wildlife Ecology and Conservation (GT-SC2)	3A	
NR 300	Biological Diversity		
Select one course from the following:			3
LAND 220/LIFE 220	Fundamentals of Ecology (GT-SC2)	3A	
LIFE 320	Ecology		
Select one course from the following:			3
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
Electives			4
	Total Credits		29

Summer

NR 220	Natural Resource Ecology and Measurements	5
	Total Credits	5

Junior

BSPM 308	Ecology and Management of Weeds		3
F 310/RS 310	Forest and Rangeland Ecogeography		3
F 311	Forest Ecology		3
GR 304/WR 304	Sustainable Watersheds	3A	3
NR 320	Natural Resources History and Policy		3
RS 312	Rangeland Plant Identification Lab		1
RS 378	Disturbance Ecology		2
Select two courses from the following:			4-7
BZ 440	Plant Physiology		
SOCR 341	Microbiology for Sustainable Agriculture		
SOCR 350	Soil Fertility Management		
SOCR 440	Pedology		
SOCR 442	Forest and Range Soils		
SOCR 455	Soil Microbiology		
SOCR 456	Soil Microbiology Laboratory		
SOCR 467	Soil and Environmental Chemistry		
SOCR 470	Soil Physics		
SOCR 471	Soil Physics Laboratory		
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
Select one course from the following:			4
NR 319	Geospatial Applications in Natural Resources		
NR 322	Introduction to Geographic Information Systems		
	Total Credits		29-32

Senior

NR 479	Restoration Case Studies	4C	2
RS 432	Rangeland Measurements and Monitoring		2
RS 452	Rangeland Herbivore Ecology and Management	4B	3
RS 478	Ecological Restoration	4A	3
SOCR 410	Seed Processes: Storage and Deterioration		1
SOCR 412	Seed Processes: Separation and Conditioning		1
Select one course from the following:			3-4
BZ 450	Plant Ecology		
BZ 471	Stream Biology and Ecology		
Select one course from the following:			3
F 324	Fire Effects and Adaptations		
F 325	Silviculture		
F 326	Wildland Fire Behavior and Management		
F 425	Advanced Wildland Fire Behavior and Management		
NR 326	Forest Vegetation Management		
Electives[2]			5-9
	Total Credits		23-27
	Program Total Credits:		120

[1] Students planning to take LIFE 320 in the sophomore year should take MATH 141 in the freshman year.

[2] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 120	Principles of Plant Biology (GT-SC1)			3A	4
NR 193	FRS First Semester Seminar				1
Select 3 credits from the following:		X			3
MATH 117	College Algebra in Context I (GT-MA1)			1B	
MATH 118	College Algebra in Context II (GT-MA1)			1B	
MATH 125	Numerical Trigonometry (GT-MA1)			1B	
MATH 141	Calculus in Management Sciences (GT-MA1)			1B	
Arts and Humanities				3B	3
Historical Perspectives				3D	3
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	X		3A	1
CO 150	College Composition (GT-CO2)	X		1A	3
Arts and Humanities				3B	3
Diversity and Global Awareness				3E	3
AUCC 1B (Quantitative Reasoning) must be completed by the end of Semester 2.		X			
	Total Credits				14

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 223	Plant Identification				3
RS 300	Rangeland Conservation and Stewardship	X			3
Select one course from the following:		X			3
LAND 220/ LIFE 220	Fundamentals of Ecology (GT-SC2)			3A	
LIFE 320	Ecology				
Electives					4
	Total Credits				13
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
SOCR 240	Introductory Soil Science				4
SPCM 200	Public Speaking				3
Select one course from the following:		X			3
AREC 202	Agricultural and Resource Economics (GT-SS1)			3C	
ECON 202	Principles of Microeconomics (GT-SS1)			3C	
Select one course from the following:					3
FW 104	Wildlife Ecology and Conservation (GT-SC2)			3A	
NR 300	Biological Diversity				
Select one course from the following:		X			3
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
	Total Credits				16
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
NR 220	Natural Resource Ecology and Measurements	X			5
	Total Credits				5

Junior

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
BSPM 308	Ecology and Management of Weeds				3

F 310/RS 310	Forest and Rangeland Ecogeography		X		3
F 311	Forest Ecology				3
RS 312	Rangeland Plant Identification Lab		X		1
Select one course from the following:					4
NR 319	Geospatial Applications in Natural Resources				
NR 322	Introduction to Geographic Information Systems				
	Total Credits				14
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
GR 304/WR 304	Sustainable Watersheds			3A	3
NR 320	Natural Resources History and Policy		X		3
RS 378	Disturbance Ecology				2
Select two courses from the following:					4-7
BZ 440	Plant Physiology				
SOCR 341	Microbiology for Sustainable Agriculture				
SOCR 350	Soil Fertility Management				
SOCR 440	Pedology				
SOCR 442	Forest and Range Soils				
SOCR 455	Soil Microbiology				
SOCR 456	Soil Microbiology Laboratory				
SOCR 467	Soil and Environmental Chemistry				
SOCR 470	Soil Physics				
SOCR 471	Soil Physics Laboratory				
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
	Total Credits				15-18
Senior					
Semester 9		**Critical**	**Recommended**	**AUCC**	**Credits**
NR 479	Restoration Case Studies		X	4C	2
RS 432	Rangeland Measurements and Monitoring		X		2
SOCR 410	Seed Processes: Storage and Deterioration				1
SOCR 412	Seed Processes: Separation and Conditioning				1
Select one course from the following:					3-4
BZ 450	Plant Ecology				
BZ 471	Stream Biology and Ecology				
Electives					2-6
	Total Credits				11-15
Semester 10		**Critical**	**Recommended**	**AUCC**	**Credits**
RS 452	Rangeland Herbivore Ecology and Management		X	4B	3
RS 478	Ecological Restoration		X	4A	3
Select one courses from the following:			X		3
F 324	Fire Effects and Adaptations				
F 325	Silviculture				
F 326	Wildland Fire Behavior and Management				
F 425	Advanced Wildland Fire Behavior and Management				
NR 326	Forest Vegetation Management				
Electives			X		3

The benchmark courses for the 10th semester are the remaining courses in the entire program of study.	X	
	Total Credits	12
	Program Total Credits:	120

Minor in Ecological Restoration

The minor in Ecological Restoration allows students in related majors to gain knowledge of the science and art of restoring ecosystems. This background is especially valuable to students who will be working in the various natural resource management fields. Since the prevalence of damaged, degraded or destroyed ecosystems is likely to increase in the future, restoration will be imperative for transforming these lands to once again provide ecosystem services.

Students are required to take NR 479: Restoration Case Studies, which includes a required field trip one week prior to the first day of the fall semester.

To get more information about this minor or to officially declare it, please visit warnercnr.colostate.edu/frs/undergraduate-program/advising/ (https://warnercnr.colostate.edu/frs/undergraduate-program/advising) to make an appointment with an advisor.

Forest and Rangeland Stewardship Department
Forestry Building, Office 123
970.491.6911

Requirements Effective Spring 2013

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Second Year		Credits
NR 300	Biological Diversity	3
RS 300	Rangeland Conservation and Stewardship	3
	Total Credits	6
Third Year		
BSPM 308	Ecology and Management of Weeds	3
Select two courses from the following:		6
F 311	Forest Ecology	
F 325	Silviculture	
FW 260	Principles of Wildlife Management	
LAND 444	Ecology of Landscapes	
NR 326	Forest Vegetation Management	
WR 304/GR 304	Sustainable Watersheds	
F 324	Fire Effects and Adaptations	3
	Total Credits	12
Fourth Year		
NR 479	Restoration Case Studies	2
RS 478	Ecological Restoration	3
	Total Credits	5
	Program Total Credits:	23

Minor in Forestry

The minor in Forestry provides students with the opportunity to obtain exposure to forest sciences. It provides insight into the management of forested lands and is particularly appropriate for students majoring in other natural resource disciplines or natural sciences.

To get more information about this minor or to officially declare it, please visit warnercnr.colostate.edu/frs/undergraduate-program/advising/ (https://warnercnr.colostate.edu/frs/undergraduate-program/advising) to make an appointment with an advisor.

Forest and Rangeland Stewardship Department
Forestry Building, Office 123
970.491.6911

Requirements Effective Fall 2015

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Select one course from the following:		3-4
BSPM 365	Integrated Tree Health Management	
F 326	Wildland Fire Behavior and Management	
F 310/RS 310	Forest and Rangeland Ecogeography	3
F 311	Forest Ecology	3
F 312	Dendrology Lab [1]	1
F 321	Forest Biometry	3
F 325	Silviculture	3
F 330	Timber Harvesting and the Environment	3
F 421	Forest Stand Management	4
NR 319	Geospatial Applications in Natural Resources	4
Program Total Credits:		27-28

[1] F 312 must be taken concurrently with F 310/RS 310.

Minor in Range Ecology

The minor in Range Ecology provides an academic background for students interested in wildlife habitat, integrated land management, ranch management, applied ecology, and international development of

arid lands. The minor provides additional flexibility for students who have a liberal arts or international education goal, but would like to increase their employment potential in an applied area. A minimum of 12 credits in the minor must be from Rangeland Ecosystem Science (RS) courses.

To get more information about this minor or to officially declare it, please visit https://warnercnr.colostate.edu/frs/undergraduate-program/advising/ to make an appointment with an advisor.

Forest and Rangeland Stewardship Department
Forestry Building, Office 123
970.491.6911

Requirements Effective Spring 2014

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Lower Division		
Select a minimum of 9 credits from the following: [1]		9
BZ 223	Plant Identification	
LIFE 320	Ecology	
NR 220	Natural Resource Ecology and Measurements	
SOCR 240	Introductory Soil Science	
Upper Division		
F 310/RS 310	Forest and Rangeland Ecogeography	3
RS 300	Rangeland Conservation and Stewardship	3
RS 312	Rangeland Plant Identification Lab	1
RS 432	Rangeland Measurements and Monitoring	2
Select a minimum of 4 credits from a minimum of 2 courses from the following:		4
RS 329	Rangeland Assessment	
RS 351	Wildland Ecosystems in a Changing World	
RS 452	Rangeland Herbivore Ecology and Management	
RS 478	Ecological Restoration	
Program Total Credits:		22

[1] SOCR 240 and one of BZ 223 or NR 220 are recommended.

Minor in Spatial Information Management

Students are no longer being accepted into this minor. Students interested in this area of study, please see the minor in Geospatial Information Science for Natural Resources.

Students currently enrolled in the Spatial Information Management (SIM) minor will continue to be advised by an advisor in the Forest and Rangeland Stewardship Department.

Requirements Effective Fall 2007

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Lower Division		
CS 150	Culture and Coding (GT-AH3)	3
Lower Division or Upper Division		
Select a minimum of 5 credits from the following: [1]		5
CS 200	Algorithms and Data Structures	
ESS 210/GR 210	Physical Geography	
GR 100	Introduction to Geography (GT-SS2)	
NR 401	Techniques in Public Relations	
NR 440	Applications in Conservation Planning	
NR 493	Seminar on GIS and Remote Sensing Applications [2]	
NR 495	Independent Study	
STAT 305	Sampling Techniques	
STAT 312	Statistics for Behavioral Sciences II	
STAT 460	Applied Multivariate Analysis	
Upper Division		
NR 322	Introduction to Geographic Information Systems	4
NR 323/GR 323	Remote Sensing and Image Interpretation	3
NR 422	GIS Applications in Natural Resource Management	4
NR 423	Applications of Global Positioning Systems	1
NR 493	Seminar on GIS and Remote Sensing Applications [2]	1
Program Total Credits:		21

[1] At least one credit must be NR 493 or NR 495.

[2] May be repeated as an elective.

Master of Natural Resources Stewardship, Plan C, Ecological Restoration Specialization

This Master of Natural Resources Stewardship (M.N.R.S.) is a coursework-intensive professional master's degree. It provides students with a broad natural resources education and specialized resource management expertise in ecological restoration.

Requirements Effective Fall 2017

Code	Title	Credits
Core Courses		
Select one course from the following:		3

F 520	Advanced Quantitative Methods in Forestry I	
NR 566	Natural Resource Inventory and Data Analysis	
RS 532	Rangeland Ecosystem Sampling	
NR 444	Fire Economics and Policy	3
or NR 568	Economics of Forests, Restoration and Fire	
NR 567	Analysis of Environmental Impact	3
NR 578	Ecology of Disturbed Lands	3
NR 693	Natural Resources Stewardship Seminar	2
Ecological Restoration Specialization		
Select a minimum 9 credits from the following:		9
BSPM 551	Advanced Integrated Pest Management	
BSPM 556	Biological Control of Plant Pests	
BZ 572	Phytoremediation	
CIVE 613	River Restoration Design	
ECOL 505	Foundations of Ecology	
ESS 575	Models for Ecological Data	
ESS 660	Biogeochemical Cycling in Ecosystems	
FW 544	Ecotoxicology	
NR 577	Wetland Ecology and Restoration	
NR 678	Advanced Ecological Restoration	
SOCR 441	Soil Ecology	
SOCR 567	Environmental Soil Chemistry	
No more than one of the following three courses may count towards the 9 credits above:		
F 624	Fire Ecology	
NR 552	Ecology of Military Lands	
RS 565	Riparian Ecology and Management	
Electives [1]		7
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

[1] Select courses with approval of advisor and graduate committee.

Master of Natural Resources Stewardship, Plan C, Forest Sciences Specialization

The Master of Natural Resources Stewardship (M.N.R.S.) is a coursework-intensive professional master's degree. It provides students with a broad natural resources education and specialized resource management expertise in forest sciences.

Requirements Effective Fall 2018

Code	Title	Credits
Core Courses		
Select one course from the following:		3
F 520	Advanced Quantitative Methods in Forestry I	
NR 566	Natural Resource Inventory and Data Analysis	
RS 532	Rangeland Ecosystem Sampling	
NR 444	Fire Economics and Policy	3
or NR 568	Economics of Forests, Restoration and Fire	
NR 567	Analysis of Environmental Impact	3
NR 578	Ecology of Disturbed Lands	3
NR 693	Natural Resources Stewardship Seminar	2
Forest Sciences Specialization		
Select a minimum of 9 credits from the following:		9
BSPM 521	Forest Health Issues	
F 421	Forest Stand Management	
F 466/HORT 466	Urban and Community Forestry	
F 510	Ecophysiology of Trees	
F 521	Advanced Quantitative Methods in Forestry II	
F 524	Forest Fire Meteorology and Behavior	
F 525	Silvicultural Practices	
F 526	Multiple Resources Silviculture	
F 624	Fire Ecology	
F 625/ESS 625	Ecology of Forest Production	
F 721	Forest Policy	
GR 448	Forest Biogeography and Climate Change	
SOCR 442	Forest and Range Soils	
Electives [1]		7
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

[1] Select courses with approval of advisor and graduate committee.

Master of Natural Resources Stewardship, Plan C, Rangeland Ecology and Management Specialization

This Master of Natural Resources Stewardship (M.N.R.S.) is a coursework-intensive professional master's degree. It provides students with a broad natural resources education and specialized resource management expertise in rangeland ecology and management.

Requirements Effective Fall 2019

Code	Title	Credits
Core Courses		
Select one course from the following:		3
F 520	Advanced Quantitative Methods in Forestry I	
NR 566	Natural Resource Inventory and Data Analysis	
RS 532	Rangeland Ecosystem Sampling	
NR 444	Fire Economics and Policy	3
or NR 568	Economics of Forests, Restoration and Fire	

NR 567	Analysis of Environmental Impact	3
NR 578	Ecology of Disturbed Lands	3
NR 693	Natural Resources Stewardship Seminar	2
Rangeland Ecology and Management Specialization		
Select a minimum 9 credits from the following:		9
NR 625	Community-Based Natural Resource Management	
RS 452	Rangeland Herbivore Ecology and Management	
RS 500	Advanced Rangeland Management	
RS 531	World Grassland Ecogeography	
RS 552	Range Animal Production and Management	
RS 565	Riparian Ecology and Management	
RS 630	Ecology of Grasslands and Shrublands	
No more than two of the following five courses may count towards the 9 credits above:		
SOCR 440	Pedology	
SOCR 442	Forest and Range Soils	
SOCR 455	Soil Microbiology	
SOCR 540	Soil-Plant-Nutrient Relationships	
SOCR 571	Foundations of Soil Science	
Electives [1]		7
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

[1] Select courses with approval of advisor and graduate committee.

Department of Geosciences

Offices in Michael Smith Natural Resources Building, Room 322
(970) 491-7826
warnercnr.colostate.edu/geosciences-home (http://warnercnr.colostate.edu/geosciences-home)

Richard C. Aster, Department Head

Undergraduate Majors

- Major in Geology
  - Environmental Geology Concentration
  - Geology Concentration
  - Geophysics Concentration
  - Hydrogeology Concentration

Minor

- Minor in Geology

Graduate

Graduate Programs in Geosciences

The department offers graduate programs leading to the Master of Science and Doctor of Philosophy degrees in Geosciences. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Geosciences. (http://warnercnr.colostate.edu/geosciences-home)

Master's Programs

- Master of Science in Geosciences, Plan A
- Master of Science in Geosciences, Plan B*

Ph.D.

- Ph.D. in Geosciences

* Please see department for program of study.

Courses

Geosciences (GEOL)

GEOL 110 Introduction to Geology-Parks and Monuments (GT-SC2) Credits: 3 (3-0-0)
Course Description: Understanding the physical processes, natural hazards, earth materials, and natural resources of planet Earth, and the relationship of humans to this planet. Outstanding examples of natural features from national and local parks and monuments, using narrated high-resolution (including aerial) video.
Prerequisite: None.
Registration Information: This is a partial semester course. Offered as an online course only. Credit allowed for only one of the following: GEOL 110, GEOL 120, GEOL 122, GEOL 124, or GEOL 150.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

GEOL 120 Exploring Earth - Physical Geology (GT-SC2) Credits: 3 (3-0-0)
Course Description: Develops scientific understanding through introduction to earth processes, materials, resources, and hazards.
Prerequisite: None.
Registration Information: Credit allowed for only one of the following: GEOL 110, GEOL 120, GEOL 122, GEOL 124, or GEOL 150.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

GEOL 121 Introductory Geology Laboratory (GT-SC1) Credit: 1 (0-2-0)
Course Description: Laboratory applications of introductory geology.
Prerequisite: GEOL 110, may be taken concurrently or GEOL 120, may be taken concurrently or GEOL 122, may be taken concurrently or GEOL 124, may be taken concurrently.
Registration Information: Required field trips. Credit not allowed for both GEOL 121 and GEOL 150.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

GEOL 122 The Blue Planet - Geology of Our Environment (GT-SC2) Credits: 3 (3-0-0)
Course Description: Develops scientific understanding through introduction to geological processes, natural hazards, earth resources, and their impacts on society.
Prerequisite: None.
Registration Information: Credit allowed for only one of the following: GEOL 110, GEOL 120, GEOL 122, GEOL 124, or GEOL 150.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

GEOL 124 Geology of Natural Resources (GT-SC2) Credits: 3 (3-0-0)
Course Description: Develops scientific understanding through introduction to the origin, use and environmental impact of geological resources extracted from the Earth.
Prerequisite: None.
Registration Information: Credit allowed for only one of the following: GEOL 110, GEOL 120, GEOL 122, GEOL 124, GEOL 150.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

GEOL 150 Physical Geology for Scientists and Engineers Credits: 4 (3-3-0)
Course Description: Earth materials, structures, and surface processes. Geologic analysis using field data, topographic and geologic maps, and aerial photos.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: GEOL 110, GEOL 120, GEOL 122, GEOL 124, GEOL 150. Credit not allowed for both GEOL 121 and GEOL 150. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A.

GEOL 154 Historical and Analytical Geology Credits: 4 (3-3-0)
Course Description: Physical and biological history of Earth with introduction to laboratory, computer, and field techniques.
Prerequisite: GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

GEOL 192 New Student Seminar--Exploring Geosciences Credit: 1 (0-0-1)
Course Description: Geosciences as a field of study; exploration of the major and career paths; strategies for academic success and beyond.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Freshman and sophomore geology majors only. This is a partial semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 201 Field Geology of the Colorado Front Range Credit: 1 (0-2-0)
Course Description: Geology of the Rocky Mountain Front Range taught primarily through field trips and field exercises, emphasizing hands-on experiences. Learn to make basic field observations and measurements on a variety of rock types and surficial features.
Prerequisite: GEOL 121 or GEOL 150.
Registration Information: Freshman, sophomore or junior standing only. Geology majors or minors only. This is a partial semester course. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 232 Mineralogy Credits: 3 (2-3-0)
Course Description: Crystal structures, crystal chemistry, rock-forming and economically important minerals, crystal growth and defects, physical properties of minerals.
Prerequisite: (CHEM 111, may be taken concurrently) and (GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150) and (MATH 124 or MATH 155 or MATH 160 or MATH 161 or MATH 255).
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 250 The Solid Earth Credits: 3 (2-2-0)
Course Description: Structure, flow, and composition of the deep Earth; introduction to geophysics; tests of plate tectonic theory.
Prerequisite: (GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150) and (MATH 124) and (MATH 125 or MATH 155 or MATH 160 or MATH 161 or MATH 255).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 332 Optical Mineralogy Credits: 2 (1-2-0)
Course Description: Fundamental light optics in crystalline substances; optical indicatrix; isotropic, uniaxial, and biaxial substances; common minerals in thin section.
Prerequisite: GEOL 232, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 342 Paleontology Credits: 3 (2-3-0)
Course Description: Description of invertebrates, vertebrates, and plants and their distribution in earth history.
Prerequisite: GEOL 154.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 344 Stratigraphy and Sedimentology Credits: 4 (3-3-0)
Course Description: Description, genesis, correlation, and age of sediments, sedimentary rocks and layered rock sequences.
Prerequisite: GEOL 154 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

GEOL 364 Igneous and Metamorphic Petrology Credits: 4 (3-3-0)
Course Description: Identification, classification, geochemistry, petrogenesis of igneous and metamorphic rocks; textural interpretation of hand samples and thin sections.
Prerequisite: GEOL 232 with a minimum grade of C-.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 366 Sedimentary Petrology and Geochemistry Credits: 4 (3-3-0)
Course Description: Composition, identification, and classification of sedimentary rocks; geochemical processes affecting sedimentary rocks and surficial deposits.
Prerequisite: CHEM 113 and GEOL 154 and GEOL 364.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 372 Structural Geology Credits: 4 (3-3-0)
Course Description: Stress and strain in rocks, geometry of deformed rocks, and tectonic principles.
Prerequisite: (GEOL 154, may be taken concurrently) and (MATH 125 or MATH 155 or MATH 160 or MATH 161 or MATH 255) and (PH 121, may be taken concurrently or PH 141, may be taken concurrently).
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

GEOL 376 Geologic Field Methods Credits: 3 (1-4-0)
Course Description: Scientific, surveying, and mapping methods used in geologic field studies; proposal, map, and report preparation.
Prerequisite: GEOL 344 and GEOL 372, may be taken concurrently.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description: Instruction and practice in laboratory instruction in lower-division departmental courses.
Prerequisite: None.
Registration Information: Written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 401 Geology of the Rocky Mountain Region Credit: 1 (0-3-0)
Course Description: Field course; geology of the local Rocky Mountain region.
Prerequisite: GEOL 154.
Registration Information: May be taken up to 3 times for credit. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 424 Modern Gas and Oil Credits: 3 (3-0-0)
Also Offered As: CIVE 424.
Course Description: Introduction to opportunities and challenges of modern gas and oil development, including synergies with other energy sources.
Prerequisite: None.
Registration Information: Junior standing or above; completion of AUCC category 3A. Credit not allowed for both GEOL 424 and CIVE 424.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 436 Geology Summer Field Course Credits: 6 (0-18-0)
Course Description: Geologic mapping, measuring sections, interpreting geologic history in Colorado. Required comprehensive reports, geologic maps, and cross sections.
Prerequisite: GEOL 364 and GEOL 376.
Registration Information: Required field trips.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 442 Applied Geophysics Credits: 4 (3-2-0)
Course Description: Geophysical exploration methods emphasizing hydrocarbon and mineral exploration, hydrogeology, and engineering applications.
Prerequisite: GEOL 372 and MATH 161 and PH 142.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 446 Environmental Geology Credits: 3 (3-0-0)
Course Description: Geology applied to environmental problems.
Prerequisite: (CHEM 111) and (GEOL 110 or GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150) and (MATH 155 or MATH 160) and (PH 121 or PH 141).
Registration Information: Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 447 Mineral Deposits Credits: 3 (2-3-0)
Course Description: Occurrence, origin, and exploration of economic metallic mineral deposits.
Prerequisite: GEOL 366, may be taken concurrently and GEOL 372.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 452 Hydrogeology Credits: 4 (3-3-0)
Course Description: Interaction of water and geologic materials; surface and groundwater; quantitative analysis and geologic effects on quality and flow of groundwater.
Prerequisite: (GEOL 110 or GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150 or GR 210) and (MATH 161 or MATH 255) and (PH 121 or PH 141).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 454 Geomorphology Credits: 4 (3-3-0)
Course Description: Origin of landforms; morphology and processes.
Prerequisite: (GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150 or GR 210) and (STAT 301 or STAT 307 or STAT 315).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 492 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 494A Independent Study: Environmental/Engineering Geology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 494B Independent Study: Geomorphology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 494C Independent Study: Mineralogy/Petrology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 494D Independent Study: Geoscience Field Studies Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 494E Independent Study: Paleontology/Stratigraphy Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 494F Independent Study: Sedimentology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 494G Independent Study: Structural Geology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 494I Independent Study: Geophysics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 498 Research Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 530 Advanced Petrology Credits: 3 (2-2-0)
Course Description: Igneous and metamorphic processes and products explored through thermodynamics, phase equilibria, and textural analysis.
Prerequisite: GEOL 364.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 535 Microtectonics Credits: 3 (2-2-0)
Course Description: Focuses on microstructural features, processes, mechanisms, and measurements. Structurally interesting rocks especially on the microscale, development of structural fabrics and reactivation, analysis of fault rocks and kinematic indicators especially in fault and shear zones, stress measurement through microstructural indicators, shock deformation/metamorphism in impact structures, chemical changes with deformation, deformation mechanisms, and isotopic investigation of deformation.
Prerequisite: GEOL 332 and GEOL 372.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both GEOL 535 and GEOL 580A3.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 540 Petrophysics and Well Log Interpretation Credits: 3 (3-0-0)
Course Description: Petrophysics and well log interpretation as it relates to hydrocarbon exploration and production. Wireline logs, calculating rock and fluid properties from log measurements, and recognizing zones of potential hydrocarbons. Map and calculate volumes of hydrocarbons in the subsurface using the analysis of petrophysical properties from wireline well logs.
Prerequisite: GEOL 344 and GEOL 366 and PH 142.
Registration Information: Senior or graduate standing in Geosciences, Engineering, or Physics. Credit not allowed for both GEOL 540 and GEOL 581A4.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 541 Geostatistics Credits: 2 (2-0-0)
Course Description: Geostatistics for earth science applications. Aquifer and reservoir heterogeneity, spatial data analysis, variogram modeling, spatial estimation, kriging, and geostatistical simulation.
Prerequisite: (GEOL 150) and (MATH 161 or MATH 255) and (STAT 301 or STAT 315).
Registration Information: Credit not allowed for both GEOL 541 and GEOL 581A5.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 543 Carbonate Sedimentology Credits: 2 (1-3-0)
Course Description: Recognition of carbonate grains, cement types, and carbonate depositional environments, and their response to sea-level changes.
Prerequisite: GEOL 344.
Registration Information: Junior standing.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 545 Shale Sedimentology Credits: 2 (2-0-0)
Course Description: Recognize and interpret mud and mudstone facies and their depositional environments, as well as reconstructing their diagenetic history. Observe stacking patterns and reconstruct sea-level fluctuations from mudstone/shale successions and their impact on the 3D distribution of mudstones/shales.
Prerequisite: GEOL 344.
Registration Information: Junior standing. Credit not allowed for both GEOL 545 and GEOL 580A6.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 546 Sedimentary Basin Analysis Credits: 4 (3-3-0)
Course Description: Sedimentologic data base, correlation, mapping, facies models, classification, and evolution of sedimentary basins. Applications to petroleum exploration.
Prerequisite: GEOL 344.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 547 Ore Deposit Geochemistry Credits: 3 (3-0-0)
Course Description: Geochemical techniques applied to the geology, exploration, and environmental analysis of ore deposits.
Prerequisite: GEOL 447.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 551 Groundwater Modeling Credits: 3 (3-0-0)
Course Description: Groundwater modeling from a geologic perspective. Conceptual models and computer modeling of groundwater flow and solute transport.
Prerequisite: CIVE 423 or GEOL 452.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 552 Advanced Topics in Hydrogeology Credits: Var[2-3] (0-0-0)
Course Description: Current literature, new techniques, legislative and political developments in hydrogeology, and appropriate case histories.
Prerequisite: GEOL 452.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 553 Use of Tracers in Hydrogeology Credits: 3 (3-0-0)
Course Description: Use of environmental and applied tracers in hydrogeology to understand groundwater flow and transport properties. Environmental tracers are used to determine groundwater age and recharge rates, ground/water surface water interactions and to estimate the average temperature when the groundwater was recharged. Applied tracers are used to determine flow and transport processes in porous media to understand controls on solute transport, especially related to contaminant movement.
Prerequisite: CIVE 423 or GEOL 452.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 562 Statistical Data Analysis in Earth Resources Credits: 3 (3-0-0)
Course Description: Statistical parameters, sequential data, map analysis, and multivariate data.
Prerequisite: STAT 340 and STAT 350.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 565 Petroleum Geochemistry and Geology Credits: 3 (3-0-0)
Course Description: Geochemistry and geology of hydrocarbon generation, migration, and accumulation. Applications to hydrocarbon exploration.
Prerequisite: GEOL 366 and GEOL 372.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 567 Sedimentary Geochemistry Credits: 3 (3-0-0)
Course Description: Geochemical processes affecting sedimentary rocks and other surficial materials.
Prerequisite: GEOL 366.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 570 Plate Tectonics Credits: 3 (3-0-0)
Course Description: Examination of the historical development of plate tectonic theory and its application to understanding geological processes.
Prerequisite: GEOL 364 and GEOL 372 and PH 142.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 572 Advanced Structural Geology Credits: 4 (3-3-0)
Course Description: Rheology, deformation mechanisms, structural associations and advanced methods of structural analysis.
Prerequisite: GEOL 436.
Registration Information: Must register for lecture and laboratory. Required field trips. Graduate standing can substitute for prerequisite course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 574 Geodynamics Credits: 3 (3-0-0)
Course Description: Continuum mechanics applied to understanding of deformation within the earth. Stress and strain as tensors, with application to various geological settings; plate flexure and isostasy; steady state and time dependent heat conduction in a geological context; fluid mechanics of the earth.
Prerequisite: GEOL 250 and MATH 261 and PH 141.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 575 Subsurface Geophysical Mapping Credits: 4 (3-2-0)
Course Description: Advanced techniques for creating subsurface geological maps based on seismic reflection and well log data.
Prerequisite: GEOL 344 and GEOL 372 and MATH 161 and PH 142.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 576 Exploration Seismology Credits: 3 (3-0-0)
Course Description: Seismic exploration methods, including theory, data acquisition, and data processing.
Prerequisite: GEOL 344 and GEOL 372 and MATH 161 and PH 142.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 578 Global Seismology Credits: 4 (3-2-0)
Course Description: Quantitative introduction to seismology; basics of seismic data analysis; fundamentals of wave propagation; earthquakes; structure of the Earth.
Prerequisite: PH 142 and MATH 261.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 579 Solid Earth Inverse Methods and Practices Credits: 3 (3-0-0)
Course Description: Inverse and parameter estimation theory and applications in the earth sciences in the context of Frequentist and Bayesian approaches to estimating and interpreting data-driven models. Review of linear algebra, statistical, and other mathematical underpinnings, and of basic MATLAB programming. Linear and nonlinear inverse problems. Nonuniqueness, ill-posedness, rank-deficiency. Regularization methods for geophysical problems.
Prerequisite: (MATH 161 or MATH 255) and (MATH 229) and (STAT 301 or STAT 315).
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 601 Professional Development for Geoscientists Credit: 1 (0-0-1)
Course Description: The conduct of science, role of scientific publications, publication process, proposal writing, responsible conduct of research, and professional ethics.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 652 Fluvial Geomorphology Credits: 3 (3-0-0)
Course Description: Geomorphology of channels, slopes, and drainage systems.
Prerequisite: GEOL 120.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

GEOL 662 Field Geomorphology Credits: 2 (1-2-0)
Course Description: Field-based geomorphologic analysis of landscape forms and processes. Apply appropriate field techniques to address relevant research hypotheses related to advanced subject matter in geomorphology. Analyze and interpret field-based data, orally present findings in a symposium setting, and discuss and critically evaluate relevant literature.
Prerequisite: GEOL 454.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. This is a partial semester course. Required field trips. Credit not allowed for both GEOL 662 and GEOL 680A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 684 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 692 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Geology

The Major in Geology provides a rigorous academic and practical basis for diverse professional geosciences careers that include private and public sector water, energy, mineral and other natural resources, geologic hazards, resources and environmental management, and education. The major also provides a solid science and general education background for subsequent graduate training in specialized fields, including hydrology, geophysics, environmental geology, economic geology, resources management, public policy, and many other areas.

The Geology curriculum encompasses a strong geosciences education within the broader framework of a liberal education. Emphasis is placed on integrating field studies in the Colorado Rocky Mountains and elsewhere with on-campus classroom and laboratory work. In addition to obtaining a solid core in geosciences, students complete substantial course work in math, physical sciences, communications, and the liberal arts that lead to effective quantitative, decision making, and communications skills. Four concentrations are offered to address specialized career interests: Geology, Environmental Geology, Geophysics, and Hydrogeology.

Learning Outcomes

Students will demonstrate:

- A solid foundation in the physical sciences and broad understanding of geological processes
- Application of field and classroom scientific reasoning skills to data analysis and problem solving in the geosciences, both individually and in teams
- An awareness of sociopolitical, economic factors, and ethical practices and standards that apply to careers in geosciences

Potential Occupations

Many opportunities exist for geology graduates in the private and public sectors in a wide range of societally important and satisfying careers. Energy resources, water resource and management, industry service, mining , power generation, computer software, and many other companies employ geoscientists in exploration, development, production, communications, management, and research. Federal agencies employ geoscientists for resource mapping and assessment, oil-gas-coal-groundwater-geothermal resource evaluation and development, resource and environmental water studies, leasing and conservation, resource restoration and rehabilitation, hazards assessment and mitigation, regulatory activities, national defense, and research. State and local governments also employ geoscientists for geologic and soils mapping and resource management, natural resource and hazards evaluation and mitigation, public information activities, consulting, management, and communications. Environmental, engineering, and groundwater firms further employ geoscientists for mapping, restoration and rehabilitation planning, monitoring and evaluation of geologic hazards, and in site feasibility evaluation and implementation of construction projects, water management and reuse evaluation, groundwater pollution assessment and remediation, and contaminant prevention. Schools, colleges, universities, national laboratories, and private research firms employ geoscientists in a variety of teaching, research, and administrative positions.

Participation in internships, volunteer activities, and cooperative education and public outreach are highly recommended and supported by the department via faculty, staff, and alumni mentoring to enhance

training and career opportunities. Graduates who go on to pursue advanced degrees acquire a strong disciplinary base for diverse areas of graduate study, including environmental studies, energy, seismology, hydrology, meteorology, oceanography, and the space sciences. Geoscientists with advanced degrees can often more effectively attain management-level positions. Careers include, but are not limited to: educator, professor, environmental or geological entrepreneur or consultant, exploration professional geologist, petroleum geologist, environmental geologist, geophysicist, hydrologist, mining geologist, oceanographer, production geologist, researcher, resource evaluator, geobiologist, or seismologist. With additional training and diversification, geosciences graduates may also pursue associated careers in business, law, medicine, public policy, and other diverse professional fields. By obtaining teaching certification, graduates can become primary and secondary educators in earth sciences.

Concentrations

- Environmental Geology Concentration
- Geology Concentration
- Geophysics Concentration
- Hydrogeology Concentration

Major in Geology, Environmental Geology Concentration

Environmental Geology students develop expertise in surface and shallow subsurface processes that shape the Earth and provide critical soil and water resources and services for human and natural use. Graduates will be prepared for careers that address environmental implications of geological process and human activities on Earth. The curriculum emphasizes courses spanning the fundamentals of geology, surface, and shallow subsurface processes, field-based research methodologies, and environmental aspects of geology. The concentration empowers students to pursue positions with public, private, and nonprofit organizations that address environmental/natural resource management issues, regulatory agency compliance, hazard identification and mitigation, and fundamental scientific investigations that can inform natural resource policy and decision making that promise sound stewardship of Earth resources. The curriculum also provides a strong foundation for those planning to continue on to graduate studies in geosciences or other environmental disciplines.

Requirements
Effective Spring 2019

Freshman

		AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
GEOL 150[1]	Physical Geology for Scientists and Engineers	3A	4
GEOL 154	Historical and Analytical Geology		4
Select one course from the following:			3-4
MATH 159	One Year Calculus IB (GT-MA1)	1B	
MATH 160[2]	Calculus for Physical Scientists I (GT-MA1)	1B	
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
	Total Credits		28-29

Sophomore

CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
GEOL 232	Mineralogy		3
GEOL 344	Stratigraphy and Sedimentology	4A	4
GEOL 364	Igneous and Metamorphic Petrology	4B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
Select one course from the following:			5
PH 121	General Physics I (GT-SC1)	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	

Social and Behavioral Sciences		3C	3
	Total Credits		30
Junior			
GEOL 366	Sedimentary Petrology and Geochemistry	4A,4B	4
GEOL 372	Structural Geology	4B	4
GEOL 376	Geologic Field Methods	4A,4C	3
SOCR 240	Introductory Soil Science		4
Select one course from the following:			4
NR 319	Geospatial Applications in Natural Resources		
NR 322	Introduction to Geographic Information Systems		
Select one course from the following:			3-5
PH 122	General Physics II (GT-SC1)	3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	
SOCR 470	Soil Physics		
Select one course from the following:			3-4
MATH 340	Introduction to Ordinary Differential Equations		
STAT 301	Introduction to Statistical Methods		
STAT 315	Statistics for Engineers and Scientists		
Arts and Humanities		3B	3
	Total Credits		28-31
Summer			
GEOL 436	Geology Summer Field Course	4C	6
	Total Credits		6
Senior			
GEOL 446	Environmental Geology		3
GEOL 452	Hydrogeology		4
GEOL 454	Geomorphology		4
WR 416	Land Use Hydrology		3
Directed Technical Electives (See list below):			6
Electives[3]			4-8
	Total Credits		24-28
	Program Total Credits:		120

Directed Technical Electives

Code	Title	Credits
Select a minimum of 6 credits from a minimum of two courses:		
BZ 471 & BZ 472	Stream Biology and Ecology and Stream Biology and Ecology Laboratory	4
CIVE 322	Basic Hydrology	3
CIVE 413	Environmental River Mechanics	3
CIVE 440	Nonpoint Source Pollution	3
CIVE 455	Applications in Geotechnical Engineering	3
CIVE 538	Aqueous Chemistry	3
ECON 340/AREC 340	Introduction-Economics of Natural Resources	3
GEOL 342	Paleontology	3
GEOL 424/CIVE 424	Modern Gas and Oil	3
GEOL 442	Applied Geophysics	4
GEOL 447	Mineral Deposits	3
GEOL 498	Research [4]	1-6
GEOL 546	Sedimentary Basin Analysis	4
GEOL 551	Groundwater Modeling	3
GEOL 552	Advanced Topics in Hydrogeology	2-3
GEOL 553	Use of Tracers in Hydrogeology	3
GEOL 562	Statistical Data Analysis in Earth Resources	3
GR 410	Climate Change: Science, Policy, Implications	3
NR 323/GR 323	Remote Sensing and Image Interpretation [5]	3
NR 422	GIS Applications in Natural Resource Management [5]	4
PHIL 565	Seminar in Environmental Philosophy	3
POLS 361	U.S. Environmental Politics and Policy	3
SOC 461	Water, Society, and Environment	3
SOCR 440	Pedology	4
SOCR 467	Soil and Environmental Chemistry	3
SOCR 470	Soil Physics [6]	3

STAT 315	Statistics for Engineers and Scientists [7]	3
WR 418	Land Use and Water Quality	3
WR 474	Snow Hydrology	3
WR 524/CIVE 524	Modeling Watershed Hydrology	3

1 GEOL 120, GEOL 122, or GEOL 124 in combination with GEOL 121 may be substituted for GEOL 150.

2 MATH 160 is recommended.

3 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

4 A maximum of one credit may be counted toward Directed Technical Electives.

5 May only select one course from NR 323, GR 323, and NR 422 to fulfill the directed technical elective requirement.

6 May be selected as a Directed Technical Elective if not taken in the junior year to fulfill the physics requirement.

7 May be selected as a Directed Technical Elective if not taken in the junior year to fulfill the statistics requirement.

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
GEOL 150	Physical Geology for Scientists and Engineers	X		3A	4
Select one course from following:					3-4
MATH 159	One Year Calculus IB (GT-MA1)			1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)		X	1B	
Arts and Humanities				3B	3
	Total Credits				13-14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
GEOL 154	Historical and Analytical Geology	X			4
Diversity and Global Awareness				3E	3
Historical Perspectives				3D	3
CO 150 and MATH 159 or MATH 160 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II				3
CHEM 114	General Chemistry Lab II				1
GEOL 232	Mineralogy	X			3
GEOL 344	Stratigraphy and Sedimentology			4A	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)		X	1B	4
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
GEOL 364	Igneous and Metamorphic Petrology	X		4B	4
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
Select one course from the following:					5
PH 121	General Physics I (GT-SC1)		X	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)		X	3A	
Social and Behavioral Sciences				3C	3
CHEM 113 must be completed by the end of Semester 4.		X			
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
GEOL 366	Sedimentary Petrology and Geochemistry			4A,4B	4

SOCR 240	Introductory Soil Science				4
Select one course from the following:					3-5
PH 122	General Physics II (GT-SC1)			3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)			3A	
SOCR 470	Soil Physics				
Select one course from the following:					3-4
MATH 340	Introduction to Ordinary Differential Equations				
STAT 301	Introduction to Statistical Methods				
STAT 315	Statistics for Engineers and Scientists				
GEOL 344 and PH 121 or 141 must be completed by the end of Semester 5.		X			
	Total Credits				14-17
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
GEOL 372	Structural Geology	X		4B	4
GEOL 376	Geologic Field Methods	X		4A,4C	3
NR 319 or 322	Geospatial Applications in Natural Resources Introduction to Geographic Information Systems				4
Arts and Humanities				3B	3
MATH 161 and STAT 301 or MATH 340 or STAT 315 must be completed by the end of Semester 6.		X			
	Total Credits				14
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
GEOL 436	Geology Summer Field Course	X		4C	6
	Total Credits				6
Senior					
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
GEOL 452	Hydrogeology	X			4
WR 416	Land Use Hydrology	X			3
Directed Technical Elective (See Department List on Concentration Requirements tab)					3
Elective					2-4
GEOL 366 must be completed by the end of Semester 8.		X			
	Total Credits				12-14
Semester 9		**Critical**	**Recommended**	**AUCC**	**Credits**
GEOL 446	Environmental Geology	X			3
GEOL 454	Geomorphology	X			4
Directed Technical Elective (See Department List on Concentration Requirements tab)		X			3
Electives		X			2-4
The benchmark courses for the 9th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12-14
	Program Total Credits:				120

Major in Geology, Geology Concentration

The Geology concentration provides a comprehensive, broad-based education in geology, emphasizing a practical and field-oriented approach that is well-suited to professional employment as a geologist in the energy and mining industries, government agencies, consulting firms, resource management, and other geologic fields. The Geology concentration, combined with additional training, provides an excellent background for other diverse professions, including primary and secondary school teaching, science writing, specializing in environment and resource issues as a lawyer, and resource or hazards specialization in the construction, insurance, real estate, and securities fields. The Geology concentration provides students with an excellent background for subsequent graduate studies in the geosciences.

Requirements Effective Fall 2018

Freshman

		AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
GEOL 150[1]	Physical Geology for Scientists and Engineers	3A	4
GEOL 154	Historical and Analytical Geology		4
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
MATH 125	Numerical Trigonometry (GT-MA1)	1B	1
MATH 126	Analytic Trigonometry (GT-MA1)	1B	1
Select one course from the following:			3-4
MATH 159	One Year Calculus IB (GT-MA1)	1B	
MATH 160[2]	Calculus for Physical Scientists I (GT-MA1)	1B	
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
	Total Credits		28-29

Sophomore

CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
GEOL 232	Mineralogy		3
GEOL 250	The Solid Earth		3
GEOL 332	Optical Mineralogy		2
GEOL 364	Igneous and Metamorphic Petrology	4B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
Select one course from the following:			5
PH 121	General Physics I (GT-SC1)	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	
Social and Behavioral Sciences		3C	3
	Total Credits		31

Junior

GEOL 344	Stratigraphy and Sedimentology	4A	4
GEOL 372	Structural Geology	4B	4
GEOL 376	Geologic Field Methods	4A,4C	3
Select one course from the following:			4
NR 319	Geospatial Applications in Natural Resources		
NR 322	Introduction to Geographic Information Systems		
Select one course from the following:			5
PH 122	General Physics II (GT-SC1)	3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	
Select one course from the following:			3-4
MATH 340	Introduction to Ordinary Differential Equations		
STAT 301	Introduction to Statistical Methods		
STAT 315	Statistics for Engineers and Scientists		
Arts and Humanities		3B	3

Historical Perspectives		3D	3
	Total Credits		29-30
Summer			
GEOL 436	Geology Summer Field Course	4C	6
	Total Credits		6
Senior			
GEOL 366	Sedimentary Petrology and Geochemistry	4A,4B	4
GEOL 454	Geomorphology		4
Geology Electives[3]			7
Select 3 credits from Technical Elective Department List			3
CHEM 245	Fundamentals of Organic Chemistry		
CHEM 261	Fundamentals of Inorganic Chemistry		
CHEM 334	Quantitative Analysis Laboratory		
CHEM 335	Introduction to Analytical Chemistry		
CHEM 341	Modern Organic Chemistry I		
CHEM 473	Foundations of Physical Chemistry		
CHEM 474	Physical Chemistry I		
CHEM 475	Physical Chemistry Laboratory I		
CIVE 322	Basic Hydrology		
CIVE 440	Nonpoint Source Pollution		
GR 323/NR 323	Remote Sensing and Image Interpretation		
MATH 261	Calculus for Physical Scientists III		
MATH 340	Introduction to Ordinary Differential Equations		
MATH 369	Linear Algebra I		
NR 300	Biological Diversity		
NR 322	Introduction to Geographic Information Systems		
NR 422	GIS Applications in Natural Resource Management		
PH 314	Introduction to Modern Physics		
PH 361	Physical Thermodynamics		
SOCR 440	Pedology		
SOCR 455	Soil Microbiology		
SOCR 470	Soil Physics		
STAT 315[4]	Statistics for Engineers and Scientists		
STAT 340	Multiple Regression Analysis		
STAT 350	Design of Experiments		
WR 406	Seasonal Snow Environments		
WR 416	Land Use Hydrology		
WR 418	Land Use and Water Quality		
Electives[5]			6-8
	Total Credits		24-26
	Program Total Credits:		120

1. GEOL 120, GEOL 122 or GEOL 124 in combination with GEOL 121 may be substituted for GEOL 150.
2. MATH 160 is recommended.
3. Select two upper-division regular or experimental GEOL courses (300-381, 402-481, 500-581) for a minimum of five credits. A maximum of two credits may be satisfied by non-regular courses (courses ending in -82 to -99) and GEOL 401, which may only count once.
4. STAT 315 can be used to fulfill technical elective requirement if not taken for statistics requirement in junior year.
5. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
GEOL 150	Physical Geology for Scientists and Engineers	X		3A	4
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	X		1B	1
MATH 125	Numerical Trigonometry (GT-MA1)	X		1B	1
MATH 126	Analytic Trigonometry (GT-MA1)		X	1B	1
Arts and Humanities				3B	3
	Total Credits				13

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
GEOL 154	Historical and Analytical Geology	X			4
Select one course from the following:			X		3-4
MATH 159	One Year Calculus IB (GT-MA1)			1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)			1B	
Diversity and Global Awareness				3E	3
CO 150 and MATH 126 must be completed by the end of Semester 2.					
	Total Credits				15-16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II				3
CHEM 114	General Chemistry Lab II				1
GEOL 232	Mineralogy	X			3
GEOL 332	Optical Mineralogy		X		2
Select one course from the following:			X		5
PH 121	General Physics I (GT-SC1)			3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)			3A	
Social and Behavioral Sciences				3C	3
	Total Credits				17

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
GEOL 250	The Solid Earth		X		3
GEOL 364	Igneous and Metamorphic Petrology	X		4B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)		X	1B	4
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
	Total Credits				14

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
GEOL 344	Stratigraphy and Sedimentology	X		4A	4
Select one course from the following:		X			5
PH 122	General Physics II (GT-SC1)		X	3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)			3A	
Select one course from the following:					3-4
MATH 340	Introduction to Ordinary Differential Equations				
STAT 301	Introduction to Statistical Methods				
STAT 315	Statistics for Engineers and Scientists				
Arts and Humanities				3B	3
	Total Credits				15-16

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
GEOL 372	Structural Geology	X		4B	4
GEOL 376	Geologic Field Methods	X		4A,4C	3
Select one course from the following:					4
NR 319	Geospatial Applications in Natural Resources				
NR 322	Introduction to Geographic Information Systems				
Historical Perspectives				3D	3
CHEM 113 must be completed by the end of Semester 6.		X			
	Total Credits				14
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
GEOL 436	Geology Summer Field Course	X		4C	6
	Total Credits				6
Senior					
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
GEOL 366	Sedimentary Petrology and Geochemistry	X		4A,4B	4
Geology Electives					4
Elective					1
Technical Elective (See Department List on Concentration Requirements tab)					3
STAT 301 or STAT 315 or MATH 340 must be completed by the end of Semester 8.		X			
	Total Credits				12
Semester 9		**Critical**	**Recommended**	**AUCC**	**Credits**
GEOL 454	Geomorphology	X			4
Geology Elective		X			3
Electives		X			5-7
The benchmark courses for the 9th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12-14
	Program Total Credits:				120

Major in Geology, Geophysics Concentration

The Geophysics concentration combines a strong foundation in geology with additional depth in geophysics, physics, mathematics, and associated quantitative and computer skills. Students in this concentration are well prepared both for employment opportunities in a wide variety of geosciences and geotechnical fields, and for subsequent graduate training that includes geophysics, seismology, geodynamics, energy exploration, environmental geophysics, space sciences, and resource management.

Requirements Effective Fall 2017

Freshman

		AUCC	**Credits**
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CO 150	College Composition (GT-CO2)	1A	3
GEOL 150[1]	Physical Geology for Scientists and Engineers	3A	4
GEOL 154	Historical and Analytical Geology		4
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
Arts and Humanities		3B	3
Social and Behavioral Sciences		3C	3
	Total Credits		30

Sophomore

GEOL 232	Mineralogy		3
GEOL 250	The Solid Earth		3
GEOL 364	Igneous and Metamorphic Petrology	4B	4
MATH 151	Mathematical Algorithms in Matlab I		1
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
MATH 261	Calculus for Physical Scientists III		4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
Historical Perspectives		3D	3
	Total Credits		27

Junior

GEOL 344	Stratigraphy and Sedimentology	4A	4
GEOL 372	Structural Geology	4B	4
GEOL 376	Geologic Field Methods	4A,4C	3
MATH 340	Introduction to Ordinary Differential Equations		4
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	5
Select one course from the following:			3
MATH 369	Linear Algebra I		
STAT 301	Introduction to Statistical Methods		
STAT 315	Statistics for Engineers and Scientists		
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
Arts and Humanities		3B	3
	Total Credits		29

Summer

GEOL 436	Geology Summer Field Course	4C	6
	Total Credits		6

Senior

Upper-Division Geology Elective[2]			3-5
Directed Technical Electives (select a minimum of 12 credits - see list below):			12-14
Diversity and Global Awareness		3E	3
Electives[5]			8
	Total Credits		28
	Program Total Credits:		120

Directed Technical Electives List (Select a minimum of 12 credits)

Code	Title	Credits
GEOL 442	Applied Geophysics	4
GEOL 570	Plate Tectonics	3
GEOL 574	Geodynamics	3
GEOL 578	Global Seismology	4
GEOL 579	Solid Earth Inverse Methods and Practices	3
MATH 317	Advanced Calculus of One Variable	3
MATH 332	Partial Differential Equations	3
MATH 417	Advanced Calculus I	3
MATH 418	Advanced Calculus II	3
MATH 419	Introduction to Complex Variables	3
MATH 450	Introduction to Numerical Analysis I	3
MATH 469	Linear Algebra II	3
MATH 530	Mathematics for Scientists and Engineers	4
PH 245	Introduction to Electronics	3
PH 314	Introduction to Modern Physics	4
PH 341	Mechanics	4
PH 351	Electricity and Magnetism	4
PH 353	Optics and Waves	4
PH 361	Physical Thermodynamics	3
One option may be selected from the following if not used to satisfy Junior year program requirements:		3

MATH 369	Linear Algebra I
STAT 301	Introduction to Statistical Methods
or STAT 315	Statistics for Engineers and Scientists

[1] GEOL 120, GEOL 122 or GEOL 124 in combination with GEOL 121 may be substituted for GEOL 150.

[2] Select 3 to 5 credits in 300- to 500-level GEOL courses excluding GEOL 384, GEOL 401, GEOL 492, GEOL 494A-I.

[3] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
CO 150	College Composition (GT-CO2)			1A	3
GEOL 150	Physical Geology for Scientists and Engineers	X		3A	4
Arts and Humanities				3B	3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II		X		3
CHEM 114	General Chemistry Lab II		X		1
GEOL 154	Historical and Analytical Geology	X			4
MATH 160	Calculus for Physical Scientists I (GT-MA1)		X	1B	4
Social and Behavioral Sciences				3C	3
CO 150 and AUCC 1B (Quantitative Reasoning) must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
GEOL 232	Mineralogy	X			3
MATH 161	Calculus for Physical Scientists II (GT-MA1)			1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)			3A	5
Historical Perspectives				3D	3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
GEOL 250	The Solid Earth		X		3
GEOL 364	Igneous and Metamorphic Petrology	X		4B	4
MATH 151	Mathematical Algorithms in Matlab I				1
MATH 261	Calculus for Physical Scientists III				4
CHEM 113 must be completed by the end of Semester 4.		X			
	Total Credits				12

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
GEOL 344	Stratigraphy and Sedimentology	X		4A	4
PH 142	Physics for Scientists and Engineers II (GT-SC1)		X	3A	5
Select one course from the following:					3
MATH 369	Linear Algebra I				
STAT 301	Introduction to Statistical Methods				
STAT 315	Statistics for Engineers and Scientists				
Arts and Humanities				3B	3
MATH 261 must be completed by the end of Semester 5.		X			
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
GEOL 372	Structural Geology	X		4B	4

GEOL 376	Geologic Field Methods	X		4A,4C	3
MATH 340	Introduction to Ordinary Differential Equations		X		4
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
	Total Credits				14
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
GEOL 436	Geology Summer Field Course	X		4C	6
	Total Credits				6
Senior					
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Directed Technical Electives (See Department List on Concentration Requirements tab)					8
Electives					4
STAT 301, STAT 315, or MATH 369 must be completed by the end of Semester 8.		X			
	Total Credits				12
Semester 9		**Critical**	**Recommended**	**AUCC**	**Credits**
Upper-Division Geology Elective		X			3-5
Directed Technical Electives (See Department List on Concentration Requirements tab)		X			4-6
Diversity and Global Awareness		X		3E	3
Electives		X			4
The benchmark courses for the 9th semester are the remaining courses in the entire program of study.		X			
	Total Credits				16
	Program Total Credits:				120

Major in Geology, Hydrogeology Concentration

The Hydrogeology concentration provides training in geological aspects of water resources and allied disciplines, while ensuring that students are well prepared for a variety of geosciences fields. Students in this concentration will be particularly well suited for employment in environmental engineering, water resource, geotechnical, and groundwater firms; government agencies managing or assessing water resources; and for subsequent graduate training in hydrogeology or other water resource- and management-related disciplines.

Requirements Effective Fall 2015

Freshman

		AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
GEOL 150[1]	Physical Geology for Scientists and Engineers	3A	4
GEOL 154	Historical and Analytical Geology		4
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
MATH 125	Numerical Trigonometry (GT-MA1)	1B	1
MATH 126	Analytic Trigonometry (GT-MA1)	1B	1
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Social and Behavioral Sciences		3C	3
	Total Credits		32

Sophomore

CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
Select one from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
GEOL 232	Mineralogy		3
GEOL 344	Stratigraphy and Sedimentology		4
GEOL 364	Igneous and Metamorphic Petrology	4B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
Historical Perspectives		3D	3
	Total Credits		30

Junior

GEOL 366	Sedimentary Petrology and Geochemistry	4A,4B	4
GEOL 372	Structural Geology	4B	4
GEOL 376	Geologic Field Methods	4A,4C	3
MATH 261	Calculus for Physical Scientists III		4
Select one from the following:			3-5
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	
SOCR 470	Soil Physics		
STAT 301 or 315	Introduction to Statistical Methods Statistics for Engineers and Scientists		3
Arts and Humanities			3
	Total Credits		24-26

Summer

GEOL 436	Geology Summer Field Course	4C	6
	Total Credits		6

Senior

GEOL 452	Hydrogeology		4
GEOL 454	Geomorphology		4
MATH 340	Introduction to Ordinary Differential Equations		4
NR 319 or 322	Geospatial Applications in Natural Resources Introduction to Geographic Information Systems		4
WR 416	Land Use Hydrology		3
Select 6 credits from Directed Technical Electives [2]			6
CIVE 423	Groundwater Engineering		
CIVE 440	Nonpoint Source Pollution		
CIVE 532	Wells and Pumps		
GEOL 424	Modern Gas and Oil		
GEOL 442	Applied Geophysics		
GEOL 446	Environmental Geology		
GEOL 447	Mineral Deposits		
GEOL 498[3]	Research		
GEOL 546	Sedimentary Basin Analysis		
GEOL 551	Groundwater Modeling		
GEOL 552	Advanced Topics in Hydrogeology		
MATH 332	Partial Differential Equations		

MATH 369	Linear Algebra I	
MATH 450	Introduction to Numerical Analysis I	
SOCR 470[4]	Soil Physics	
WR 418	Land Use and Water Quality	
Elective[5]		1-3
	Total Credits	26-28
	Program Total Credits:	120

1 GEOL 120, GEOL 122, or GEOL 124 in combination with GEOL 121 may be substituted for GEOL 150.

2 At least one of the selected courses must be a geology course.

3 Only one credit may be used to fulfill the Directed Technical Elective requirement.

4 May be selected as a Directed Technical Elective if not taken in the junior year to fulfill the physics requirement.

5 Select enough credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
GEOL 150	Physical Geology for Scientists and Engineers	X		3A	4
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	X		1B	1
MATH 125	Numerical Trigonometry (GT-MA1)	X		1B	1
MATH 126	Analytic Trigonometry (GT-MA1)		X	1B	1
Arts and Humanities				3B	3
Social and Behavioral Sciences				3C	3
	Total Credits				16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
GEOL 154	Historical and Analytical Geology	X			4
MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	4
Diversity and Global Awareness				3E	3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II				3
CHEM 114	General Chemistry Lab II				1
GEOL 232	Mineralogy	X			3
GEOL 344	Stratigraphy and Sedimentology		X	4A	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	X		1B	4
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
GEOL 364	Igneous and Metamorphic Petrology	X		4B	4
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
PH 141	Physics for Scientists and Engineers I (GT-SC1)	X		3A	5
Historical Perspectives				3D	3
CHEM 113 must be completed by the end of Semester 4.		X			
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
GEOL 366	Sedimentary Petrology and Geochemistry			4A,4B	4
MATH 261	Calculus for Physical Scientists III	X			4
Select one course from the following:		X			3-5
PH 142	Physics for Scientists and Engineers II (GT-SC1)			3A	
SOCR 470	Soil Physics				
Arts and Humanities				3B	3
GEOL 344 must be completed by the end of Semester 5.		X			
	Total Credits				14
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
GEOL 372	Structural Geology	X		4B	4
GEOL 376	Geologic Field Methods	X		4A,4C	3
Select one course from the following:		X			3
STAT 301	Introduction to Statistical Methods				
STAT 315	Statistics for Engineers and Scientists				
	Total Credits				10
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
GEOL 436	Geology Summer Field Course	X		4C	6
	Total Credits				6

Senior

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
GEOL 452	Hydrogeology	X			4
MATH 340	Introduction to Ordinary Differential Equations				4
Select one course from the following:					4
NR 319	Geospatial Applications in Natural Resources				
NR 322	Introduction to Geographic Information Systems				
WR 416	Land Use Hydrology	X			3
GEOL 366 must be completed by the end of Semester 8.		X			
	Total Credits				15
Semester 9		**Critical**	**Recommended**	**AUCC**	**Credits**
GEOL 454	Geomorphology	X			4
Directed Technical Electives (See Department List on Concentration Requirements tab)		X			6
Elective		X			3
The benchmark courses for the 9th semester are the remaining courses in the entire program of study.		X			
	Total Credits				13
	Program Total Credits:				120

Minor in Geology

The minor in Geology is open to students in all majors to provide curricular depth in geosciences. Example majors who may benefit from a geology minor include students from the Colleges of Natural Science, Natural Resources, Business, Engineering, and Agriculture.

Requirements Effective Fall 2019

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	**Title**	**Credits**
Required Courses		
Select one group from the following for four credits:		4
Group A:		
GEOL 120 & GEOL 121	Exploring Earth - Physical Geology (GT-SC2) and Introductory Geology Laboratory (GT-SC1)	
Group B:		
GEOL 122 & GEOL 121	The Blue Planet - Geology of Our Environment (GT-SC2) and Introductory Geology Laboratory (GT-SC1)	

Group C:		
GEOL 124 & GEOL 121	Geology of Natural Resources (GT-SC2) and Introductory Geology Laboratory (GT-SC1)	
Group D:		
GEOL 150	Physical Geology for Scientists and Engineers	
Group E:		
GEOL 110 & GEOL 121	Introduction to Geology-Parks and Monuments (GT-SC2) and Introductory Geology Laboratory (GT-SC1)	
GEOL 154	Historical and Analytical Geology	4
Selected Courses		
Select a minimum of 13 credits of GEOL coursework, of which at least 12 credits must be upper-division (300- to 400-level).		
A maximum of two credits may be satisfied by non-regular courses (courses ending in -82 to -99), of which only one credit may be GEOL 401.		
GEOL *** Geology Electives		13
Program Total Credits:		21

Master of Science in Geosciences, Plan A

The M.S. in Geosciences provides best practice preparation for employment in major fields of the geoscience profession. This is the normative working degree for many energy, environmental, natural resource, regulatory, and other professional opportunities. Each graduate student follows a custom-tailored program of coursework and research developed with their advisor and graduate committee. Strengths of the program include diverse field-driven scientific specializations; an interdisciplinary approach to addressing earth resource education, professional preparation, and global research interests; analytical, field, and computational facilities; and close student/faculty working relationships.

Faculty in the department advise M.S. students in a wide range of subdisciplines, including applied geophysics, economic geology, environmental geology, geochemistry, geochronology, geodynamics, geomorphology, geophysics, hydrogeology, igneous and metamorphic petrology, petroleum geology, sedimentology, sedimentary petrology, seismology, stratigraphy, structural geology, and tectonics. Students work with their advisor and graduate committee to identify a curriculum specific to their academic needs and goals. Prospective students should contact likely advisors to learn more that is specific about the program.

Requirements Effective Fall 2019

A minimum of 30 semester credit hours are required to complete this program.

At least 16 credits must be at the graduate level (500-level or higher).

At least 15 credits in courses numbered 500-581, 600-681, or 700-781 are required and should be selected in consultation with the student's advisor.

Up to 6 of the 30 credits may be for GEOL 699 Thesis.

With permission of the advisor and committee, 300- or 400-level course credits may be applied to the degree.

Completion and successful oral defense of a thesis is a degree requirement.

Ph.D. in Geosciences

The Department of Geosciences offers a Ph.D. program in Geosciences. Faculty in the department advise Ph.D. students in a wide range of subdisciplines, including geophysics and seismology, economic geology, environmental geology, geochemistry, geochronology, geodynamics, geomorphology, hydrogeology, igneous and metamorphic petrology, petroleum geology, sedimentology, sedimentary petrology, stratigraphy, structural geology, and tectonics. Students work with their advisor and graduate committee to identify a dissertation topic and curriculum specific to their academic needs and goals. Prospective students should contact appropriate faculty advisors in the department to refine a program plan.

Requirements Effective Fall 2018

Ph.D. students must complete 72 semester credits beyond those required for the B.S. degree. They must satisfy a breadth requirement by:

Taking a six-credit upper-division or graduate-level course sequence outside of the student's discipline. Most students will take their breadth requirement courses outside of their department.

At least 10 credits beyond the master's degree must be earned in regular courses numbered 500-level or above.

A minimum of 72 credits are required to complete this program.

Department of Human Dimensions of Natural Resources

Office in Forestry Building, Room 220
(970) 491-6591
https://warnercnr.colostate.edu/hdnr/

Professor Michael Manfredo, Department Head
Paul Layden, M.S., Undergraduate Coordinator
Professor Alan Bright, Graduate Coordinator

Undergraduate

Majors

- Major in Human Dimensions of Natural Resources
- Major in Natural Resource Tourism
  - Global Tourism Concentration
  - Natural Resource Tourism Concentration

Graduate

Graduate Programs in Human Dimensions of Natural Resources

Programs lead to a Master of Science in Conservation Leadership, Master of Tourism Management and Master of Science and Doctor of Philosophy degrees in Human Dimensions of Natural Resources. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Human Dimensions and Natural Resources (http://warnercnr.colostate.edu/hdnr-graduate-study/graduate-program).

Certificates

- Adventure Tourism
- Agritourism Management
- Communications for Conservation
- Ski Area Management

Master's Programs

- Master of Conservation Leadership, Plan C
- Master of Science in Environmental Leadership, Plan A and Plan B
- Master of Science in Conservation Leadership, Plan A (No new students are being admitted to this program of study.)
- Master of Science in Conservation Leadership, Plan B (No new students are being admitted to this program of study.)
- Master of Science in Conservation Leadership, Plan A, Global Specialization (No new students are being admitted to this specialization.)
- Master of Science in Conservation Leadership, Plan B, Global Specialization (No new students are being admitted to this specialization.)
- Master of Science in Human Dimensions of Natural Resources, Plan A
- Master of Tourism Management, Plan C

Ph.D.

- Ph.D. in Human Dimensions of Natural Resources*

*Please see department for program of study.

Courses

Subjects in this department include: Natural Resource Recreation and Tourism (NRRT).

Natural Resource Recreation and Tourism (NRRT)

NRRT 231 Principles-Parks/Protected Area Management Credits: 3 (3-0-0)
Course Description: Provide a broad but comprehensive understanding of the history, challenges, and practices of parks and protected areas management.
Prerequisite: None.
Registration Information: Sections may be offered: Online. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 262 Principles of Environmental Communication Credits: 3 (3-0-0)
Course Description: Principles of environmental communication, education, and interpretation for managing natural and cultural resources.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 270 Principles of Natural Resource Tourism Credits: 3 (3-0-0)
Course Description: Tourism and private commercial outdoor recreation industry in America.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 301 Conservation Leadership Credits: 3 (3-0-0)
Course Description: Approaches to conservation leadership.
Prerequisite: NRRT 262 and NRRT 231.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 320 International Issues-Recreation and Tourism Credits: 3 (3-0-0)
Course Description: History, development, and preservation of international parks, preserves, tourist and historical sites.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 321 Travel Abroad-Marine Ecotourism-Bahamas Credits: 3 (1-3-1)
Course Description: Environmental and socio-cultural aspects of marine ecotourism in the Bahamas.
Prerequisite: None.
Registration Information: Minimum GPA 2.500; 3 credits in natural sciences. Passport and ability to swim will be required.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 330 Social Aspects of Natural Resource Management Credits: 3 (3-0-0)
Course Description: Review social science concepts and research important to the way humans use and manage natural resources. Using lectures and readings on social theory and management frameworks, dissect current natural resource management issues. Case study presentations, exercises, and discussions will connect various social science approaches and theoretical frameworks to their natural resource applications.
Prerequisite: None.
Registration Information: Sophomore standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 331 Management of Parks and Protected Areas Credits: 3 (2-3-0)
Course Description: Comprehensive assessment of problems confronted by park professionals and the techniques and tools applied to their solution.
Prerequisite: NRRT 231 and NRRT 330.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 340 Principles in Conservation Planning and Mgmt Credits: 3 (3-0-0)
Course Description: Social, economic, legal, and ecological concepts that shape planning and management frameworks within conservation.
Prerequisite: NRRT 231.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 350 Wilderness Leadership Credits: 3 (2-2-0)
Course Description: Practical and philosophical aspects of wilderness usage including safety, group dynamics, and backcountry skills.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

NRRT 351 Wilderness Instructors Credits: 3 (2-2-0)
Course Description: Preparation to safely lead and instruct groups in outdoor wilderness programs; further refine skills including judgement and leadership.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

NRRT 362 Environmental Conflict Management Credits: 3 (3-0-0)
Course Description: Theoretical, critical and practical approaches to negotiation, mediation and conflict management strategies related to natural resources.
Prerequisite: NRRT 262.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 371 Techniques in Interpretation Credits: 3 (2-1-0)
Course Description: Intermediate techniques in interpretation including exhibit design and construction, personal program development and visitor studies.
Prerequisite: NRRT 262.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 372 Tourism Promotion Credits: 3 (3-0-0)
Course Description: Explores different approaches for tourism marketing in order to develop a sound background in the field. Addresses the forces that drive change in the tourism marketplace; how marketing managers can most effectively position their services, destination and products, through a systems approach to capture today's traveler. Basic concepts and skills in tourism marketing are examined through problems and characteristics specific to tourism.
Prerequisite: NRRT 270.
Registration Information: Sophomore standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 376 Human Dimensions Research and Analysis Credits: 3 (2-2-0)
Course Description: Applies human dimensions (recreation) research and analysis techniques to natural resource issues. Predicated on the assumption that the best way to learn research methodology and statistics is to become directly involved in the process of scientific inquiry. Consequently, a considerable amount of time is devoted to conducting research tasks (e.g., developing surveys, analyzing data).
Prerequisite: STAT 201.
Registration Information: Sophomore standing. Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 384 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 400 Environmental Governance Credits: 3 (3-0-0)
Course Description: Theory and practice of prevalent environmental governance approaches in diverse social and environmental contexts.
Prerequisite: NRRT 231.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 401 Collaborative Conservation Credits: 3 (3-0-0)
Course Description: Guiding principles and practices for effectively engaging stakeholders in conservation issues and natural resource management.
Prerequisite: NRRT 231 or NRRT 262.
Registration Information: Required field trips. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

NRRT 425 Communication for Tourism Credits: 3 (3-0-0)
Course Description: Exploration and practical application of communication theories, concepts, and techniques for successful communication in the context of tourism industry practice.
Prerequisite: NRRT 372.
Registration Information: Junior standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 431 Integrated Planning for Conservation Credits: 3 (3-0-0)
Course Description: Integrated planning practices within public and private lands that work at the interface of social and ecological dimensions of conservation.
Prerequisite: (NRRT 231) and (LAND 220 or LIFE 220).
Restriction: Must be a: Undergraduate.
Registration Information: Junior standing. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 439 Open Space and Natural Area Management Credits: 3 (3-0-0)
Course Description: Acquisition of, planning for, and management of local government and private open space and natural areas.
Prerequisite: NR 440 or NRRT 331.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 440 Applications in Environmental Communication Credits: 3 (3-0-0)
Course Description: Application of tools and techniques for communicating to audiences about issues related to conservation, environment and sustainability.
Prerequisite: NRRT 262.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 441 Spatial Analysis of Protected Areas Credits: 3 (2-2-0)
Course Description: Spatial analytical techniques used in planning and managing protected areas, including locating, managing, and assessing parks.
Prerequisite: NRRT 231.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 442 Tourism Planning Credits: 3 (3-0-0)
Course Description: Examines the relationship among tourists, tourist developments and the planning of tourist attractions and services. Focuses on the planning of tourist resources and programs within a geographic region, as well as at a destination and site level. Planning tools and design concepts are reviewed and analyzed. A regional strategic planning process is applied to the development of a regional tourism plan in Colorado.
Prerequisite: NRRT 270.
Registration Information: Junior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 460 Tourism Event and Conference Planning Credits: 3 (3-0-0)
Course Description: Foundation in planning, organizing, and producing tourism special events and conferences. Functions and strategies necessary for effective tourism event management.
Prerequisite: NRRT 270.
Registration Information: Junior standing. Sections may be offered: Online. Credit not allowed for both NRRT 460 and RRM 460.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 462 Environmental Communication-Natural Resources Credits: 3 (3-0-0)
Course Description: Exploration and application of theories, concepts, and techniques for successful environmental communication in natural resources.
Prerequisite: NRRT 262.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 463 Non-Profit Administration in Conservation Credits: 3 (3-0-0)
Course Description: Role of NGOs in protected-area management and conservation education; models for development, including grant writing, in conservation.
Prerequisite: NRRT 231 and NRRT 262.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 470 Tourism Impacts Credits: 3 (3-0-0)
Course Description: Examine the impacts of tourism from several distinct, but interrelated perspectives: social, political, economical, environmental, and technological. Limits to future tourism growth are discussed and possible strategies to mitigate impacts are detailed. Case studies are used to highlight issues discussed.
Prerequisite: NRRT 270.
Registration Information: Junior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 471 Starting and Managing Tourism Enterprise Credits: 3 (3-0-0)
Course Description: Concepts surrounding the starting, planning, and managing of a tourism business with a small business creation and management approach. Focus is given to: (1) connections between commercial recreation/tourism and entrepreneurship, (2) starting and managing a business including selecting the form of business, raising funds, financial/marketing management, and (3) legal aspects including identifying and minimizing risks, supervision of workers and employment laws.
Prerequisite: NRRT 231 or NRRT 270.
Registration Information: Junior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 473 Ski Area Management Credits: 3 (3-0-0)
Course Description: Ski area management; history and trends, ski area operations, human resource management, environmental issues, liability, resort planning and design.
Prerequisite: NRRT 270.
Registration Information: Senior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 483 Off-Campus Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

NRRT 487 Internship Credits: Var[4-12] (0-0-0)
Course Description:
Prerequisite: NR 377.
Registration Information: Junior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 495A Independent Study: Administration Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 495B Independent Study:Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 495C Independent Study:Interpretation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 499 Senior Thesis Credits: Var[1-18] (0-0-0)
Course Description: Independent research project culminating in thesis presented to faculty mentor.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

NRRT 505 Environmental Education History and Theory Credits: 3 (3-0-0)
Course Description: History and theories, planning and instruction; outcomes, historical events; ecological literacy; experiential learning models.
Prerequisite: None.
Registration Information: Upper-division course in natural resources. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 506 Methods in Environmental Education Research Credits: 3 (3-0-0)
Course Description: Research methods and designs; literature reviews, needs assessments and program evaluation of environmental education in informal settings.
Prerequisite: None.
Registration Information: Upper-division course in natural resources. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 507 Environmental Education Planning Credits: 3 (3-0-0)
Course Description: Informal learning theory; evaluation models focused on education in informal settings such as nature centers, zoos, etc.
Prerequisite: None.
Registration Information: One upper-division course in natural resources, biological sciences, or ecology. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 508 Current Issues in Environmental Education Credits: 3 (3-0-0)
Course Description: Impact of current events, legislation, demographic changes, and other events on informal environmental education.
Prerequisite: None.
Registration Information: One upper-division course in natural resources, biological sciences, or ecology. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 520 Perspectives on Ski Area Management Credits: 2 (2-0-0)
Course Description: Introduction to the history of skiing, the ski industry, and ski area management around the world.
Prerequisite: None.
Registration Information: Bachelor's degree required. This is a partial semester course. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 521 Sustainable Ski Area Management Credits: 2 (2-0-0)
Course Description: Examines sustainability issues that relate specifically to ski resort development and management.
Prerequisite: NRRT 520, may be taken concurrently.
Registration Information: This is a partial semester course. Sections may be offered: Online. Offered every Spring term and every other Fall term.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 522 Ski Area Operations and Human Resources Credits: 2 (2-0-0)
Course Description: Examines ski area operations and services.
Prerequisite: NRRT 520, may be taken concurrently.
Registration Information: This is a partial semester course. Sections may be offered: Online. Offered every Spring term and every other Fall term.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 523 Strategic Ski Area Marketing and Management Credits: 2 (2-0-0)
Course Description: Examines strategic management and marketing concepts within a ski area context.
Prerequisite: NRRT 520, may be taken concurrently.
Registration Information: This is a partial semester course. Sections may be offered: Online. Offered every Spring term and every other Fall term.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 524 Ski Area Finance and Investment Credits: 2 (2-0-0)
Course Description: Examines finance and investment considerations relevant to ski area operations and management.
Prerequisite: NRRT 520, may be taken concurrently.
Registration Information: This is a partial semester course. Sections may be offered: Online. Offered every Spring term and every other Fall term.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 525 Ski Area Planning and Development Credits: 2 (2-0-0)
Course Description: Examines the various planning and design considerations for ski area development and expansion.
Prerequisite: NRRT 520, may be taken concurrently.
Registration Information: This is a partial semester course. Sections may be offered: Online. Offered every Spring term and every other Fall term.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 530 Insight into the Adventure Tourism Industry Credits: 2 (2-0-0)
Course Description: Definitions of adventure tourism, and relevant leisure, outdoor education, and tourism theories and frameworks are discussed and critically examined. Key stakeholders are identified, along with current and future trends, opportunities, and challenges. The need for sustainable practices and cross-cultural understanding and communication within adventure tourism is also emphasized.
Prerequisite: None.
Registration Information: This is a partial semester course. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 531 Building an Adventure Tourism Enterprise Credits: 2 (2-0-0)
Course Description: Entrepreneurial skills and know-how to successfully build an adventure tourism enterprise. As most adventure tourism businesses are small-to-medium enterprises, there is a need for students to understand the fundamentals of how to develop an adventure tourism concept and turn it into a successful business.
Prerequisite: None.
Registration Information: This is a partial semester course. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 532 Leading the Adventure Tourism Experience Credits: 2 (2-0-0)
Course Description: Skills and knowledge to successfully plan and lead an adventure tourism experience. Focus is given to leadership and facilitation strategies, guiding standards and best practices, and the importance of environmental and cultural education and interpretation for guests. This is in addition to quality programming and logistics, ensuring guest safety through risk mitigation, emergency planning and crisis management, public relations, and guest management.
Prerequisite: NRRT 530, may be taken concurrently.
Registration Information: This is a partial semester course. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 533 Adventure Tourism Policy and Planning Credits: 2 (2-0-0)
Course Description: Key stakeholders and policies that influence the adventure tourism industry. This involves a detailed examination of adventure tourism standards and regulations, in addition to broader government policies that influence the environment within which the adventure tourism industry is situated. As many adventure tourism ventures operate on public lands, the role of public land agencies and their relationships with adventure tourism operators are also closely examined.
Prerequisite: NRRT 530, may be taken concurrently.
Registration Information: This is a partial semester course. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 534 Applications in the Outdoor Products Industry Credits: 2 (2-0-0)
Course Description: Outdoor products industry and the various steps involved in developing an outdoor product and bringing it to market. Focus is placed on identifying and understanding the outdoor products consumer, product development processes, product aesthetics and functionality, the unique characteristics of branding, selling, and distributing outdoor products, current and future trends, and the diverse career opportunities that exist within the outdoor products industry.
Prerequisite: NRRT 530, may be taken concurrently.
Registration Information: This is a partial semester course. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 541 Overview & Trends of Agritourism Management Credits: 2 (2-0-0)
Course Description: Introductory agritourism sector concepts and emerging business opportunities. Identify and assess agritourism sector data describing industry supply and demand attributes and examine key distinguishing aspects of agritourism enterprise. Regulatory frameworks and policy, community and economic development dimensions, and relevant case studies specific to new agritourism oriented opportunities.
Prerequisite: None.
Registration Information: Graduate standing. This is a partial semester course. Offered as an online course only. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 542 Spatial & Community Dimensions of Agritourism Credits: 2 (2-0-0)
Course Description: Advanced analysis methodology and the use of data in enterprise valuation, market analysis and the assessment of the agritourism sector. Distinguishing aspects of agritourism supply and economic development dimensions that target tourism demand enhancement. Creative market assessment methods are employed to illustrate concepts and analysis, including spatial, economic impact and trip evaluation techniques.
Prerequisite: None.
Registration Information: Graduate standing. This is a partial semester course. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 545 Culinary Tourism Credits: 2 (2-0-0)
Course Description: Aspects of tourism concepts and assessment of the culinary sector in relation to the supply and demand experience attributes. Explores frameworks related to the culinary community, policy, and training dimensions, and reviews case studies specific to new and ongoing culinary tourism oriented opportunities.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Offered as an online course only. Sections may be offered: Online. Credit not allowed for both NRRT 545 and NRRT 580A2.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 548 Agritourism Enterprise Management Credits: 2 (2-0-0)
Course Description: Examines the role of agritourism in the agricultural economy and provides students with frameworks to identify and assess opportunities for agritourism development. Focusing on determinants of business success and the role and importance of comprehensive business planning. Students will develop and present a comprehensive business plan for a prototype agritourism business as a requirement of this course.
Prerequisite: None.
Registration Information: Graduate standing. This is a partial semester course. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 550 Ecotourism Credits: 3 (3-0-0)
Course Description: Concept of ecotourism, impacts associated with ecotourism, and role of education/interpretation in mitigating these impacts.
Prerequisite: NRRT 470.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 565 Research-Human Dimensions Natural Resources Credits: 3 (3-0-0)
Course Description: Theory, research, literature review, hypothesis development, scientific writing, proposal development.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 600 Tourism Industry Concepts and Practices Credits: 2 (2-0-0)
Course Description: Fundamental tourism theories and concepts that lay the groundwork for understanding tourists and the tourism industry. Based on the interdisciplinary nature of tourism studies, covers the broad range of fundamental theories and interrelated concepts that guide decision-making in the tourism industry. Focuses on several key themes aimed to capture the primary areas of conceptual thinking and analysis in contemporary tourism.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections offered as Mixed Face-to-Face or Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 601 Tourism Quantitative Analysis I Credits: 2 (1-2-0)
Course Description: Statistical techniques used by researchers to inform and support tourism decision-making. Emphasis is placed on understanding data manipulation techniques and what statistics are appropriate for addressing applied decision–making problems.
Prerequisite: STAT 312.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered as Mixed Face-to-Face or Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 602 Tourism Quantitative Analysis II Credits: 2 (2-0-0)
Course Description: Quantitative analysis methods to specific tourism problems. Students explore visitor intercept techniques and identify other local, regional, national and international institutional data sources, including "Big Data" analytic engines. Using these sources, students estimate destination demand, supply and economic impact as well as perform competitive analysis in a variety of settings.
Prerequisite: NRRT 601, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered as Mixed Face-to-Face or Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 605 Human Dimensions of Natural Resources Theory Credits: 3 (3-0-0)
Course Description: Application of theories and conceptual approaches from social sciences to study of recreation behavior and natural resource issues.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 610 Natural Resource Management and Tourism Credits: 2 (2-0-0)
Course Description: Explores nature-based tourism and the planning and management of experiences and impacts. Review the tourism system as it is applied in the natural resource setting, define and describe outdoor recreation motivations, describe the covenants and institutions that govern international development globally, and apply the measurement of supply, demand, and economic impact in the natural-based tourism realm. Apply these techniques in comprehensive planning and compliance activities.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered as Mixed Face-to Face or Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 615 Sustainable Tourism Development Foundation Credits: 2 (2-0-0)
Course Description: Theory, practice, history, terminology and issues surrounding sustainable tourism development. Sustainable tourism planning and management are examined in the context of sustainable livelihoods. A comprehensive survey of sustainable tourism components – including indicators of sustainability, community participation, poverty alleviation, alternative tourism, governance and power, and socio-environmental responsibility – will be covered from a systems thinking perspective.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections offered as Mixed Face-to-Face or Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 620 Organizational Management in Tourism Credits: 2 (2-0-0)
Course Description: Application of management concepts to tourism organizations. Topics include managing ethics, diversity, and globalization; planning, decision-making, and competitive advantage; organizational structure and design; leading individuals and groups, and controlling communication and information technology. Discussions, exercises, and case studies will allow students to apply management principles to the tourism organizations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections offered as Mixed Face-to-Face or Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 625 Communication/Conflict Management in Tourism Credits: 2 (2-0-0)
Course Description: Managerial communication skills and negotiation tools and their implications for effective organizational communication and management of potential conflicts faced by managers in the tourism industry.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections offered as Mixed Face-to-Face or Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 650 Financial Management in Tourism Credits: 2 (2-0-0)
Course Description: Apply financial concepts to the management of tourism businesses. Financial accounting aspects of finance, including development and analysis of financial statements are covered. Management accounting aspects of finance include forecasting and budgeting; analysis of profit, and profitability; and working capital management. Application of capital budgeting techniques, time value of money, and business valuation are emphasized.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections offered as Mixed Face-to-Face or Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 655 Tourism Marketing Concepts and Applications Credits: 2 (2-0-0)
Course Description: Marketing theories and concepts and their application within a travel and tourism organizational context. The travel and tourism industry has unique characteristics that create a variety of problems and opportunities specific to that industry and important for tourism marketing professionals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections offered as Mixed Face-to-Face or Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 660 Law and Legal Liability in Tourism Credits: 2 (2-0-0)
Course Description: Concepts of legal liability, business law, and risk management to travel, tourism, and hospitality organizations. Topics include contract law; agency law; business organization and formation; torts and legal liability; employment law and labor-management relations, and the protection of organization assets through risk management.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections offered as Mixed Face-to-Face or Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 662 Global Tourism Policy Credits: 2 (2-0-0)
Course Description: Major international policies, trends, and challenges facing tourism. Provides an understanding of policies, programs, and regulations and how international tourism is affected.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered as Mixed Face-to-Face or Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 665 Survey Research and Analysis Credits: 3 (2-2-0)
Course Description: Survey research, design, and analysis in human dimensions of natural resources.
Prerequisite: NRRT 565 and STAT 301.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 666 Qualitative Research in NRRT Credits: 3 (3-0-0)
Course Description: Qualitative approaches to tourism research and techniques from a range of disciplinary backgrounds; methodological aspects.
Prerequisite: NRRT 565.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 671 Strategic Management for Travel and Tourism Credits: 2 (2-0-0)
Course Description: Factors, tools, and techniques for strategic management of a travel and tourism business or organization.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered as Mixed Face-to-Face or Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 679A Current Topics in Nature Based Tourism Credit: 1 (0-0-1)
Course Description: Current topics in nature-based travel and tourism.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Students will enroll for this course during both the Fall and Spring semesters.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 679B Current Topics in Nature Based Tourism Credit: 1 (0-0-1)
Course Description: Current topics in nature-based travel and tourism.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Students will enroll for this course during both the Fall and Spring semesters.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 695A Independent Study: Administration Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 695B Independent Study: Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 695C Independent Study: Interpretation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 695D Independent Study: Landscape Planning Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 765 Applied Multivariate Analysis Credits: 3 (2-2-0)
Course Description: Application and interpretation of multivariate statistics to human dimensions in natural resources, recreation, and tourism.
Prerequisite: NRRT 665.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Restaurant and Resort Management (RRM)

RRM 101 Hospitality Industry Credits: 3 (3-0-0)
Course Description: Food service, lodging, and tourism industries; exploration of various industry segments and career opportunities.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 200 Hotel Operations Credits: 3 (3-0-0)
Course Description: Front office and room management as related to resorts and hotels. Computer application, financial controls, employee and guest relations.
Prerequisite: RRM 101.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 310 Food Service Systems-Operations Credits: 3 (3-0-0)
Course Description: Technical operations: menu planning, evaluation, recipe standardization, forecasting, food cost, sanitation, hospital food distribution systems.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 311 Food Service Systems-Production and Purchasing Credits: 3 (3-0-0)
Course Description: Quantity food production principles, purchasing specifications, market channels.
Prerequisite: RRM 310.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 312 Hospitality Human Resource Management Credits: 3 (2-0-1)
Course Description: Principles and practices of employee management in the hospitality industry including employment process, training, legal aspects, performance.
Prerequisite: RRM 310.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 330 Alcohol Beverage Control and Management Credits: 2 (2-0-0)
Course Description: Classification, production, and service of controlled beverages; management of facilities and people; safe service training; financial controls.
Prerequisite: CHEM 103, may be taken concurrently or CHEM 107, may be taken concurrently or CHEM 111, may be taken concurrently.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

RRM 340 Restaurant Operations Credits: 5 (0-10-0)
Course Description: Principles, practices, philosophies, systems for daily operation of casual or fine dining restaurant; focus on developing solutions to problems.
Prerequisite: RRM 101, may be taken concurrently.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 345 Food, Beverage, and Labor Cost Control Credits: 3 (3-0-0)
Course Description: Cost control for food, beverage, and labor in the hospitality industry.
Prerequisite: ACT 205.
Registration Information: Sophomore standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 350 Hospitality Marketing Credits: 3 (3-0-0)
Course Description: Operations marketing, including consumer behaviors, marketing strategies, and marketing plans in the hospitality industry.
Prerequisite: RRM 101.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 386 Practicum Credits: 3 (0-0-9)
Course Description: Practicum in Hospitality Management.
Prerequisite: RRM 101.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

RRM 400 Food and Society Credits: 3 (2-0-1)
Course Description: Exploration of the influence of food, dining, and nutrition on cultural aspects of the human experience.
Prerequisite: SOC 100 or PSY 100.
Registration Information: Completion of AUCC 3D and AUCC 3E requirements. Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 410 Food Safety Management Credits: 2 (2-0-0)
Course Description: Management and practical applications of safe food service including sanitation, food borne illness, worker hygiene, proper food temperatures and handling, hazard analysis critical control points, local/state/federal health rules and regulations. ServSafe® Manager Certification.
Prerequisite: (CHEM 103 or CHEM 107 or CHEM 111) and (RRM 310).
Registration Information: Junior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 415 Catering Techniques and Culinary Arts Credits: 3 (0-6-0)
Course Description: Management of advanced techniques in culinary technique; catering of food and beverages for special functions.
Prerequisite: RRM 311.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

RRM 450 Leadership in the Hospitality Industry Credits: 3 (3-0-0)
Course Description: Exploration of leadership skills, their relationship to ethics through self-analysis, and leading change in the hospitality industry.
Prerequisite: RRM 310 and MGT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 460 Event and Conference Planning Credits: 3 (2-0-1)
Course Description: Overview of event planning and management. Explores key concepts critical to the success of any event and current trends in the industry.
Prerequisite: NRRT 270 or RRM 101.
Registration Information: Junior standing. Must register for lecture and recitation. Required field trips. Credit not allowed for both RRM 460 and NRRT 460.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

RRM 487 Internship in Hospitality Management Credits: 5 (0-0-25)
Course Description: Supervised off-campus experience in food and beverage, lodging, or event planning focusing on management tasks and responsibilities.
Prerequisite: RRM 101 and RRM 310, may be taken concurrently.
Registration Information: Sophomore standing. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

RRM 492 Seminar on Hospitality Management Credits: 3 (0-0-3)
Course Description: Applying and synthesizing service knowledge and management functions; project discussions, benchmark presentations, execution of a capstone project.
Prerequisite: MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

RRM 500 Understanding Food Credits: 3 (3-0-0)
Course Description: Role of food in the creation of identity, as a driver of technology, and the prominent role food plays in the media.
Prerequisite: RRM 400.
Registration Information: RRM 400 or admission to GPIdea program in Dietetics. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 510 Foodservice Management Credits: 2 (1-0-1)
Course Description: Analysis of a wide variety of foodservice operations, including procurement, forecasting, operational design, and menu planning.
Prerequisite: NRRT 442 or NRRT 471.
Registration Information: Must register for lecture and recitation. This is a partial semester course. Offered as Mixed Face-to-Face only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 520 Lodging Management Credits: 2 (1-0-1)
Course Description: Operating standards and practices essential to the profitability of a hotel, lodging, and accommodation enterprise.
Prerequisite: NRRT 442 or NRRT 471.
Registration Information: Must register for lecture and recitation. This is a partial-semester course. Offered as Mixed Face-to-Face only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 686 Practicum-Food Service Management Credit: 1 (0-4-0)
Course Description: Food production, menu planning, nutritional analysis and food costing.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Major in Human Dimensions of Natural Resources

The source of many challenges in natural resources involves human behavior, and solutions to those challenges requires innovative problem-solving, deep understanding of complex issues, and collective action. This major is focused on understanding the social aspect of natural resources, and developing the skills to assess, plan and implement strategies that lead to successful conservation. Curriculum for this major trains students in the areas of communication, leadership, collaboration, conflict management, decision-making, planning, and protected area and land management practices.

Learning Outcomes

Students will:

- Understand collaborative tools for contributing to conservation solutions
- Apply social science concepts and techniques to understand and address conservation problems
- Attain a breadth of understanding of how different social science disciplines can contribute to conservation
- Describe the linkages between conservation and human livelihoods, ecosystem services and human well-being
- Practice and use adaptive and effective planning and environmental communication techniques
- Practice and use core principles of protected area management
- Become adept at conservation problem solving and linking knowledge, understanding and practice

Potential Occupations

Students are prepared for various positions with local, state and federal land management and natural resource agencies in the United States. Opportunities are also available both domestically and abroad with non-governmental, and nonprofit conservation and development organizations as well as private foundations. Examples of the types of positions include conservation planner/administrator, environmental communication specialist, conservation/environmental educator, nature center coordinator, visitor services manager, public outreach coordinator, public information officer, protected area manager, park/wilderness ranger, communication coordinator, policy liaison, environmental analyst and others.

Requirements Effective Fall 2019

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
SPCM 200	Public Speaking		3
Select 4 credits from the following groups:			4
Group A:			
BZ 110	Principles of Animal Biology (GT-SC2)	3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	3A	
Group B:			
BZ 120	Principles of Plant Biology (GT-SC1)	3A	
Arts and Humanities		3B	6
Biological and Physical Sciences		3A	3
Social and Behavioral Sciences		3C	3
Elective			3
	Total Credits		28

Sophomore

LAND 220/LIFE 220	Fundamentals of Ecology (GT-SC2)	3A	3
NRRT 231	Principles-Parks/Protected Area Management		3
NRRT 262	Principles of Environmental Communication		3
STAT 201	General Statistics		3
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
Diversity and Global Awareness		3E	3

Historical Perspectives		3D	3
Guided Electives (see list below)			3
Electives[1]			5
	Total Credits		29
Summer			
Select one course from the following:			5
NR 220	Natural Resource Ecology and Measurements		
NR 382A or 382B	Travel Abroad: Social-Ecological Field Methods in Kenya Travel Abroad: Social-Ecological Field Methods in Belize		
	Total Credits		5
Junior			
NR 300	Biological Diversity		3
NR 319	Geospatial Applications in Natural Resources		4
NR 320	Natural Resources History and Policy		3
NR 377	Pre-Internship		1
NRRT 301	Conservation Leadership		3
NRRT 330	Social Aspects of Natural Resource Management		3
NRRT 340	Principles in Conservation Planning and Mgmt		3
NRRT 376	Human Dimensions Research and Analysis		3
NRRT 440	Applications in Environmental Communication		3
Guided Electives (see list below)[2]			3
	Total Credits		29
Senior			
NR 310	Ecosystem Services and Human Well-Being		3
NR 440	Applications in Conservation Planning		3
NRRT 362	Environmental Conflict Management		3
NRRT 400	Environmental Governance		3
NRRT 401	Collaborative Conservation	4A	3
NRRT 431	Integrated Planning for Conservation	4B,4C	3
NRRT 463	Non-Profit Administration in Conservation		3
NRRT 487	Internship		5
Guided Elective (see list below)[2]			3
	Total Credits		29
	Program Total Credits:		120

Human Dimensions of Natural Resources Guided Electives [3]

Code	Title	AUCC	Credits
LOWER-DIVISION			
AREC 240/ECON 240	Issues in Environmental Economics (GT-SS1)	3C	3
BZ 223	Plant Identification		3
ESS 211	Foundations in Ecosystem Science		3
FW 104	Wildlife Ecology and Conservation (GT-SC2)	3A	3
FW 204	Introduction to Fishery Biology		3
FW 260	Principles of Wildlife Management		3
HORT 100	Horticultural Science	3A	4

NR 120A	Environmental Conservation (GT-SC2)	3A	3
NR 130	Global Environmental Systems (GT-SC2)	3A	3
SOC 220	Global Environmental Issues (GT-SS3)	3E	3
UPPER-DIVISION			
ANTH 330	Human Ecology		3
ANTH 370	Primates		3
ANTH 453	Impacts on Ancient Environments		3
ANTH 478/HIST 478	Heritage Resource Management		3
ANTH 479/IE 479	International Development Theory and Practice		3
AREC 340/ECON 340	Introduction-Economics of Natural Resources		3
AREC 346/ECON 346	Economics of Outdoor Recreation		3
ATS 350	Introduction to Weather and Climate		2
BZ 353/NR 353	Global Change Ecology, Impacts and Mitigation		3
ESS 311	Ecosystem Ecology		3
F 310/RS 310	Forest and Rangeland Ecogeography		3
F 311	Forest Ecology		3
GR 304/WR 304	Sustainable Watersheds	3A	3
GR 311	GIS for Social Scientists		3
GR 420	Spatial Analysis with GIS		4
NR 322	Introduction to Geographic Information Systems		4
NRRT 320	International Issues-Recreation and Tourism		3
PHIL 345	Environmental Ethics		3
POLS 361	U.S. Environmental Politics and Policy		3
POLS 362	Global Environmental Politics		3
RS 300	Rangeland Conservation and Stewardship		3
SOC 320	Population-Natural Resources and Environment		3
SOC 322	Introduction to Environmental Justice		3
SOC 364	Food, Agriculture and Global Society		3

1 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

2 Select two upper-division (300- to 400-level) courses, one in the junior year and one in the senior year, for a minimum total of 6 credits from the Guided Electives department list.

3 Students may petition to substitute courses not on the Guided Electives department list with approval of advisor.

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)		X	1B	1
Select one group from the following:					4

Group A:					
BZ 110	Principles of Animal Biology (GT-SC2)			3A	
BZ 111	Animal Biology Laboratory (GT-SC1)			3A	
Group B:					
BZ 120	Principles of Plant Biology (GT-SC1)			3A	
Arts and Humanities				3B	3
	Total Credits				13
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
SPCM 200	Public Speaking				3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
Social and Behavioral Sciences				3C	3
Elective					3
BZ 110/BZ 111 or BZ 120, CO 150, and MATH 124 must be completed by the end of Semester 2.		X			
	Total Credits				15
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
LAND 220/ LIFE 220	Fundamentals of Ecology (GT-SC2)	X		3A	3
NRRT 231	Principles-Parks/Protected Area Management	X			3
NRRT 262	Principles of Environmental Communication	X			3
Guided Natural Resources Elective (See list on Major Requirements Tab)					3
Elective					2
	Total Credits				14
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
STAT 201	General Statistics	X			3
Select one course from the following:			X		3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
Diversity and Global Awareness				3E	3
Historical Perspectives				3D	3
Elective					3
SPCM 200 must be completed by the end of Semester 4.					
	Total Credits				15
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:		X			5
NR 220	Natural Resource Ecology and Measurements				
NR 382A	Travel Abroad: Social-Ecological Field Methods in Kenya				
NR 382B	Travel Abroad: Social-Ecological Field Methods in Belize				
	Total Credits				5
Junior					
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
NR 320	Natural Resources History and Policy		X		3
NR 377	Pre-Internship	X			1
NRRT 301	Conservation Leadership	X			3
NRRT 340	Principles in Conservation Planning and Mgmt	X			3
NRRT 376	Human Dimensions Research and Analysis		X		3
Guided Natural Resources Elective (See list on Major Requirements Tab)					3
	Total Credits				16

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
NR 300	Biological Diversity	X			3
NR 319	Geospatial Applications in Natural Resources		X		4
NRRT 330	Social Aspects of Natural Resource Management		X		3
NRRT 440	Applications in Environmental Communication	X			3
	Total Credits				13
Senior					
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
NR 440	Applications in Conservation Planning	X			3
NRRT 362	Environmental Conflict Management	X			3
NRRT 400	Environmental Governance	X			3
NRRT 401	Collaborative Conservation	X		4A	3
Guided Natural Resources Elective (See list on Major Requirements Tab)					3
	Total Credits				15
Semester 9		**Critical**	**Recommended**	**AUCC**	**Credits**
NR 310	Ecosystem Services and Human Well-Being	X			3
NRRT 431	Integrated Planning for Conservation	X		4B,4C	3
NRRT 463	Non-Profit Administration in Conservation	X			3
NRRT 487	Internship	X			5
The benchmark courses for the 9th semester are the remaining courses in the entire program of study.		X			
	Total Credits				14
	Program Total Credits:				120

Major in Natural Resource Tourism

Graduates possess technical skills in problem solving, systems planning, integrative team decision making, quantitative analysis, oral and verbal communications, and computer operations. Graduates are familiar with skills useful in a business setting and the historic evolution of environmental conservation. Additionally, graduates develop an appreciation for how their discipline contributes to environmental stewardship and sustainability. Two concentrations are offered – Global Tourism and Natural Resource Tourism.

Learning Outcomes

Students will demonstrate:

- Written and oral communication skills, with a focus on writing skills. Student writing and speaking will embody characteristics that represent attention to high quality communication skills, including substance of the issue addressed, organization of the paper or presentation, mechanics, and evidence.
- Research and analytical skills. These skills will include the ability to generate a problem statement, associated research questions, data acquisition methodologies, synthesis of related information and the development of management implications and conclusions.
- Planning skills. These will involve an ability to implement the planning process, including setting goals and objectives, acquiring relevant background information, synthesizing information, conceptualizing ideas, constructing alternative courses of action, making recommendations and considering ways of evaluating decisions.

Potential Occupations

Graduates primarily work in a variety of private commercial tourism and recreation enterprises. Competition can be intense for full time/permanent positions in highly attractive natural resource locations, although ample opportunities exist to gain experience through seasonal/temporary and volunteer work. Participation in a high quality, pre-approved internship is required for the degree. Graduates who go on for advanced studies can attain more responsible positions with the possibility of rising to top professional levels.

Career opportunities available to graduates in the global and natural resource tourism concentrations include, but are not limited to: retail relations manager; social media planner; convention sales coordinator; marketing/public relations specialist; trip counselor; travel account manager; food and beverage supervisor; small tourism enterprise/ecotourism owner/manager; regional sales director; account executive; director of trail development; tourism planner; travel pricing and demand analyst; concession specialist; marketing/sales manager; conference/meeting/event planner; resort services director; member relations director; purchasing manager; camp and nature center director; tourist information center manager; sustainable energy director.

Concentrations

- Global Tourism Concentration
- Natural Resource Tourism Concentration

Major in Natural Resource Tourism, Global Tourism Concentration

The Global Tourism concentration is focused on a unique blend of subjects. Business and tourism topics provide students with planning, management, marketing, financial, and entrepreneurship skills essential

in the tourism industry. Because sustainable tourism requires a healthy natural environment, the environment is another area of study. Finally, students are provided cross-cultural experience by learning a second language, studying at a university abroad, and participating in an international internship.

Requirements Effective Fall 2019

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
Select one of the following:			5
L*** 101 First Year Language II			
L*** 108 Intensive Language I			
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
NR 120A or 120B	Environmental Conservation (GT-SC2) Environmental Conservation	3A	3-4
SPCM 200	Public Speaking		3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	7
Electiive			1
	Total Credits		31-32

Sophomore

ACT 205	Fundamentals of Accounting		3
BUS 205	Legal and Ethical Issues in Business		3
L*** 200 Second Year Language I			3
L*** 201 Second Year Language II			3
NRRT 270	Principles of Natural Resource Tourism		3
RRM 101	Hospitality Industry		3
RRM 200	Hotel Operations		3
STAT 201	General Statistics		3
Arts and Humanities		3B	3
	Total Credits		27

Junior

MGT 305	Fundamentals of Management		3
MKT 305	Fundamentals of Marketing		3
NR 320	Natural Resources History and Policy		3
NR 377	Pre-Internship		1
NRRT 320	International Issues-Recreation and Tourism		3
NRRT 372	Tourism Promotion		3
NRRT 376	Human Dimensions Research and Analysis		3
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
Select one from the following:			3

L*** 300 Reading and Writing for Communication			
L*** 304 Third-Year Language I			
Select one from the following:			3
L*** 305 Third-Year Language II			
L*** 335 Issues in Culture			
Diversity and Global Awareness[1]		3E	3
	Total Credits		31

Senior

MKT 365	International Marketing		3
NR 300	Biological Diversity		3
NRRT 442	Tourism Planning	4B,4C	3
NRRT 470	Tourism Impacts	4A	3
NRRT 471	Starting and Managing Tourism Enterprise		3
NRRT 487	Internship		4
NRRT 499	Senior Thesis		3
Upper-division language electives			5-10
Historical Perspectives		3D	3
	Total Credits		30-35
	Program Total Credits:		120

[1] This requirement is satisfied by studying abroad with a minimum of 3 credits of SA 482.

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)		X	1B	1
Select one course from the following:		X			3-4
NR 120A	Environmental Conservation (GT-SC2)			3A	
NR 120B	Environmental Conservation				
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
Elective					1
	Total Credits				16-17

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
ECON 202	Principles of Microeconomics (GT-SS1)			3C	3
SPCM 200	Public Speaking				3
Select one from the following:		X			5
L*** 101 First Year Language II					
L*** 108 Intensive Language I					
Biological and Physical Sciences				3A	4
AUCC 1B (Quantitative Reasoning) and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 205	Fundamentals of Accounting				3
L*** 200 Second Year Language I		X			3
NRRT 270	Principles of Natural Resource Tourism	X			3

RRM 101	Hospitality Industry	X			3
	Total Credits				12
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 205	Legal and Ethical Issues in Business				3
L*** 201 Second Year Language I		X			3
RRM 200	Hotel Operations				3
STAT 201	General Statistics	X			3
Arts and Humanities				3B	3
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
MGT 305	Fundamentals of Management				3
NR 320	Natural Resources History and Policy				3
NR 377	Pre-Internship	X			1
NRRT 376	Human Dimensions Research and Analysis				3
Select one course from the following:		X			3
L*** 300 Reading and Writing for Communication					
L*** 304 Third-Year Language I					
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)			2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
ECON 202 must be completed by the end of Semester 5.		X			
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
MKT 305	Fundamentals of Marketing	X			3
NRRT 320	International Issues-Recreation and Tourism				3
Select one course from the following:					3
L*** 305 Third-Year Language II					
L*** 335 Issues in Culture					
NRRT 372	Tourism Promotion				3
Diversity and Global Awareness				3E	3
AUCC 3E is satisfied by studying abroad with a minimum of 3 credits of SA 482.					
MGT 305 must be completed by the end of Semester 6.		X			
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
MKT 365	International Marketing				3
NRRT 442	Tourism Planning			4B,4C	3
NRRT 471	Starting and Managing Tourism Enterprise				3
Upper-Division Language Electives					5
Historical Perspectives				3D	3
	Total Credits				17
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
NR 300	Biological Diversity	X			3
NRRT 470	Tourism Impacts	X			3
NRRT 487	Internship	X		4A	4
NRRT 499	Senior Thesis	X			3

Upper-Division Language Elective	X	0-5
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X	
Total Credits		13-18
Program Total Credits:		120

Major in Natural Resource Tourism, Natural Resource Tourism Concentration

The Natural Resource Tourism curriculum emphasizes courses in tourism management, marketing and planning, natural resources, business, entrepreneurship, and social science to develop appropriate skills for work in recreation and tourism enterprises. The department works closely with several natural resource-focused Colorado resorts and private tourism enterprises.

Requirements Effective Fall 2019

Freshman

		AUCC	Credits
BUS 150	Business Computing Concepts and Applications		3
CO 150	College Composition (GT-CO2)	1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
Political Science Elective – Select one course from the following:			3
POLS 101	American Government and Politics (GT-SS1)	3C	
POLS 103	State and Local Government and Politics (GT-SS1)	3C	
POLS 131	Current World Problems (GT-SS1)	3E	
POLS 232	International Relations (GT-SS1)	3E	
POLS 241	Comparative Government and Politics (GT-SS1)	3E	
Arts and Humanities		3B	6
Biological and Physical Sciences		3A	7
	Total Credits		28

Sophomore

ACT 205	Fundamentals of Accounting		3
BUS 205	Legal and Ethical Issues in Business		3
NRRT 231	Principles-Parks/Protected Area Management		3
NRRT 270	Principles of Natural Resource Tourism		3
RRM 101[1]	Hospitality Industry		3
SPCM 200[1]	Public Speaking		3
STAT 201[1]	General Statistics		3
Guided Electives (see list below)			8
	Total Credits		29

Junior

MGT 305	Fundamentals of Management		3
MKT 305	Fundamentals of Marketing		3
NR 320	Natural Resources History and Policy		3
NR 377	Pre-Internship		1
NRRT 320	International Issues-Recreation and Tourism		3
NRRT 376	Human Dimensions Research and Analysis		3
Select one course from the following:			3
JTC 350	Public Relations		

NR 400	Public Communication in Natural Resources		
Advanced Writing		2	3
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Guided Electives (see list below)			3
	Total Credits		31

Senior

NRRT 330	Social Aspects of Natural Resource Management		3
NRRT 372	Tourism Promotion		3
NRRT 442	Tourism Planning	4B,4C	3
NRRT 460	Tourism Event and Conference Planning		3
NRRT 470	Tourism Impacts	4A	3
NRRT 471	Starting and Managing Tourism Enterprise		3
NRRT 487	Internship		5
Guided Electives (see list below)			9
	Total Credits		32
	Program Total Credits:		120

[1] STAT 201, SPCM 200 and RRM 101 are not offered online at CSU. Students should consult with their advisor regarding acceptable equivalent courses available online through the Colorado Community College System (including Front Range Community College).

Guided Electives List (20 credits)

Code	Title	AUCC	Credits
AGRI 270/IE 270	World Interdependence-Population and Food (GT-SS3)	3E	3
ANTH 100	Introductory Cultural Anthropology (GT-SS3)	3C	3
ANTH 310	Peoples and Cultures of Africa		3
ANTH 319	Latin American Peasantries		3
ANTH 329	Cultural Change		3
AREC 340/ECON 340	Introduction-Economics of Natural Resources		3
AREC 346/ECON 346	Economics of Outdoor Recreation		3
E 403	Writing the Environment		3
GR 100	Introduction to Geography (GT-SS2)	3C	3
GR 320	Cultural Geography		3
HIST 100	Western Civilization, Pre-Modern (GT-HI1)	3D	3
HIST 101	Western Civilization, Modern (GT-HI1)	3D	3
L*** XXX (any foreign language course)			
LAND 110	Introduction to Landscape Architecture	3B	3
NR 319	Geospatial Applications in Natural Resources		4
NR 322	Introduction to Geographic Information Systems		4
NR 323/GR 323	Remote Sensing and Image Interpretation		3
NR 422	GIS Applications in Natural Resource Management		4

NR 440	Applications in Conservation Planning		3
NRRT 350	Wilderness Leadership		3
NRRT 351	Wilderness Instructors		3
NRRT 431	Integrated Planning for Conservation		3
PHIL 345	Environmental Ethics		3
PSY 100	General Psychology (GT-SS3)	3C	3
PSY 315	Social Psychology		3
PSY 316	Environmental Psychology		3
SOC 100	General Sociology (GT-SS3)	3C	3
SOC 105	Social Problems (GT-SS3)	3C	3
SOC 320	Population-Natural Resources and Environment		3
SOC 341	Sociology of Rural Life		3
SOC 362	Social Change		3
Other advisor approved guided electives course			

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)		X	1B	1
Political Science Elective (See concentration requirements tab.)					3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 150	Business Computing Concepts and Applications				3
ECON 202	Principles of Microeconomics (GT-SS1)			3C	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	4
AUCC 1B (Quantitative Reasoning) and CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				13

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 205	Fundamentals of Accounting				3
NRRT 231	Principles-Parks/Protected Area Management	X			3
NRRT 270	Principles of Natural Resource Tourism	X			3
RRM 101	Hospitality Industry	X			3
Guided Elective (See concentration requirements tab.)					3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 205	Legal and Ethical Issues in Business				3
SPCM 200	Public Speaking				3
STAT 201	General Statistics				3
Guided Elective (See concentration requirements tab.)					5
	Total Credits				14

Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
MGT 305	Fundamentals of Management				3
NR 320	Natural Resources History and Policy	X			3
NR 377	Pre-Internship				1
NRRT 376	Human Dimensions Research and Analysis				3
Advanced Writing				2	3
Guided Elective (See concentration requirements tab.)					3
ECON 202 must be completed by the end of Semester 5.		X			
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
MKT 305	Fundamentals of Marketing				3
NRRT 320	International Issues-Recreation and Tourism				3
Select one course from the following:					3
JTC 350	Public Relations				
NR 400	Public Communication in Natural Resources				
Diversity and Global Awareness				3E	3
Historical Perspectives				3D	3
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
NRRT 330	Social Aspects of Natural Resource Management				3
NRRT 442	Tourism Planning			4B,4C	3
NRRT 471	Starting and Managing Tourism Enterprise				3
Guided Electives (See concentration requirements tab.)					6
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
NRRT 372	Tourism Promotion	X			3
NRRT 460	Tourism Event and Conference Planning	X			3
NRRT 470	Tourism Impacts	X		4A	3
NRRT 487	Internship	X			5
Guided Elective (See concentration requirements tab.)		X			3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				17
	Program Total Credits:				120

Graduate Certificate in Adventure Tourism

The Graduate Certificate in Adventure Tourism is a 6 course, 12-credit offering that provides theoretical, managerial, and entrepreneurial knowledge and skills required for successfully developing and managing land-, water-, and air-based adventure tourism enterprises.

Effective Fall 2017

Additional coursework may be required due to prerequisites.

Code	Title	Credits
NRRT 530	Insight into the Adventure Tourism Industry	2
NRRT 531	Building an Adventure Tourism Enterprise	2
NRRT 532	Leading the Adventure Tourism Experience	2
NRRT 533	Adventure Tourism Policy and Planning	2
NRRT 534	Applications in the Outdoor Products Industry	2
NRRT 655	Tourism Marketing Concepts and Applications	2
Program Total Credits:		12

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Graduate Certificate in Agritourism Management

The Graduate Certificate in Agritourism Management is a 6 course, 12 credit offering that provides students with practical, managerial and

theoretical skills needed for the successful creation and management of an agritourism operation.

Effective Fall 2019

Additional coursework may be required due to prerequisites.

Code	Title	Credits
NRRT 541	Overview & Trends of Agritourism Management	2
NRRT 542	Spatial & Community Dimensions of Agritourism	2
NRRT 545	Culinary Tourism	2
NRRT 548	Agritourism Enterprise Management	2
NRRT 650	Financial Management in Tourism	2
RRM 520	Lodging Management	2
Program Total Credits:		12

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Graduate Certificate in Communications for Conservation

The Graduate Certificate in Communications for Conservation is a 6-course, 12-credit program covering concepts and strategies, research and case studies, and tools and skills for successful conservation communications. Focus is given to various methods of community and stakeholder outreach, and public and media relations as they relate to conservation and conservation planning.

Effective Spring 2019

Additional coursework may be required due to prerequisites.

Code	Title	Credits
NR 569	Conservation Communication Fundamentals	2
NR 570	Conservation Managers – Media Communications	2
NR 571	New Media Communications for Conservation	2
NR 572	Strategic Communications for Conservation	2
NR 573	Conservation Crisis Communications	2
NR 574	Advanced Communications for Conservation	2
Program Total Credits:		12

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Graduate Certificate in Ski Area Management

The graduate certificate in ski area management is a 6 course, 12 credit offering that provides students with the management, finance, and operational knowledge required for successful ski area management and operations. Principles relating to sustainability, strategic management, marketing, human resource management, finance and investment, and planning and development are examined and applied within a ski area context.

Effective Fall 2015

Additional coursework may be required due to prerequisites.

Code	Title	Credits
NRRT 520	Perspectives on Ski Area Management	2
NRRT 521	Sustainable Ski Area Management	2
NRRT 522	Ski Area Operations and Human Resources	2
NRRT 523	Strategic Ski Area Marketing and Management	2
NRRT 524	Ski Area Finance and Investment	2
NRRT 525	Ski Area Planning and Development	2
Program Total Credits:		12

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Master of Conservation Leadership, Plan C

The Master of Conservation Leadership is a graduate degree which prepares leaders to address complex conservation issues at local, regional, and global scales. The program is built around principles of experiential learning, inter-disciplinary instruction, and applied approaches.

Requirements
Effective Spring 2019

First Year		Credits
NR 541	Conservation Policy, Finance, and Governance	2
NR 543B	Catalyzing Change: Collaborative Conservation	3
NR 544D	Conservation Methods: Spatial Information	1
NR 544E	Conservation Methods: Integrative Field Work	3
NR 545B	Multilevel Views: Society and Conservation- Global	3
NR 549A	Conservation and Systems Leadership	3
NR 549B	Conservation and Systems Leadership: Field	3
NR 562	Ecosystem Services in a Changing World	3

NR 564	Systems Thinking and Biodiversity	3
	Total Credits	24
Second Year		
NR 586	Conservation Leadership Capstone	6
	Total Credits	6
	Program Total Credits:	30

A minimum of 30 credits are required to complete this program.

Master of Science in Environmental Leadership

The Master of Science in Environmental Leadership prepares leaders to address complex conservation issues at local, regional, and global scales.

Plan A Effective Fall 2019

First Year		Credits
NR 541	Conservation Policy, Finance, and Governance	2
NR 543B	Catalyzing Change: Collaborative Conservation	3
NR 544D	Conservation Methods: Spatial Information	1
NR 544E	Conservation Methods: Integrative Field Work	3
NR 545B	Multilevel Views: Society and Conservation- Global	3
NR 549A	Conservation and Systems Leadership	3
NR 549B	Conservation and Systems Leadership: Field	3
NR 562	Ecosystem Services in a Changing World	3
NR 564	Systems Thinking and Biodiversity	3
	Total Credits	24
Second Year		
NRRT 699	Thesis	6
	Total Credits	6
	Program Total Credits:	30

A minimum of 30 credits are required to complete this program.

Plan B Effective Fall 2019

First Year		Credits
NR 541	Conservation Policy, Finance, and Governance	2
NR 543B	Catalyzing Change: Collaborative Conservation	3
NR 544D	Conservation Methods: Spatial Information	1
NR 544E	Conservation Methods: Integrative Field Work	3
NR 545B	Multilevel Views: Society and Conservation- Global	3
NR 549A	Conservation and Systems Leadership	3
NR 549B	Conservation and Systems Leadership: Field	3
NR 562	Ecosystem Services in a Changing World	3
NR 564	Systems Thinking and Biodiversity	3
	Total Credits	24
Second Year		
NRRT 698	Research	6
	Total Credits	6
	Program Total Credits:	30

A minimum of 30 credits are required to complete this program.

Master of Science in Conservation Leadership, Plan A

No new students are being admitted to this program of study. Students interested in this area of study should see the M.S. in Environmental Leadership.

Requirements Effective Fall 2012

First Year		Credits
NR 540A	Environmental Issues: Water Resources	2
NR 540B	Environmental Issues: Biological Diversity	2
NR 540C	Environmental Issues: Ecologic Reconciliation	2
NR 540D	Environmental Issues: Ecosystem Services	2
NR 541	Conservation Policy, Finance, and Governance	2

NR 542	Global Change and Conservation	2
NR 543A	Catalyzing Change: Conflict and Conservation	2
NR 543B	Catalyzing Change: Collaborative Conservation	2
NR 544A	Conservation Methods: Watershed Sciences	1
NR 544B	Conservation Methods: Ecological Sciences	1
NR 544C	Conservation Methods: Social Sciences	1
NR 544D	Conservation Methods: Spatial Information	1
NR 544E	Conservation Methods: Integrative Field Work	2-4
NR 545A or 545B	Multilevel Views: Society and Conservation- Mexico Multilevel Views: Society and Conservation- Global	2
NR 549A	Conservation and Systems Leadership	Var.
	Total Credits	26-32
Second Year		
NR 546A or 546B	Socioecological Context: Mexico Socioecological Context: Global	2
NR 547	Poverty and Sustainable Development	2
NR 548A or 548B	Conservation Planning and Management: Mexico Conservation Planning and Management: Global	2
NR 549B	Conservation and Systems Leadership: Field	1-3
NRRT 698	Research	3-7
NRRT 699	Thesis	3-4
	Total Credits	13-20
	Program Total Credits:	39-52

A minimum of 39 credits are required to complete this program.

Master of Science in Conservation Leadership, Plan B

No new students are being admitted to this program of study. Students interested in this area of study should see the M.S. in Environmental Leadership.

Requirements Effective Fall 2012

First Year		**Credits**
NR 540A	Environmental Issues: Water Resources	2
NR 540B	Environmental Issues: Biological Diversity	2
NR 540C	Environmental Issues: Ecologic Reconciliation	2
NR 540D	Environmental Issues: Ecosystem Services	2
NR 541	Conservation Policy, Finance, and Governance	2
NR 542	Global Change and Conservation	2
NR 543A	Catalyzing Change: Conflict and Conservation	2
NR 543B	Catalyzing Change: Collaborative Conservation	2
NR 544A	Conservation Methods: Watershed Sciences	1
NR 544B	Conservation Methods: Ecological Sciences	1
NR 544C	Conservation Methods: Social Sciences	1
NR 544D	Conservation Methods: Spatial Information	1
NR 544E	Conservation Methods: Integrative Field Work	2-4
NR 545A or 545B	Multilevel Views: Society and Conservation- Mexico Multilevel Views: Society and Conservation- Global	2
NR 549A	Conservation and Systems Leadership	Var.
	Total Credits	26-32
Second Year		
NR 546A or 546B	Socioecological Context: Mexico Socioecological Context: Global	2
NR 547	Poverty and Sustainable Development	2
NR 548A or 548B	Conservation Planning and Management: Mexico Conservation Planning and Management: Global	2

NR 549B	Conservation and Systems Leadership: Field	1-3
NRRT 698	Research	3
	Total Credits	10-12
	Program Total Credits:	36-44

A minimum of 36 credits are required to complete this program.

Master of Science in Conservation Leadership, Plan A, Global Specialization

No new students are being admitted to this specialization. Students interested in this area of study please contact the department or an advisor.

Effective Fall 2015

First Year		Credits
NR 541	Conservation Policy, Finance, and Governance	2
NR 543B	Catalyzing Change: Collaborative Conservation	3
NR 544D	Conservation Methods: Spatial Information	1
NR 544E	Conservation Methods: Integrative Field Work	3
NR 545B	Multilevel Views: Society and Conservation- Global	3
NR 549A	Conservation and Systems Leadership	3
NR 549B	Conservation and Systems Leadership: Field	3
NR 562	Ecosystem Services in a Changing World	3
NR 564	Systems Thinking and Biodiversity	3
	Total Credits	24
Second Year		
NR 546B	Socioecological Context: Global	3
NR 548B	Conservation Planning and Management: Global	3
NR 563	Research Methods in Conservation--Global	4
NRRT 699	Thesis	1-4
	Total Credits	11-14
	Program Total Credits:	35-38

A minimum of 35 credits are required to complete this program.

Master of Science in Conservation Leadership, Plan B, Global Specialization

No new students are being admitted to this specialization. Students interested in this area of study please contact the department or an advisor.

Effective Fall 2015

First Year		Credits
NR 541	Conservation Policy, Finance, and Governance	2
NR 543B	Catalyzing Change: Collaborative Conservation	3
NR 544D	Conservation Methods: Spatial Information	1
NR 544E	Conservation Methods: Integrative Field Work	3
NR 545B	Multilevel Views: Society and Conservation- Global	3
NR 549A	Conservation and Systems Leadership	3
NR 549B	Conservation and Systems Leadership: Field	3
NR 562	Ecosystem Services in a Changing World	3
NR 564	Systems Thinking and Biodiversity	3
	Total Credits	24
Second Year		
NR 546B	Socioecological Context: Global	3
NR 548B	Conservation Planning and Management: Global	3
NR 563	Research Methods in Conservation--Global	4
NRRT 698	Research	1-7
	Total Credits	11-17
	Program Total Credits:	35-41

A minimum of 35 credits are required to complete this program.

Master of Science in Human Dimensions of Natural Resources, Plan A

Effective Fall 2005

Code	Title	Credits
NRRT 565	Research-Human Dimensions Natural Resources	3
NRRT 605	Human Dimensions of Natural Resources Theory	3
NRRT 665	Survey Research and Analysis	3
NRRT 699	Thesis	6
Select one from the following:		3
NRRT 765	Applied Multivariate Analysis [1]	
Qualitative Methods Course		
Statistics (300-level or higher)		3
Electives		14
Program Total Credits:		35

A minimum of 35 credits are required to complete this program.

1 Or qualitative methods course.

Master of Tourism Management, Plan C (M.T.M)

This nine-month master's program prepares students to advance their career in public, commercial, or nonprofit organizations in the natural resource tourism industry. It emphasizes the combination of tourism, business and sustainability concepts. This program is applicable for those looking to enter the tourism industry or to be competitive for higher level positions within the industry.

The program includes graduate courses in:

- Concepts that guide strategic analysis and decision-making for tourism practitioners and the interdependence of the diverse sectors within the tourism industry;
- Economic, social, and environmental impacts (also known as the triple bottom line) of tourism and the impact of tourism on land use and natural resources;
- Foundations of sustainable tourism development; and
- Identification and understanding of international policies, trends and challenges facing the tourism industry and tourism organizations.

This master's degree can be completed on the main campus, face-to-face or online.

Requirements
Effective Spring 2016

Code	Title	Credits
Required Courses		
Select one of the following:		2
NRRT 523	Strategic Ski Area Marketing and Management	
NRRT 655	Tourism Marketing Concepts and Applications	
Select one of the following:		2
NRRT 524	Ski Area Finance and Investment	
NRRT 650	Financial Management in Tourism	
NRRT 600	Tourism Industry Concepts and Practices	2
NRRT 601	Tourism Quantitative Analysis I	2
NRRT 602	Tourism Quantitative Analysis II	2
NRRT 610	Natural Resource Management and Tourism	2
NRRT 615	Sustainable Tourism Development Foundation	2
NRRT 620	Organizational Management in Tourism	2
NRRT 625	Communication/Conflict Management in Tourism	2
NRRT 660	Law and Legal Liability in Tourism [1]	2
NRRT 662	Global Tourism Policy	2
NRRT 671	Strategic Management for Travel and Tourism	2
NRRT 679A	Current Topics in Nature Based Tourism [1]	1
NRRT 679B	Current Topics in Nature Based Tourism [1]	1
Directed Electives [2,3]		4-6
Program Total Credits:		30-32

A minimum of 30-32 credits are required to complete this program.

1 Memorandum of Understanding (MOU) with international universities may identify culturally specific course substitutions and total credits.

2 Select a minimum of 4 credits of directed electives approved by advisor. For those international students enrolled in this program, the number of directed electives credits (approved by the advisor) is to be consistent with the MOU with the cooperating international university.

3 Directed electives may be used toward a certificate with approval of advisor. The number of directed electives that satisfy the Master of Tourism Management and a graduate certificate may be limited by advisor.

College of Natural Sciences

Office in Statistics Building, Room 117
(970) 491-1300
natsci.colostate.edu (http://www.natsci.colostate.edu)

Professor Janice Nerger, Dean
Professor Simon Tavener, Executive Associate Dean for Academics
Professor Melissa Reynolds, Associate Dean for Research
Dr. Lisa Dysleski, Associate Dean of Undergraduate Programs

Undergraduate Majors

- Applied Computing Technology
- Biochemistry
- Biological Science
- Chemistry
- Computer Science
- Data Science
- Mathematics
- Natural Sciences
- Neuroscience
- Physics
- Psychology
- Statistics
- Zoology

Undergraduate Minors

- Applied Statistics
- Biochemistry
- Botany
- Chemistry
- Computer Science
- Mathematics
- Mathematical Biology
- Physics
- Statistics
- Zoology

For a complete list of departmental program offerings (including certificates), see individual department catalog pages.

College-Wide Graduate Programs

Master's Programs

- Master of Natural Sciences Education, Plan C
- Master of Science in Materials Science and Engineering, Plan A
- Master of Science in Materials Science and Engineering, Plan B
- Professional Science Master's in Natural Science – Biological Data Analytics
- Professional Science Master's in Natural Science – Microscope Imaging Technology
- Professional Science Master's in Natural Science – Zoo, Aquarium, and Animal Shelter Management Specialization

Ph.D.

- Ph.D. in Materials Science and Engineering

College Programs

Our goal is to provide an extraordinary education to students in order to prepare them for science careers in industry, modern research and academia. In addition, the College of Natural Sciences provides foundational courses in the biological, mathematical, behavioral, and physical sciences for CSU's seven other colleges, supporting CSU's broad liberal arts and general education objectives.

Undergraduate Majors

The college's eight departments offer thirteen undergraduate majors, all leading to a Bachelor of Science degree which requires a minimum of 120 credits including 42 or more credits in upper-division courses. The undergraduate major in Neuroscience is offered jointly with the College of Veterinary Medicine and Biomedical Sciences.

A major should be chosen based with both educational and career objectives in mind. Students earning degrees in College of Natural Sciences majors will be well prepared to succeed in careers in biochemistry, biology, chemistry, computer science, mathematics, physics, and statistics, including middle/high school science and math instruction. Students who plan to enter a human- or animal-health profession must formally declare an academic major. There is no specific premedical, pre-veterinary, etc. major at CSU because health profession programs do not require a specific major, only specific courses. Majors such as Biological Sciences, Biochemistry, Chemistry, Psychology and Zoology are popular for students interested in a career in the health professions.

All College of Natural Sciences students have the ability to work with an academic advisor to plan the coursework necessary to graduate from CSU. The College of Natural Sciences also provides students with the opportunity to seek specialized career counseling from a career education manager in the CSU Career Center. Our services are offered to all Natural Sciences students and alumni in all aspects of their career development. Additionally, pre-health professions advisors are available at the Collaborative for Student Achievement (http://studentachievement.colostate.edu), located in Canvas Stadium, East Building, 1415 Meridian Ave.

The college provides multiple opportunities for students to become engaged outside the classroom, including SACNAS, Student Leaders in Science, the College of Natural Sciences Learning Community (a residential learning community), and undergraduate research opportunities.

Education Abroad

Education abroad programs are available to all students in the College of Natural Sciences. Because the knowledge of another culture is valuable in understanding one's own, students are strongly encouraged to participate in at least one educational experience outside of the United States as part of their overall program at CSU. Students interested in education abroad should plan, well in advance, by discussing opportunities with their academic advisor and by visiting the Education Abroad Office through the Office of International Programs (http://educationabroad.colostate.edu). The Education Abroad office offers information about credit and non-credit opportunities (service-learning/volunteer, research, internships), as well as support prior to and during travel, information about scholarships and financial aid, and resources for diverse populations (including adult learners & veterans, multicultural students and students with disabilities).

Graduate Programs

Faculty and graduate students in the College of Natural Sciences are engaged in cutting-edge research in multiple disciplines and the college is proud of the graduate student education it provides. Master of Science and Doctor of Philosophy degrees are offered by all departments and a Master of Natural Sciences Education is offered through the

college. The college also offers Professional Science Master's in Natural Sciences degrees with specializations in Biological Data Analytics, Microscope Imaging Technology, and Zoo, Aquarium and Animal Shelter Management. For detailed information about graduate degree programs, please consult the appropriate department and see the Graduate and Professional Bulletin.

Major in Data Science

Data science is the discovery of knowledge and insight through the analysis of data. As such, it draws on the study of algorithms and their implementation from computer science, the power of abstraction and of geometric and topological formalism from mathematics, and the modeling and analysis of data from statistics. It has emerged as a separate field in response to the avalanche of data from web enabled sensors and instrumentation, mobile devices, web logs and transactions, and the availability of computing power for data storage and analysis. Modern data is challenging not only due to its large scale, but also because it is increasingly heterogeneous and unstructured. Information gleaned from this data none-the-less is revolutionizing diverse areas of human endeavor from health policy to high energy physics.

Concentrations

- Computer Science Concentration
- Economics Concentration
- Mathematics Concentration
- Statistics Concentration

Major in Data Science, Computer Science Concentration

Data science is the discovery of knowledge and insight through the analysis of data. As such, it draws on the study of algorithms and their implementation from computer science, the power of abstraction and of geometric and topological formalism from mathematics, and the modeling and analysis of data from statistics. It has emerged as a separate field in response to the avalanche of data from web enabled sensors and instrumentation, mobile devices, web logs and transactions, and the availability of computing power for data storage and analysis. Modern data is challenging not only due to its large scale, but also because it is increasingly heterogeneous and unstructured. Information gleaned from this data none-the-less is revolutionizing diverse areas of human endeavor from health policy to high energy physics.

Requirements
Effective Fall 2018

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
CS 163 or 164	CS1---No Prior Programming Experience CS1--Prior Programming Experience		4
CS 165	CS2--Data Structures		4
DSCI 100	First Year Seminar in Data Science		1
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
STAT 158	Introduction to R Programming		1
STAT 315	Statistics for Engineers and Scientists		3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	4
	Total Credits		31

Sophomore

CS 220	Discrete Structures and their Applications		4
CS 253	Software Development with C++		4
CS 270	Computer Organization		4
DSCI 235	Data Wrangling		2
DSCI 369	Linear Algebra for Data Science		4
MATH 151	Mathematical Algorithms in Matlab I		1
MATH 261	Calculus for Physical Scientists III		4
STAT 341	Statistical Data Analysis I		3
STAT 342	Statistical Data Analysis II		3
	Total Credits		29

Junior

DSCI 320	Optimization Methods in Data Science		3

DSCI 335	Inferential Reasoning in Data Analysis		3
DSCI 336	Data Graphics and Visualization		1
Select one course from the following:			3
CS 320	Algorithms--Theory and Practice		
CS 370	Operating Systems		
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
CO 302	Writing in Digital Environments (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
Computer Science Electives (Select one course from the Computer Science Electives List below)			3-4
Data Science Electives (Select at least 6 credits from the Data Science Electives List below)			6-8
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	3
	Total Credits		28-31

Senior

DSCI 445	Statistical Machine Learning	4B	3
DSCI 478	Capstone Group Project in Data Science	4A,4C	4
Computer Science Electives (Select two courses not taken in the junior year from the Computer Science Electives List below)			7-8
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
Electives[1]			6-8
	Total Credits		29-32
	Program Total Credits:		120

Computer Science Electives List

Code	Title	AUCC	Credits
Select three courses from the list below not taken elsewhere in the program:			
CS 320	Algorithms--Theory and Practice		3
CS 370	Operating Systems		3
CS 420	Introduction to Analysis of Algorithms		4
CS 425	Introduction to Bioinformatics Algorithms		4
CS 430	Database Systems		4
CS 435	Introduction to Big Data		4
CS 440	Introduction to Artificial Intelligence		4
CS 455	Introduction to Distributed Systems		4
CS 475	Parallel Programming		4

Data Science Electives List

Code	Title	AUCC	Credits
DSCI 473	Introduction to Geometric Data Analysis		2
DSCI 475	Topological Data Analysis		2
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3

ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
MATH 301	Introduction to Combinatorial Theory		3
MATH 317	Advanced Calculus of One Variable		3
MATH 331	Introduction to Mathematical Modeling		3
MATH 332	Partial Differential Equations		3
MATH 360	Mathematics of Information Security		3
MATH 450	Introduction to Numerical Analysis I		3
MATH 451	Introduction to Numerical Analysis II		3
MATH 460	Information and Coding Theory		3
STAT 400	Statistical Computing		3
STAT 420	Probability and Mathematical Statistics I		3
STAT 430	Probability and Mathematical Statistics II		3
STAT 440	Bayesian Data Analysis		3

[1] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
DSCI 100	First Year Seminar in Data Science				1
Select one course from the following:		X			4
CS 163	CS1---No Prior Programming Experience				
CS 164	CS1--Prior Programming Experience				
MATH 160	Calculus for Physical Scientists I (GT-MA1)			1B	4
Arts and Humanities				3B	3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 165	CS2--Data Structures	X			4
MATH 161	Calculus for Physical Scientists II (GT-MA1)			1B	4
STAT 158	Introduction to R Programming				1
STAT 315	Statistics for Engineers and Scientists				3
Biological and Physical Sciences				3A	4
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 220	Discrete Structures and their Applications	X			4
CS 270	Computer Organization	X			4
MATH 261	Calculus for Physical Scientists III				4
STAT 341	Statistical Data Analysis I				3
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 253	Software Development with C++	X			4
DSCI 235	Data Wrangling				2
DSCI 369	Linear Algebra for Data Science				4
MATH 151	Mathematical Algorithms in Matlab I				1

STAT 342	Statistical Data Analysis II				3
	Total Credits				14
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
DSCI 320	Optimization Methods in Data Science				3
Select one course from the following:		X			3
CS 320	Algorithms--Theory and Practice				
CS 370	Operating Systems				
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
CO 302	Writing in Digital Environments (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
Data Science Elective (See List on Concentration Requirements Tab)					3-4
Biological and Physical Sciences				3A	3
	Total Credits				15-16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
DSCI 335	Inferential Reasoning in Data Analysis				3
DSCI 336	Data Graphics and Visualization				1
Computer Science Elective (Select one course not previously taken from List on Concentration Requirements Tab)					3-4
Data Science Elective (See List on Concentration Requirements Tab)					3-4
Arts and Humanities				3B	3
	Total Credits				13-15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
DSCI 445	Statistical Machine Learning			4B	3
Computer Science Elective (Select course not previously taken from List on Concentration Requirements Tab)					3-4
Diversity and Global Awareness				3E	3
Social and Behavioral Sciences				3C	3
Elective					3-4
	Total Credits				15-17
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
DSCI 478	Capstone Group Project in Data Science	X		4A,4C	4
Computer Science Elective (Select course not previously taken from List on Concentration Requirements Tab)		X			4
Historical Perspectives		X		3D	3
Elective		X			3-4
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				14-15
	Program Total Credits:				120

Major in Data Science, Economics Concentration

Data science is the discovery of knowledge and insight through the analysis of data. As such, it draws on the study of algorithms and their implementation from computer science, the power of abstraction and of geometric and topological formalism from mathematics, and the modeling and analysis of data from statistics. It has emerged as a separate field in response to the avalanche of data from web enabled sensors and instrumentation, mobile devices, web logs and transactions, and the availability of computing power for data storage and analysis. Modern data is challenging not only due to its large scale, but also because it is increasingly heterogeneous and unstructured. Information gleaned from this data none-the-less is revolutionizing diverse areas of human endeavor from health policy to high energy physics.

Requirements Effective Fall 2018

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
CS 163 or 164	CS1--No Prior Programming Experience CS1--Prior Programming Experience		4
CS 165	CS2--Data Structures		4
DSCI 100	First Year Seminar in Data Science		1
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
STAT 158	Introduction to R Programming		1
STAT 315	Statistics for Engineers and Scientists		3
	Total Credits		30

Sophomore

CS 220	Discrete Structures and their Applications		4
DSCI 235	Data Wrangling		2
DSCI 369	Linear Algebra for Data Science		4
ECON 211	Gender in the Economy (GT-SS1)	3E	3
ECON 304	Intermediate Macroeconomics		3
ECON 306	Intermediate Microeconomics		3
MATH 151	Mathematical Algorithms in Matlab I		1
MATH 261	Calculus for Physical Scientists III		4
STAT 341	Statistical Data Analysis I		3
STAT 342	Statistical Data Analysis II		3
	Total Credits		30

Junior

DSCI 320	Optimization Methods in Data Science		3
DSCI 335	Inferential Reasoning in Data Analysis		3
DSCI 336	Data Graphics and Visualization		1
ECON 335/AREC 335	Introduction to Econometrics		3
ECON 435	Intermediate Econometrics		3
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
CO 302	Writing in Digital Environments (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
Data Science Electives (Select a minimum of 3 credits from the Data Science Electives list below)			3-4
Biological and Physical Sciences		3A	3
Arts and Humanities		3B	6
Historical Perspectives		3D	3
	Total Credits		31-32

Senior

DSCI 445	Statistical Machine Learning	4B	3
DSCI 478	Capstone Group Project in Data Science	4A,4C	4
Data Science Electives (Select a minimum of 6 credits not previously taken from the Data Science Electives List below)			6-8
Economics Electives (See List below)			6

Biological and Physical Sciences		3A	4
Electives[1]			4-6
	Total Credits		27-31
	Program Total Credits:		120

Data Science Electives List

Code	Title	Credits
CS 253	Software Development with C++	4
CS 270	Computer Organization	4
CS 320	Algorithms--Theory and Practice	3
CS 370	Operating Systems	3
DSCI 473	Introduction to Geometric Data Analysis	2
DSCI 475	Topological Data Analysis	2
MATH 301	Introduction to Combinatorial Theory	3
MATH 317	Advanced Calculus of One Variable	3
MATH 331	Introduction to Mathematical Modeling	3
MATH 332	Partial Differential Equations	3
MATH 360	Mathematics of Information Security	3
MATH 450	Introduction to Numerical Analysis I	3
MATH 451	Introduction to Numerical Analysis II	3
STAT 400	Statistical Computing	3
STAT 420	Probability and Mathematical Statistics I	3
STAT 430	Probability and Mathematical Statistics II	3
STAT 440	Bayesian Data Analysis	3

Economics Electives List

Code	Title	AUCC	Credits
ECON 315	Money and Banking		3
ECON 317	Population Economics		3
ECON 320	Economics of Public Finance		3
ECON 325	Health Economics		3
ECON 327	Law and Economics		3
ECON 332/POLS 332	International Political Economy		3
ECON 340/AREC 340	Introduction-Economics of Natural Resources		3
ECON 346/AREC 346	Economics of Outdoor Recreation		3
ECON 372	History of Economic Institutions and Thought		3
ECON 376	Marxist Economic Thought		3
ECON 379/HIST 379	Economic History of the United States		3
ECON 404	Macroeconomic Policy		3
ECON 410	Labor Economics		3
ECON 440	Economics of International Trade and Policy		3
ECON 442	Economics of International Finance and Policy		3
ECON 460	Economic Development		3
ECON 463	Regional Economics		3
ECON 474	Recent Economic Thought		3

[1] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
CO 150	College Composition (GT-CO2)			1A	3
Select one course from the following:					4
CS 163	CS1---No Prior Programming Experience		X		
CS 164	CS1--Prior Programming Experience		X		
DSCI 100	First Year Seminar in Data Science				1

ECON 202	Principles of Microeconomics (GT-SS1)			3C	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)			1B	4
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 165	CS2--Data Structures		X		4
ECON 204	Principles of Macroeconomics (GT-SS1)			3C	3
MATH 161	Calculus for Physical Scientists II (GT-MA1)			1B	4
STAT 158	Introduction to R Programming				1
STAT 315	Statistics for Engineers and Scientists				3
	Total Credits				15
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 220	Discrete Structures and their Applications		X		4
ECON 306	Intermediate Microeconomics				3
MATH 261	Calculus for Physical Scientists III				4
STAT 341	Statistical Data Analysis I				3
	Total Credits				14
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
DSCI 235	Data Wrangling				2
DSCI 369	Linear Algebra for Data Science	X			4
ECON 211	Gender in the Economy (GT-SS1)			3E	3
ECON 304	Intermediate Macroeconomics				3
MATH 151	Mathematical Algorithms in Matlab I				1
STAT 342	Statistical Data Analysis II				3
	Total Credits				16
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
DSCI 320	Optimization Methods in Data Science				3
ECON 335/ AREC 335	Introduction to Econometrics				3
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
CO 302	Writing in Digital Environments (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
Arts and Humanities				3B	3
Historical Perspectives				3D	3
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
DSCI 335	Inferential Reasoning in Data Analysis				3
DSCI 336	Data Graphics and Visualization				1
ECON 435	Intermediate Econometrics				3
Data Science Elective (See List on Concentration Requirements Tab)					3-4
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	3
	Total Credits				16-17
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
DSCI 445	Statistical Machine Learning			4B	3
Data Science Electives (See List on Concentration Requirements Tab)					3-4
Economics Elective (See List on Concentration Requirements Tab)					3
Biological and Physical Sciences				3A	4

Elective					3
	Total Credits				16-17
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
DSCI 478	Capstone Group Project in Data Science	X		4A,4C	4
Data Science Electives (See List on Concentration Requirements Tab)		X			3-4
Economics Elective (See List on Concentration Requirements Tab)		X			3
Elective		X			3
The benchmark courses in the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				13-14
	Program Total Credits:				120

Major in Data Science, Mathematics Concentration

Data science is the discovery of knowledge and insight through the analysis of data. As such, it draws on the study of algorithms and their implementation from computer science, the power of abstraction and of geometric and topological formalism from mathematics, and the modeling and analysis of data from statistics. It has emerged as a separate field in response to the avalanche of data from web enabled sensors and instrumentation, mobile devices, web logs and transactions, and the availability of computing power for data storage and analysis. Modern data is challenging not only due to its large scale, but also because it is increasingly heterogeneous and unstructured. Information gleaned from this data none-the-less is revolutionizing diverse areas of human endeavor from health policy to high energy physics.

Requirements Effective Fall 2018

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
CS 163 or 164	CS1---No Prior Programming Experience CS1--Prior Programming Experience		4
CS 165	CS2--Data Structures		4
DSCI 100	First Year Seminar in Data Science		1
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
STAT 158	Introduction to R Programming		1
STAT 315	Statistics for Engineers and Scientists		3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	4
	Total Credits		31

Sophomore

CS 220	Discrete Structures and their Applications		4
DSCI 235	Data Wrangling		2
DSCI 369	Linear Algebra for Data Science		4
MATH 151	Mathematical Algorithms in Matlab I		1
MATH 261	Calculus for Physical Scientists III		4
STAT 341	Statistical Data Analysis I		3
STAT 342	Statistical Data Analysis II		3
Biological and Physical Sciences		3A	3
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
	Total Credits		30

Junior

DSCI 320	Optimization Methods in Data Science		3
DSCI 335	Inferential Reasoning in Data Analysis		3

DSCI 336	Data Graphics and Visualization		1
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
CO 302	Writing in Digital Environments (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
Data Science Electives (Select at least 6 credits from the Data Science Electives List below)[1]			6-9
Math Electives (Select two courses from the Math Electives List below)			6
Arts and Humanities		3B	3
Electives			3
	Total Credits		28-31

Senior

DSCI 445	Statistical Machine Learning	4B	3
DSCI 478	Capstone Group Project in Data Science	4A,4C	4
Data Science Electives (Select at least six credits from the Data Science Electives List below not taken in Junior year)[1]			6-9
Math Electives (Select two courses from the Math Electives List not taken in Junior year)			6
Diversity and Global Awareness		3E	3
Electives[2]			6
	Total Credits		28-31
	Program Total Credits:		120

Data Science Electives List [1]

Code	Title	AUCC	Credits
Select a minimum of 15 total credits from the list below:			
CS 253	Software Development with C++		4
CS 270	Computer Organization		4
CS 320	Algorithms--Theory and Practice		3
CS 370	Operating Systems		3
DSCI 473	Introduction to Geometric Data Analysis		2
DSCI 475	Topological Data Analysis		2
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
ECON 304	Intermediate Macroeconomics		3
ECON 306	Intermediate Microeconomics		3
STAT 400	Statistical Computing		3
STAT 420	Probability and Mathematical Statistics I		3
STAT 430	Probability and Mathematical Statistics II		3
STAT 440	Bayesian Data Analysis		3

Math Electives List

Code	Title	Credits
Select four courses from the list below:		
MATH 301	Introduction to Combinatorial Theory	3
MATH 317	Advanced Calculus of One Variable	3
MATH 331	Introduction to Mathematical Modeling	3
MATH 332	Partial Differential Equations	3
MATH 360	Mathematics of Information Security	3
MATH 417	Advanced Calculus I	3
MATH 430/ECE 430	Fourier and Wavelet Analysis with Apps	3
MATH 455	Mathematics in Biology and Medicine	3
MATH 460	Information and Coding Theory	3

[1] A minimum of 15 total credits must be selected from the Data Science Electives in the Junior and Senior years.

[2] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman					
Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
Select one course from the following:		X			4
CS 163	CS1---No Prior Programming Experience				
CS 164	CS1--Prior Programming Experience				
DSCI 100	First Year Seminar in Data Science				1
MATH 160	Calculus for Physical Scientists I (GT-MA1)			1B	4
Arts and Humanities				3B	3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 165	CS2--Data Structures	X			4
MATH 161	Calculus for Physical Scientists II (GT-MA1)			1B	4
STAT 158	Introduction to R Programming				1
STAT 315	Statistics for Engineers and Scientists				3
Biological and Physical Sciences				3A	4
	Total Credits				16
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 220	Discrete Structures and their Applications	X			4
MATH 261	Calculus for Physical Scientists III				4
STAT 341	Statistical Data Analysis I				3
Social and Behavioral Sciences				3C	3
	Total Credits				14
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
DSCI 235	Data Wrangling				2
DSCI 369	Linear Algebra for Data Science	X			4
MATH 151	Mathematical Algorithms in Matlab I				1
STAT 342	Statistical Data Analysis II				3
Biological and Physical Sciences				3A	3
Historical Perspectives				3D	3
	Total Credits				16
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
DSCI 320	Optimization Methods in Data Science				3
Data Science Elective (See List on Concentration Requirements Tab)					3-4
Math Elective (See List on Concentration Requirements Tab)					3
Select from the following:				2	3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
CO 302	Writing in Digital Environments (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
Elective					3
	Total Credits				15-16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
DSCI 335	Inferential Reasoning in Data Analysis				3

DSCI 336	Data Graphics and Visualization				1
Data Science Elective (See List on Concentration Requirements Tab)					3-5
Math Elective (See List on Concentration Requirements Tab)					3
Arts and Humanities				3B	3
	Total Credits				13-15

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
DSCI 445	Statistical Machine Learning			4B	3
Data Science Elective (See List on Concentration Requirements Tab)					3-4
Math Elective (See List on Concentration Requirements Tab)					3
Diversity and Global Awareness				3E	3
Elective					3
	Total Credits				15-16

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
DSCI 478	Capstone Group Project in Data Science	X		4A,4C	4
Data Science Elective (See List on Concentration Requirements Tab)		X			3-5
Math Elective (See List on Concentration Requirements Tab)		X			3
Elective		X			3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				13-15
	Program Total Credits:				120

Major in Data Science, Statistics Concentration

Data science is the discovery of knowledge and insight through the analysis of data. As such, it draws on the study of algorithms and their implementation from computer science, the power of abstraction and of geometric and topological formalism from mathematics, and the modeling and analysis of data from statistics. It has emerged as a separate field in response to the avalanche of data from web enabled sensors and instrumentation, mobile devices, web logs and transactions, and the availability of computing power for data storage and analysis. Modern data is challenging not only due to its large scale, but also because it is increasingly heterogeneous and unstructured. Information gleaned from this data none-the-less is revolutionizing diverse areas of human endeavor from health policy to high energy physics.

Requirements Effective Fall 2018

Freshman

		AUCC	**Credits**
CO 150	College Composition (GT-CO2)	1A	3
CS 163 or 164	CS1--No Prior Programming Experience CS1--Prior Programming Experience		4
CS 165	CS2--Data Structures		4
DSCI 100	First Year Seminar in Data Science		1
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
STAT 158	Introduction to R Programming		1
STAT 315	Statistics for Engineers and Scientists		3
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	4
	Total Credits		31

Sophomore

CS 220	Discrete Structures and their Applications	4
DSCI 235	Data Wrangling	2
DSCI 369	Linear Algebra for Data Science	4
MATH 151	Mathematical Algorithms in Matlab I	1

MATH 261	Calculus for Physical Scientists III		4
STAT 341	Statistical Data Analysis I		3
STAT 342	Statistical Data Analysis II		3
Biological and Physical Sciences		3A	3
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
	Total Credits		30
Junior			
DSCI 320	Optimization Methods in Data Science		3
DSCI 335	Inferential Reasoning in Data Analysis		3
DSCI 336	Data Graphics and Visualization		1
Select one course from the following:		2	3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
CO 302	Writing in Digital Environments (GT-CO3)	2	
JTC 300	Professional and Technical Communication (GT-CO3)	2	
Data Science Electives (Select at least 6 credits from the Data Science Electives List below)[1]			6-9
Statistics Electives (Select two courses from the Statistics Electives List below)			6
Arts and Humanities		3B	3
Elective			3
	Total Credits		28-31
Senior			
DSCI 445	Statistical Machine Learning	4B	3
DSCI 478	Capstone Group Project in Data Science	4A,4C	4
Data Science Electives (Select at least six credits from the Data Science Electives List below not taken in Junior year)[1]			6-9
Statistics Electives (Select two courses from the Statistics Electives List below not taken in Junior year)			6
Diversity and Global Awareness		3E	3
Electives[2]			6
	Total Credits		28-31
	Program Total Credits:		120

Data Science Electives List [1]

Code	Title	AUCC	Credits
Select a minimum of 15 total credits from the list below:			
CS 253	Software Development with C++		4
CS 270	Computer Organization		4
CS 320	Algorithms--Theory and Practice		3
CS 370	Operating Systems		3
DSCI 473	Introduction to Geometric Data Analysis		2
DSCI 475	Topological Data Analysis		2
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
ECON 304	Intermediate Macroeconomics		3
ECON 306	Intermediate Microeconomics		3
MATH 301	Introduction to Combinatorial Theory		3
MATH 317	Advanced Calculus of One Variable		3

MATH 331	Introduction to Mathematical Modeling	3
MATH 332	Partial Differential Equations	3
MATH 360	Mathematics of Information Security	3
MATH 450	Introduction to Numerical Analysis I	3
MATH 451	Introduction to Numerical Analysis II	3

Statistics Electives List

Code	Title	AUCC	Credits
Select four courses from the list below:			
STAT 305	Sampling Techniques		3
STAT 400	Statistical Computing		3
STAT 420	Probability and Mathematical Statistics I		3
STAT 421	Introduction to Stochastic Processes		3
STAT 430	Probability and Mathematical Statistics II		3
STAT 440	Bayesian Data Analysis		3
STAT 460	Applied Multivariate Analysis		3
STAT 472	Statistical Consulting Capstone		3

[1] A minimum of 15 total credits must be selected from the Data Science Electives in the Junior and Senior years.

[2] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
Select one course from the following:		X			4
CS 163	CS1---No Prior Programming Experience				
CS 164	CS1--Prior Programming Experience				
DSCI 100	First Year Seminar in Data Science				1
MATH 160	Calculus for Physical Scientists I (GT-MA1)			1B	4
Arts and Humanities				3B	3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 165	CS2--Data Structures	X			4
MATH 161	Calculus for Physical Scientists II (GT-MA1)			1B	4
STAT 158	Introduction to R Programming				1
STAT 315	Statistics for Engineers and Scientists				3
Biological and Physical Sciences				3A	4
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 220	Discrete Structures and their Applications	X			4
MATH 261	Calculus for Physical Scientists III				4
STAT 341	Statistical Data Analysis I				3
Social and Behavioral Sciences				3C	3
	Total Credits				14

Semester 4		Critical	Recommended	AUCC	Credits
DSCI 235	Data Wrangling				2
DSCI 369	Linear Algebra for Data Science	X			4
MATH 151	Mathematical Algorithms in Matlab I				1
STAT 342	Statistical Data Analysis II				3
Biological and Physical Sciences				3A	3
Historical Perspectives				3D	3
	Total Credits				16
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
DSCI 320	Optimization Methods in Data Science				3
Data Science Electives (See List on Concentration Requirements Tab)					3-4
Statistics Elective (See List on Concentration Requirements Tab)					3
Select one course from the following:				2	3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
CO 302	Writing in Digital Environments (GT-CO3)			2	
JTC 300	Professional and Technical Communication (GT-CO3)			2	
Elective					3
	Total Credits				15-16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
DSCI 335	Inferential Reasoning in Data Analysis				3
DSCI 336	Data Graphics and Visualization				1
Data Science Electives (See List on Concentration Requirements Tab)					3-5
Statistics Elective (See List on Concentration Requirements Tab)					3
Arts and Humanities				3B	3
	Total Credits				13-15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
DSCI 445	Statistical Machine Learning			4B	3
Data Science Electives (See List on Concentration Requirements Tab)					3-4
Statistics Elective (See List on Concentration Requirements Tab)					3
Diversity and Global Awareness				3E	3
Elective					3
	Total Credits				15-16
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
DSCI 478	Capstone Group Project in Data Science	X		4A,4C	4
Data Science Electives (See List on Concentration Requirements Tab)		X			3-5
Statistics Elective (See List on Concentration Requirements Tab)		X			3
Elective		X			3
The benchmark courses in the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				13-15
	Program Total Credits:				120

Major in Natural Sciences

The Bachelor of Science in Natural Sciences meets the needs of two audiences:

- Students who wish to become high school or junior high/middle school science teachers.
- Students who seek a broad exposure to mathematics and the physical sciences, rather than specialization in one discipline.

Learning Outcomes

Students will demonstrate:

- Skills to critically interpret scientific data.
- Logical and critical thinking.

- The ability to analyze and solve complex problems.
- Strong written and oral communication skills.

Potential Occupations

Graduates with *licensure in secondary science education* will find a strong demand for high school and junior high/middle school teachers in Colorado and elsewhere in the nation. In addition, these graduates will also have the background required for graduate science education programs.

With proper planning, *physical science* graduates can meet requirements for professional schools (e.g., medicine or law) or graduate programs in the basic or applied sciences. Internships and volunteer activities can provide practical training and experience.

Secondary Education

The Bachelor of Science in Natural Sciences provides the scientific subject matter, education classes, and the classroom experience required for secondary science education licensure in Colorado.

Concentrations in the Natural Sciences major include: Biology Education, Chemistry Education, Geology Education, and Physics Education.

The program includes science courses in a concentration such as Biology, Geology, Physics, Chemistry; the All-University Core Curriculum and professional classes in the Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu) program in the School of Education. In addition, the CEP program helps schedule classroom visits and practica. The experience culminates in a semester of student teaching under the supervision of a master teacher.

Concentrations

- Biology Education Concentration
- Chemistry Education Concentration
- Geology Education Concentration
- Physical Science Concentration
- Physics Education Concentration

Major in Natural Sciences, Biology Education Concentration

Requirements
Effective Fall 2015

Freshman

		AUCC	Credits
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
LIFE 103	Biology of Organisms-Animals and Plants		4
LIFE 205	Microbial Biology		3
LIFE 206	Microbial Biology Laboratory		2
MATH 155 or 160	Calculus for Biological Scientists I (GT-MA1) Calculus for Physical Scientists I (GT-MA1)	1B	4
Arts and Humanities		3B	3
Global and Cultural Awareness		3E	3
	Total Credits		31

Sophomore

BZ 220	Introduction to Evolution		3
BZ 350 or SOCR 330	Molecular and General Genetics Principles of Genetics		3-4
CHEM 245	Fundamentals of Organic Chemistry		4
CHEM 246	Fundamentals of Organic Chemistry Laboratory		1
LIFE 320	Ecology		3
Select one group from the following:			10
Group A:			
PH 121	General Physics I (GT-SC1)	3A	
PH 122	General Physics II (GT-SC1)	3A	
Group B:			
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	
STAT 301	Introduction to Statistical Methods		3

Science Elective[1]			3
	Total Credits		30-31

Junior

Select one group from the following:			4
Group A:			
AA 100	Introduction to Astronomy (GT-SC2)	3A	
AA 101	Astronomy Laboratory (GT-SC1)	3A	
Group B:			
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)	3A	
GEOL 121	Introductory Geology Laboratory (GT-SC1)	3A	
BZ 310	Cell Biology		4
BZ 311	Developmental Biology		4
EDUC 275	Schooling in the United States (GT-SS3)	3C	3
EDUC 331	Educational Technology and Assessment		2
EDUC 340	Literacy and the Learner		3
EDUC 350	Instruction I-Individualization/Management		3
EDUC 386	Practicum-Instruction I		1
Advanced Writing		2	3
Historical Perspectives		3D	3
Science Elective[1]			3
	Total Credits		33

Senior

BMS 300	Principles of Human Physiology		4
EDUC 450	Instruction II-Standards and Assessment		4
EDUC 460	Methods and Materials in Teaching Science		4
EDUC 485B	Student Teaching: Secondary	4A,4B,4C	11
EDUC 486E	Practicum: Instruction II		1
EDUC 493A	Seminar: Professional Relations	4C	1
Arts and Humanities		3B	3
	Total Credits		28
	Program Total Credits:		122-123

[1] Select course(s) in consultation with advisor.

Major Completion Map

Distinctive Requirements for Degree Program:

All Biology Education majors must maintain a 2.75 GPA and receive a C or better in all content and education courses for licensure. All course work must be completed prior to Student Teaching (AUCC 4A/4B/4C requirement). Admission into the teacher licensure program is required for phase II education courses and above.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 107	Fundamentals of Chemistry (GT-SC2)		X	3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)		X	3A	1
CO 150	College Composition (GT-CO2)			1A	3
LIFE 102	Attributes of Living Systems (GT-SC1)		X	3A	4
Arts and Humanities				3B	3
MATH 117, MATH 118 may be necessary for some students to fulfill pre-calculus requirements.		X			
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
LIFE 103	Biology of Organisms-Animals and Plants		X		4

LIFE 205	Microbial Biology				3
LIFE 206	Microbial Biology Laboratory				2
Select one course from the following:					4
MATH 155	Calculus for Biological Scientists I (GT-MA1)		X	1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)		X	1B	
Global and Cultural Awareness				3E	3
LIFE 102 must be completed by the end of Semester 2.		X			
MATH 124, MATH 125, MATH 126 may be necessary for some students to fulfill pre-calculus requirements.		X			
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 220	Introduction to Evolution				3
CHEM 245	Fundamentals of Organic Chemistry		X		4
CHEM 246	Fundamentals of Organic Chemistry Laboratory		X		1
Select one course from the following:					5
PH 121	General Physics I (GT-SC1)		X	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)		X	3A	
STAT 301	Introduction to Statistical Methods				3
CHEM 107 and CHEM 108 must be completed by the end of Semester 3.		X			
	Total Credits				16

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3-4
BZ 350	Molecular and General Genetics				
SOCR 330	Principles of Genetics				
LIFE 320	Ecology		X		3
Select one course from the following:					5
PH 122	General Physics II (GT-SC1)		X	3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)		X	3A	
Mathematics or Science Elective					3
CO 150 and MATH 155 or MATH 160 must be completed by the end of Semester 4.		X			
	Total Credits				14-15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one group from the following:					4
Group A:					
AA 100	Introduction to Astronomy (GT-SC2)			3A	
AA 101	Astronomy Laboratory (GT-SC1)			3A	
Group B:					
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)			3A	
GEOL 121	Introductory Geology Laboratory (GT-SC1)			3A	
BZ 310	Cell Biology		X		4
EDUC 275	Schooling in the United States (GT-SS3)	X		3C	3
EDUC 340	Literacy and the Learner	X			3
Advanced Writing				2	3
	Total Credits				17

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 311	Developmental Biology		X		4
EDUC 331	Educational Technology and Assessment	X			2
EDUC 350	Instruction I-Individualization/Management	X			3
EDUC 386	Practicum-Instruction I	X			1

Historical Perspectives				3D	3
Science Elective					3
BZ 310 must be completed by the end of Semester 6.		X			
	Total Credits				16

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
BMS 300	Principles of Human Physiology				4
EDUC 450	Instruction II-Standards and Assessment	X			4
EDUC 460	Methods and Materials in Teaching Science	X			4
EDUC 486E	Practicum: Instruction II	X			1
Arts and Humanities				3B	3
	Total Credits				16

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 485B	Student Teaching: Secondary	X		4A,4B,4C	11
EDUC 493A	Seminar: Professional Relations	X		4C	1
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12
	Program Total Credits:				122-123

Major in Natural Sciences, Chemistry Education Concentration

Requirements
Effective Fall 2015

Freshman

		AUCC	**Credits**
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CO 150	College Composition (GT-CO2)	1A	3
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
LIFE 103	Biology of Organisms-Animals and Plants		4
Select one group from the following:			8
Group A:			
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	
MATH 255	Calculus for Biological Scientists II	1B	
Group B:			
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	
Science Elective[1]			3
	Total Credits		31

Sophomore

CHEM 261	Fundamentals of Inorganic Chemistry	3
Select one group from the following:		8
Group A:		
CHEM 341	Modern Organic Chemistry I	
CHEM 343	Modern Organic Chemistry II	

CHEM 344	Modern Organic Chemistry Laboratory		
Group B:			
CHEM 345	Organic Chemistry I		
CHEM 346	Organic Chemistry II		
Select one group from the following:			10
Group A:			
PH 121	General Physics I (GT-SC1)	3A	
PH 122	General Physics II (GT-SC1)	3A	
Group B:			
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	
STAT 301	Introduction to Statistical Methods		3
Advanced Writing		2	3
Arts and Humanities		3B	3
	Total Credits		30

Junior

Select one group from the following:			4
Group A:			
AA 100	Introduction to Astronomy (GT-SC2)	3A	
AA 101	Astronomy Laboratory (GT-SC1)	3A	
Group B:			
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)	3A	
GEOL 121	Introductory Geology Laboratory (GT-SC1)	3A	
CHEM 334	Quantitative Analysis Laboratory		1
CHEM 335	Introduction to Analytical Chemistry		3
CHEM 473	Foundations of Physical Chemistry		4
EDUC 275	Schooling in the United States (GT-SS3)	3C	3
EDUC 331	Educational Technology and Assessment		2
EDUC 340	Literacy and the Learner		3
EDUC 350	Instruction I-Individualization/Management		3
EDUC 386	Practicum-Instruction I		1
Science Elective[1]			2
Global and Cultural Awareness		3E	3
Historical Perspectives		3D	3
	Total Credits		32

Senior

BC 351	Principles of Biochemistry		4
EDUC 450	Instruction II-Standards and Assessment		4
EDUC 460	Methods and Materials in Teaching Science		4
EDUC 485B	Student Teaching: Secondary	4A,4B,4C	11
EDUC 486E	Practicum: Instruction II		1
EDUC 493A	Seminar: Professional Relations	4C	1
Arts and Humanities		3B	3
	Total Credits		28
	Program Total Credits:		121

[1] Select course(s) in consultation with advisor.

Major Completion Map

Distinctive Requirements for Degree Program:

All Chemistry Education majors must maintain a 2.75 GPA and receive a C or better in all content and education courses for licensure. All Chemistry Education majors are expected to be prepared to take CHEM 111/CHEM 112 their first semester which requires MATH 118. All course work must be completed prior to Student Teaching (AUCC 4A/B/

C requirement). Admission into the teacher licensure program is required for phase II education courses and above.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 111	General Chemistry I (GT-SC2)		X	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)		X	3A	1
CO 150	College Composition (GT-CO2)			1A	3
LIFE 102	Attributes of Living Systems (GT-SC1)		X	3A	4
Select one course from the following:					4
MATH 155	Calculus for Biological Scientists I (GT-MA1)		X	1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)		X	1B	
MATH 117, MATH 118 may be necessary for some students to fulfill pre-requisite requirements.		X			
	Total Credits				16

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II		X		3
CHEM 114	General Chemistry Lab II		X		1
LIFE 103	Biology of Organisms-Animals and Plants		X		4
Select one course from the following:					4
MATH 255	Calculus for Biological Scientists II		X	1B	
MATH 161	Calculus for Physical Scientists II (GT-MA1)		X	1B	
Science Elective					3
CHEM 111, CHEM 112, CO 150 must be completed by the end of Semester 2.		X			
MATH 124, MATH 125, MATH 126 may be necessary for some students to fulfill pre-calculus requirements.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3-4
CHEM 341	Modern Organic Chemistry I		X		
CHEM 345	Organic Chemistry I		X		
Select one course from the following:					5
PH 121	General Physics I (GT-SC1)		X	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)		X	3A	
STAT 301	Introduction to Statistical Methods				3
Arts and Humanities				3B	3
CHEM 113, CHEM 114, MATH 155 or MATH 160 must be completed by the end of Semester 3.		X			
	Total Credits				14-15

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 261	Fundamentals of Inorganic Chemistry		X		3
Select one group from the following:					4-5
Group A:					
CHEM 343	Modern Organic Chemistry II		X		
CHEM 344	Modern Organic Chemistry Laboratory		X		
Group B:					
CHEM 346	Organic Chemistry II		X		
Select one course from the following:					5
PH 122	General Physics II (GT-SC1)		X	3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)		X	3A	
Advanced Writing				2	3

MATH 161 or MATH 255 and PH 121 or PH 141 must be completed by the end of Semester 4.		X			
	Total Credits				15-16
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one group from the following:					4
Group A:					
AA 100	Introduction to Astronomy (GT-SC2)			3A	
AA 101	Astronomy Laboratory (GT-SC1)			3A	
Group B:					
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)			3A	
GEOL 121	Introductory Geology Laboratory (GT-SC1)			3A	
CHEM 334	Quantitative Analysis Laboratory		X		1
CHEM 335	Introduction to Analytical Chemistry		X		3
EDUC 275	Schooling in the United States (GT-SS3)	X		3C	3
EDUC 340	Literacy and the Learner	X			3
Historical Perspectives				3D	3
CHEM 341 or CHEM 345 and PH 122 or PH 142 must be completed by the end of Semester 5.		X			
	Total Credits				17
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 473	Foundations of Physical Chemistry	X			4
EDUC 331	Educational Technology and Assessment	X			2
EDUC 350	Instruction I-Individualization/Management	X			3
EDUC 386	Practicum-Instruction I	X			1
Global and Cultural Awareness				3E	3
Science Elective					2
CHEM 261 and LIFE 102 must be completed by the end of Semester 6.		X			
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 351	Principles of Biochemistry	X			4
EDUC 450	Instruction II-Standards and Assessment	X			4
EDUC 460	Methods and Materials in Teaching Science	X			4
EDUC 486E	Practicum: Instruction II	X			1
Arts and Humanities				3B	3
CHEM 334, CHEM 335 and CHEM 343/CHEM 344 or CHEM 346 must be completed by the end of Semester 7.		X			
	Total Credits				16
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 485B	Student Teaching: Secondary	X		4A,4B,4C	11
EDUC 493A	Seminar: Professional Relations	X		4C	1
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12
	Program Total Credits:				121

Major in Natural Sciences, Geology Education Concentration

Requirements
Effective Fall 2015

Freshman

		AUCC	Credits
Select one from the following:			3
AA 100	Introduction to Astronomy (GT-SC2)	3A	
NR 150	Oceanography (GT-SC2)	3A	
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
Select one group from the following:			4
Group A:			
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)	3A	
GEOL 121	Introductory Geology Laboratory (GT-SC1)	3A	
Group B:			
GEOL 150	Physical Geology for Scientists and Engineers	3A	
GEOL 154	Historical and Analytical Geology		4
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
Select one from the following:			4
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	
Arts and Humanities		3B	3
	Total Credits		30

Sophomore

CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
EDUC 275	Schooling in the United States (GT-SS3)	3C	3
EDUC 340	Literacy and the Learner		3
GEOL 232	Mineralogy		3
LIFE 103	Biology of Organisms-Animals and Plants		4
Select one from the following:			4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	
MATH 255	Calculus for Biological Scientists II	1B	
STAT 301	Introduction to Statistical Methods		3
Science Elective[1]			3
Advanced Writing		2	3
Historical Perspectives		3D	3
	Total Credits		33

Junior

EDUC 331	Educational Technology and Assessment		2
EDUC 350	Instruction I-Individualization/Management		3
EDUC 386	Practicum-Instruction I		1
Select two Geology Elective courses from the following:			6-8
GEOL 250	The Solid Earth		
GEOL 342	Paleontology		
GEOL 344	Stratigraphy and Sedimentology		
GEOL 364	Igneous and Metamorphic Petrology		
GEOL 366	Sedimentary Petrology and Geochemistry		
GEOL 372	Structural Geology		
GEOL 446	Environmental Geology		
GEOL 452	Hydrogeology		

GEOL 454	Geomorphology		4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	5
Global and Cultural Awareness		3E	3
	Total Credits		29-31

Senior

ATS 350	Introduction to Weather and Climate		2
EDUC 450	Instruction II-Standards and Assessment		4
EDUC 460	Methods and Materials in Teaching Science		4
EDUC 485B	Student Teaching: Secondary	4A,4B,4C	11
EDUC 486E	Practicum: Instruction II		1
EDUC 493A	Seminar: Professional Relations	4C	1
Select one Geology Elective course not taken elsewhere from the following:			3-4
GEOL 250	The Solid Earth		
GEOL 342	Paleontology		
GEOL 344	Stratigraphy and Sedimentology		
GEOL 364	Igneous and Metamorphic Petrology		
GEOL 366	Sedimentary Petrology and Geochemistry		
GEOL 372	Structural Geology		
GEOL 446	Environmental Geology		
GEOL 452	Hydrogeology		
Arts and Humanities		3B	3
	Total Credits		29-30
	Program Total Credits:		121-124

[1] Select course(s) in consultation with advisor.

Major Completion Map

Distinctive Requirements for Degree Program:

All Geology Education majors must maintain a 2.75 GPA and receive a C or better in all content and education courses for licensure. All course work must be completed prior to Student Teaching (AUCC 4A/4B/4C requirement). Admission into the teacher licensure program is required for phase II education courses and above.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
Select one group from the following:					4
Group A:					
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)		X	3A	
GEOL 121	Introductory Geology Laboratory (GT-SC1)		X	3A	
Group B:					
GEOL 150	Physical Geology for Scientists and Engineers		X	3A	
LIFE 102	Attributes of Living Systems (GT-SC1)		X	3A	4
Select one course from the following:					4
MATH 155	Calculus for Biological Scientists I (GT-MA1)		X	1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)		X	1B	
MATH 117, MATH 118 may be necessary for some students to fulfill pre-calculus requirements.		X			
	Total Credits				15

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
AA 100	Introduction to Astronomy (GT-SC2)			3A	
NR 150	Oceanography (GT-SC2)			3A	

CHEM 111	General Chemistry I (GT-SC2)		X	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)		X	3A	1
GEOL 154	Historical and Analytical Geology		X		4
Arts and Humanities				3B	3
GEOL 120/GEOL 121 or GEOL 150 must be completed by the end of Semester 2.		X			
MATH 124, MATH 125, MATH 126 may be necessary for some students to fulfill pre-calculus requirements.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II		X		3
CHEM 114	General Chemistry Lab II		X		1
GEOL 232	Mineralogy		X		3
STAT 301	Introduction to Statistical Methods		X		3
Historical Perspectives				3D	3
Science Elective					3
CHEM 111, CHEM 112, GEOL 154 and MATH 155 or MATH 160 must be completed by the end of Semester 3.		X			
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 275	Schooling in the United States (GT-SS3)		X	3C	3
EDUC 340	Literacy and the Learner		X		3
LIFE 103	Biology of Organisms-Animals and Plants		X		4
Select one course from the following:					4
MATH 255	Calculus for Biological Scientists II		X	1B	
MATH 161	Calculus for Physical Scientists II (GT-MA1)		X	1B	
Advanced Writing				2	3
CO 150, GEOL 232 must be completed by the end of Semester 4.		X			
	Total Credits				17

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 331	Educational Technology and Assessment		X		2
EDUC 350	Instruction I-Individualization/Management		X		3
EDUC 386	Practicum-Instruction I		X		1
Select one course from the following:					3-4
GEOL 250	The Solid Earth		X		
GEOL 342	Paleontology		X		
GEOL 344	Stratigraphy and Sedimentology		X		
GEOL 364	Igneous and Metamorphic Petrology		X		
GEOL 366	Sedimentary Petrology and Geochemistry		X		
GEOL 372	Structural Geology		X		
GEOL 446	Environmental Geology		X		
GEOL 452	Hydrogeology		X		
PH 141	Physics for Scientists and Engineers I (GT-SC1)		X	3A	5
EDUC 275, EDUC 340, MATH 255 or MATH 161, STAT 301 must be completed by the end of Semester 5.		X			
	Total Credits				14-15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3-4
GEOL 250	The Solid Earth		X		
GEOL 342	Paleontology		X		
GEOL 344	Stratigraphy and Sedimentology		X		

GEOL 364	Igneous and Metamorphic Petrology		X		
GEOL 366	Sedimentary Petrology and Geochemistry		X		
GEOL 372	Structural Geology		X		
GEOL 446	Environmental Geology		X		
GEOL 452	Hydrogeology		X		
GEOL 454	Geomorphology		X		4
PH 142	Physics for Scientists and Engineers II (GT-SC1)		X	3A	5
Global and Cultural Awareness				3E	3
EDUC 331, EDUC 350, EDUC 386, PH 141 must be completed by the end of Semester 6.		X			
	Total Credits				15-16

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
ATS 350	Introduction to Weather and Climate				2
EDUC 450	Instruction II-Standards and Assessment	X			4
EDUC 460	Methods and Materials in Teaching Science	X			4
EDUC 486E	Practicum: Instruction II	X			1
Select one course from the following:					3-4
GEOL 250	The Solid Earth				
GEOL 342	Paleontology				
GEOL 344	Stratigraphy and Sedimentology				
GEOL 364	Igneous and Metamorphic Petrology				
GEOL 366	Sedimentary Petrology and Geochemistry				
GEOL 372	Structural Geology				
GEOL 446	Environmental Geology				
GEOL 452	Hydrogeology				
Arts and Humanities				3B	3
	Total Credits				17-18

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 485B	Student Teaching: Secondary	X		4A,4B,4C	11
EDUC 493A	Seminar: Professional Relations	X		4C	1
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12
	Program Total Credits:				121-124

Major in Natural Sciences, Physics Education Concentration

Requirements
Effective Fall 2018

Freshman

		AUCC	**Credits**
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CO 150	College Composition (GT-CO2)	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4

PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
Arts and Humanities		3B	3
Historical Perspectives		3D	3
	Total Credits		31
Sophomore			
AA 100	Introduction to Astronomy (GT-SC2)	3A	3
AA 101	Astronomy Laboratory (GT-SC1)	3A	1
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
LIFE 103	Biology of Organisms-Animals and Plants		4
MATH 261	Calculus for Physical Scientists III		4
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	5
PH 314	Introduction to Modern Physics	4A,4B	4
Advanced Writing		2	3
Arts and Humanities		3B	3
	Total Credits		31
Junior			
CS 150	Culture and Coding (GT-AH3)	3B	3
EDUC 275	Schooling in the United States (GT-SS3)	3C	3
EDUC 331	Educational Technology and Assessment		2
EDUC 340	Literacy and the Learner		3
EDUC 350	Instruction I-Individualization/Management		3
EDUC 386	Practicum-Instruction I		1
PH 245	Introduction to Electronics		3
PH 315	Modern Physics Laboratory	4A,4B	2
PH 361	Physical Thermodynamics	4A,4B	3
Science Electives[1]			8
	Total Credits		31
Senior			
EDUC 450	Instruction II-Standards and Assessment		4
EDUC 460	Methods and Materials in Teaching Science		4
EDUC 485B	Student Teaching: Secondary	4A,4C	11
EDUC 486E	Practicum: Instruction II		1
EDUC 493A	Seminar: Professional Relations	4C	1
PH 353	Optics and Waves	4A,4B	4
Global and Cultural Awareness		3E	3
	Total Credits		28
	Program Total Credits:		121

[1] Select course(s) in consultation with advisor.

All Physics Education majors must maintain a 2.75 GPA and receive a C or better in all content and education courses for licensure. All course work must be completed prior to Student Teaching (AUCC 4A/4B/4C requirement). Admission into the teacher licensure program is required for phase II education courses and above.

Major Completion Map

Distinctive Requirements for Degree Program:

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)		X	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)		X	3A	1
CO 150	College Composition (GT-CO2)			1A	3

MATH 160	Calculus for Physical Scientists I (GT-MA1)		X	1B	4
Historical Perspectives				3D	3
MATH 117, MATH 118 may be necessary for some students to fulfill pre-calculus requirements.		X			
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II		X		3
CHEM 114	General Chemistry Lab II		X		1
MATH 161	Calculus for Physical Scientists II (GT-MA1)		X	1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)		X	3A	5
Arts and Humanities				3B	3
CHEM 111, CHEM 112 must be completed by the end of Semester 2.		X			
MATH 124, MATH 125, MATH 126 may be necessary for some students to fulfill pre-calculus requirements.		X			
	Total Credits				16
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
AA 100	Introduction to Astronomy (GT-SC2)			3A	3
AA 101	Astronomy Laboratory (GT-SC1)			3A	1
LIFE 102	Attributes of Living Systems (GT-SC1)		X	3A	4
PH 142	Physics for Scientists and Engineers II (GT-SC1)		X	3A	5
Arts and Humanities				3B	3
MATH 160, PH 141 must be completed by the end of Semester 3.		X			
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
LIFE 103	Biology of Organisms-Animals and Plants		X		4
MATH 261	Calculus for Physical Scientists III		X		4
PH 314	Introduction to Modern Physics			4A,4B	4
Advanced Writing				2	3
CO 150, MATH 161 must be completed by the end of Semester 4.		X			
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 150	Culture and Coding (GT-AH3)		X	3B	3
EDUC 275	Schooling in the United States (GT-SS3)	X		3C	3
EDUC 340	Literacy and the Learner	X			3
PH 245	Introduction to Electronics		X		3
Science Electives					4
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 331	Educational Technology and Assessment	X			2
EDUC 350	Instruction I-Individualization/Management	X			3
EDUC 386	Practicum-Instruction I	X			1
PH 315	Modern Physics Laboratory			4A,4B	2
PH 361	Physical Thermodynamics			4A,4B	3
Science Electives					4
Must pass the PLACE or Praxis II licensure exam before taking EDUC 450 and EDUC 486E.		X			
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 450	Instruction II-Standards and Assessment	X			4

EDUC 460	Methods and Materials in Teaching Science	X			4
EDUC 486E	Practicum: Instruction II	X			1
PH 353	Optics and Waves			4A,4B	4
Global and Cultural Awareness				3E	3
	Total Credits				16
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 485B	Student Teaching: Secondary	X		4A,4C	11
EDUC 493A	Seminar: Professional Relations	X		4C	1
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12
	Program Total Credits:				121

Major in Natural Sciences, Physical Science Concentration

The Physical Science concentration begins with two semesters each of calculus, chemistry, and physics, plus a semester of biological science. Students then complete the major by earning two minors selected from Biochemistry, Chemistry, Computer Science, Geology, Mathematics, Statistics, or Physics. Completion of the double minor gives an unusual breadth in the physical sciences. Recent graduates have pursued careers in the sciences. Others use this background as a basis for graduate work and research or for entry into medical or veterinary professional programs.

Requirements Effective Fall 2015

Freshman

		AUCC	**Credits**
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
Select one pair of courses from the following:			8
Group A:			
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	
MATH 255	Calculus for Biological Scientists II	1B	
Group B:			
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	
Minor[1]			9
Social and Behavioral Sciences		3C	3
Electives			3
	Total Credits		31

Sophomore

CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	5
STAT 301	Introduction to Statistical Methods		3
Minor[1]			8
Electives			3
	Total Credits		28

Junior

Select four credits from the following:			4
Group A:			
BZ 104	Basic Concepts of Plant Life (GT-SC2)	3A	

BZ 105	Basic Concepts of Plant Life Laboratory (GT-SC1)	3A	
Group B:			
BZ 110	Principles of Animal Biology (GT-SC2)	3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	3A	
Group C:			
BZ 120	Principles of Plant Biology (GT-SC1)	3A	
Group D:			
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
Advanced Writing		2	3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Minor[1, 2, 3, 4]			15
	Total Credits		31

Senior

Arts and Humanities	3B	3
Building Foundations/Perspectives[2]	4B	3
Capstone Course[3]	4C	3
Using Competencies[4]	4A	3
Minor[1, 2, 3, 4]		12
Electives[5]		6
Total Credits		30
Program Total Credits:		120

1. Declare and complete two minors from the following list: Biochemistry, Chemistry, Computer Science, Geology, Mathematics, Physics, Statistics, Applied Statistics.
2. Complete a 3 credit course satisfying AUCC category 4B that is offered within a major that is the same as one of the minors that will be completed.
3. Complete a 3 credit course satisfying AUCC category 4C that is offered within a major that is the same as one of the minors that will be completed.
4. Complete a 3 credit course satisfying AUCC category 4A that is offered within a major that is the same as one of the minors that will be completed.
5. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- and 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
Select one course from the following:					4
MATH 155	Calculus for Biological Scientists I (GT-MA1)		X	1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)		X	1B	
Social and Behavioral Sciences				3C	3
Minor Requirement Courses					6
MATH 117, MATH 118 may be necessary for some students to fulfill pre-calculus requirements.		X			
	Total Credits				16

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 111	General Chemistry I (GT-SC2)			3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)			3A	1
Select one course from the following:					4
MATH 255	Calculus for Biological Scientists II		X	1B	
MATH 161	Calculus for Physical Scientists II (GT-MA1)		X	1B	
Elective					3

Minor Requirement Course					3
MATH 124, MATH 125, MATH 126 may be necessary for some students to fulfill pre-calculus requirements.		X			
	Total Credits				15
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II				3
CHEM 114	General Chemistry Lab II				1
PH 141	Physics for Scientists and Engineers I (GT-SC1)	X		3A	5
Elective					3
Minor Requirement Courses					4
MATH 155 or MATH 160 must be completed by the end of Semester 3.		X			
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
PH 142	Physics for Scientists and Engineers II (GT-SC1)			3A	5
STAT 301	Introduction to Statistical Methods				3
Minor Requirement Courses					4
	Total Credits				12
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
Advanced Writing				2	3
Arts and Humanities				3B	3
Diversity and Global Awareness				3E	3
Minor Requirement Courses					6
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one group from the following:					4
Group A:					
BZ 104	Basic Concepts of Plant Life (GT-SC2)			3A	
BZ 105	Basic Concepts of Plant Life Laboratory (GT-SC1)			3A	
Group B:					
BZ 110	Principles of Animal Biology (GT-SC2)			3A	
BZ 111	Animal Biology Laboratory (GT-SC1)			3A	
Group C:					
BZ 120	Principles of Plant Biology (GT-SC1)			3A	
Group D:					
LIFE 102	Attributes of Living Systems (GT-SC1)			3A	
Historical Perspectives				3D	3
Minor Requirement Courses					9
	Total Credits				16
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Arts and Humanities				3B	3
Building Foundations/Perspectives				4B	3
Elective					3
Minor Requirement Courses					6
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Capstone Course		X		4C	3
Using Competencies		X		4A	3
Elective		X			3
Minor Requirement Courses		X			6

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X	
	Total Credits	15
	Program Total Credits:	120

Master of Natural Sciences Education, Plan C (M.N.S.E.)

The Master of Natural Sciences Education (M.N.S.E.) is an online degree program designed for:

- Current science teachers hoping to learn new pedagogical techniques that contribute to student learning and engagement
- Current science teachers who want the flexibility to teach other natural science disciplines by enhancing their knowledge in biology, chemistry, physics and environmental science
- Current non-science teachers with a natural science undergraduate degree who would like to pursue science teaching positions
- Current non-science teachers with a related undergraduate degree (computer science, agriculture, engineering) and a strong science background who would like to pursue science teaching positions
- Individuals with strong science backgrounds and past or current experience in educational settings who would like to earn a master's degree in science education and separately pursue a teaching certification

Requirements Effective Fall 2018

Code	Title	Credits
OPTION 1:		
Education Courses		
EDRM 602	Action Research	3
EDUC 619	Curriculum Development	3
or NSCI 612	Myth Busters – Science/Controversy/Evaluation	
EDUC 660	Advanced Methods-Science and Math Instruction	3
Natural Science Courses		
Select at least 18 credits from the following:		18-19
NSCI 619A	Physics for Educators: Optics	
NSCI 619B	Physics for Educators: Mechanics	
NSCI 620	Chemistry for Science Educators	
NSCI 630	Spectroscopy for Science Educators	
NSCI 640	Energetics for Science Educators	
NSCI 650	Pollution and Environmental Biology for Educators	
NSCI 660	Evolutionary Biology for Educators	
NSCI 670	Earth Sciences for Educators	
STAT 511A	Design and Data Analysis for Researchers I: R Software	
Independent Study		
NSCI 695	Independent Study for the MNSE [1]	3
Program Total Credits:		30-31

Code	Title	Credits
OPTION 2:		
Education Courses		
EDRM 602	Action Research	3
EDUC 619	Curriculum Development	3
or NSCI 612	Myth Busters – Science/Controversy/Evaluation	
EDUC 660	Advanced Methods-Science and Math Instruction	3
Natural Science Courses		
Select at least 15 credits from the following:		15-16
NSCI 619A	Physics for Educators: Optics	
NSCI 619B	Physics for Educators: Mechanics	
NSCI 620	Chemistry for Science Educators	
NSCI 630	Spectroscopy for Science Educators	
NSCI 640	Energetics for Science Educators	
NSCI 650	Pollution and Environmental Biology for Educators	
NSCI 660	Evolutionary Biology for Educators	
NSCI 670	Earth Sciences for Educators	
STAT 511A	Design and Data Analysis for Researchers I: R Software	
Research		
NSCI 698	Research Experience in Natural Sciences [2]	6
Program Total Credits:		30-31

1 The independent study requires enrollment in the summer session after completing the program's course requirements. It involves weekly meetings of the student with her/his research advisor, but does not require full-time residency on campus.

2 The research experience requires full time enrollment in the summer session after completing the program's course requirements. Instructors are graduate student advisors who hold regular faculty appointments in the Departments of Biology, Chemistry, or Physics.

Master of Science in Materials Science and Engineering, Plan A

Materials Science and Engineering (MSE) research is aimed at educating and training the next generation of out-of-the box thinkers to solve the biggest global challenges.

By fostering a multidisciplinary approach, MSE degree programs strive to endow students with the tools to strategically question current design paradigms and drive innovative materials and manufacturing solutions across a diverse range of sectors. Motivated by modern materials challenges in energy, computing, transportation, impact protection, robotics, and global health care, MSE programs' comprehensive, experiential training is designed to arm graduates with a modernized skill set tailored to confront those challenges head-on.

MSE degree programs are designed to engage students with:

- Active hands-on training in the latest materials characterization and computational methods, materials-focused intellectual property protection and technology transfer, and professional soft skill development.
- Enhanced educational opportunities promoted through industry partnerships, facilitating internships and class time spent in active commercial manufacturing labs.
- A diverse core of faculty mentors driving advances in controlling structure at the nanoscale, predictive property modeling, high performance metal, polymer and ceramic composites, photovoltaics, and additive manufacturing.

The overall objective of the **MSE-MS Plan A (thesis option)** is to develop students to be science and engineering professionals who use their multidisciplinary problem solving skills to address global challenges in the field of materials science and engineering.

Requirements Effective Fall 2017

Code	Title	Credits
Core Courses		
MSE 501	Materials Technology Transfer	1
MSE 502A	Materials Science & Engineering Methods: Materials Structure and Scattering	1
MSE 502B	Materials Science & Engineering Methods: Computational Materials Methods	1
MSE 503	Mechanical Behaviors of Materials	3
MSE 504	Thermodynamics of Materials	3
MSE 699	Thesis [1]	3
MSE 793	Professional Development Seminar [2]	2
Select at least one course from the following:		1
MSE 502C	Materials Science & Engineering Methods: Materials Microscopy	
MSE 502D	Materials Science & Engineering Methods: Materials Spectroscopy	
MSE 502E	Materials Science & Engineering Methods: Bulk Properties and Performance	
MSE 502F	Materials Science & Engineering Methods: Experimental Methods for Materials Research	
Select one course from the following:		3
CHEM 511	Solid State Chemistry	
CHEM 517	Chemistry of Electronic Materials	
ECE 574	Optical Properties in Solids	
PH 531	Introductory Condensed Matter Physics	
Specialty Course(s)		3
Select at least 3 credits from the following: [3]		
BIOM 570/ MECH 570	Bioengineering	
BIOM 592	Seminar	
CBE 501	Chemical Engineering Thermodynamics	
CBE 514	Polymer Science and Engineering	
CHEM 515	Polymer Chemistry	
CHEM 550A	Materials Chemistry: Hard Materials	
CHEM 550B	Materials Chemistry: Soft Materials	
CHEM 550C	Materials Chemistry: Nanomaterials	
CHEM 567	Crystallographic Computation	
CHEM 569	Chemical Crystallography	
CHEM 577	Surface Chemistry	
CIVE 560	Advanced Mechanics of Materials	
CIVE 565	Finite Element Method	
CIVE 662	Foundations of Solid Mechanics	
CIVE 664	Mechanics of Fatigue and Fracture	
ECE 505	Nanostructures: Fundamentals and Applications	
ECE 569/ MECH 569	Micro-Electro-Mechanical Devices	
ECE 673	Thin Film Growth	
GRAD 544	Ethical Conduct of Research	
MATH 535	Foundations of Applied Mathematics	
MATH 550/ ENGR 550	Numerical Methods in Science and Engineering	
MATH 560	Linear Algebra	
MATH 561	Numerical Analysis I	
MATH 750	Numerical Methods and Models I	
MECH 525/ BIOM 525	Cell and Tissue Engineering	
MECH 530	Advanced Composite Materials	
MECH 531/ BIOM 531	Materials Engineering	
MECH 532/ BIOM 532	Materials Issues in Mechanical Design	
MECH 573	Structure and Function of Biomaterials	
MECH 628	Applied Fracture Mechanics	
MSE 505	Kinetics of Materials	
PH 631	Modern Topics in Condensed Matter Physics	
PH 731	Condensed Matter Theory	
Research and Teaching		
The M.S. Plan A requires a minimum of 30 credit hours, some of which may be fulfilled with the following		
MSE 651	Special Topics in Materials Science	
MSE 695	Independent Study	
MSE 784	Supervised College Teaching	
Program Total Credits		30

A minimum of 30 credits are required to complete this program.

1. Complete a minimum of 3 credits of MSE 699.
2. Students must register for 1 credit of MSE 793 each of their first 2 semesters in the program.
3. CHEM 511, CHEM 517, ECE 574, and PH 531 can be used as specialty courses, if not used to fulfill core requirements.

Master of Science in Materials Science and Engineering, Plan B

Materials Science and Engineering (MSE) research is aimed at educating and training the next generation of thinkers to solve the biggest global challenges.

By fostering a multidisciplinary approach, MSE degree programs strive to endow students with the tools to strategically question current design paradigms and drive innovative materials and manufacturing solutions across a diverse range of sectors. Motivated by modern materials challenges in energy, computing, transportation, impact protection, robotics, and global health care, MSE programs' comprehensive, experiential training is designed to equip graduates with a modernized skill set tailored to confront those challenges head-on.

The Plan B (coursework only) degree program is designed to engage students with:

- Active hands-on training on state of the art instrumentation and class time spent in commercial manufacturing labs.
- Enhanced educational and internship opportunities promoted through industry partnerships.
- A diverse core of faculty mentors driving advances in controlling structure at the nanoscale, predictive property modeling, high performance metal, polymer and ceramic composites, photovoltaics, and additive manufacturing.

The overall objective of the **M.S. in Materials Science and Engineering, Plan B,** is to develop students to be science and engineering professionals who use their multidisciplinary problem solving skills to address global challenges in the field of materials science and engineering.

Requirements Effective Fall 2017

Code	Title	Credits
Core Courses		
MSE 501	Materials Technology Transfer	1
MSE 502A	Materials Science & Engineering Methods: Materials Structure and Scattering	1
MSE 502B	Materials Science & Engineering Methods: Computational Materials Methods	1
MSE 503	Mechanical Behaviors of Materials	3
MSE 504	Thermodynamics of Materials	3
MSE 695	Independent Study [1]	3
MSE 793	Professional Development Seminar [2]	2
Select at least one course from the following:		1
MSE 502C	Materials Science & Engineering Methods: Materials Microscopy	
MSE 502D	Materials Science & Engineering Methods: Materials Spectroscopy	
MSE 502E	Materials Science & Engineering Methods: Bulk Properties and Performance	
MSE 502F	Materials Science & Engineering Methods: Experimental Methods for Materials Research	
Select one course from the following:		3
CHEM 511	Solid State Chemistry	
CHEM 517	Chemistry of Electronic Materials	
ECE 574	Optical Properties in Solids	
PH 531	Introductory Condensed Matter Physics	
Specialty Courses		6
Select at least 6 credits from the following: [3]		
BIOM 570/ MECH 570	Bioengineering	
BIOM 592	Seminar	
CBE 501	Chemical Engineering Thermodynamics	
CBE 514	Polymer Science and Engineering	
CHEM 515	Polymer Chemistry	
CHEM 550A	Materials Chemistry: Hard Materials	
CHEM 550B	Materials Chemistry: Soft Materials	
CHEM 550C	Materials Chemistry: Nanomaterials	
CHEM 567	Crystallographic Computation	
CHEM 569	Chemical Crystallography	
CHEM 577	Surface Chemistry	
CIVE 560	Advanced Mechanics of Materials	
CIVE 565	Finite Element Method	
CIVE 662	Foundations of Solid Mechanics	
CIVE 664	Mechanics of Fatigue and Fracture	
ECE 505	Nanostructures: Fundamentals and Applications	
ECE 569/ MECH 569	Micro-Electro-Mechanical Devices	
ECE 673	Thin Film Growth	
GRAD 544	Ethical Conduct of Research	
MATH 535	Foundations of Applied Mathematics	
MATH 550/ ENGR 550	Numerical Methods in Science and Engineering	
MATH 560	Linear Algebra	
MATH 561	Numerical Analysis I	
MATH 750	Numerical Methods and Models I	
MECH 525/ BIOM 525	Cell and Tissue Engineering	
MECH 530	Advanced Composite Materials	
MECH 531/ BIOM 531	Materials Engineering	
MECH 532/ BIOM 532	Materials Issues in Mechanical Design	
MECH 573	Structure and Function of Biomaterials	
MECH 628	Applied Fracture Mechanics	
MSE 505	Kinetics of Materials	
PH 631	Modern Topics in Condensed Matter Physics	
PH 731	Condensed Matter Theory	
Research and Teaching		
The M.S. Plan B requires a minimum of 30 credit hours, some of which may be fulfilled with the following		
MSE 651	Special Topics in Materials Science	
MSE 784	Supervised College Teaching	
Program Total Credits		30

A minimum of 30 credits are required to complete this program.

1 A project/report will be required for satisfactory completion of MSE 695; complete a minimum of 3 credits.

2 Students must register for 1 credit of MSE 793 each of their first 2 semesters in the program.

3 CHEM 511, CHEM 517, ECE 574, and PH 531 can be used as specialty courses, if not used to fulfill core requirements.

Professional Science Master's in Natural Sciences – Zoo, Aquarium, and Animal Shelter Management Specialization

The PSM in Natural Sciences – Zoo, Aquarium, and Animal Shelter Management Specialization is a unique opportunity to blend business skills and applied science with a specific focus on helping animal organizations. Our two-year Professional Science Master's degree program focuses on experiential learning and development of skills in addition to academic learning.

The PSM in Natural Sciences – Zoo, Aquarium, and Animal Shelter Management Specialization is an affiliated Professional Science Master's (PSM) degree. Affiliation is administered by the Commission on Affiliation of PSM Programs (https://www.professionalsciencemasters.org) (formerly named PSM National Office) to ensure a strong and distinctive PSM brand. PSMs are designed for students who are seeking a graduate degree in science or mathematics and understand the need for developing workplace skills valued by top employers.

Requirements Effective Fall 2019

Code	Title	Credits
ANEQ 522	Animal Metabolism	3
NSCI 579/VS 579	Animal Behavior in Captive Populations	3
NSCI 601/PHIL 601	Master of Profess. Natural Sciences Ethics	1
NSCI 611	Leadership in Animal Organizations	3
NSCI 621	Workplace Wellness - Animal Organizations	3
NSCI 631	Marketing for Animal Organizations	3
NSCI 687A	MPNS Internship: Preparation	4
NSCI 687B	MPNS Internship: Project	6
NSCI 693	Seminar–MPNS	4
Professional skills electives (select from the list below with approval of advisor)		11-12
Program Total Credits:		41-42

A minimum of 41 credits are required to complete this program.

Professional Skills Electives

Code	Title	Credits
Aquarium		
BZ 415	Marine Biology	4
BZ 515	Physiological Ecology of Marine Vertebrates	3
FW 300	Biology and Diversity of Fishes	2
FW 405	Fish Physiology	3
FW 540	Fisheries Ecology	3
Behavior		
ANEQ 315	Equine Behavior	2
ANTH 370	Primates	3
ANTH 375	Evolution of Primate Behavior	3
BMS 325	Cellular Neurobiology	3
BMS 505/NB 505	Neuronal Circuits, Systems and Behavior	3
BZ 430	Animal Behavior and Conservation	3
BZ 433	Behavioral Genetics	4
BZ 466	Biological Basis of Animal Behavior	4
BZ 479/VS 479	Biology and Behavior of Dogs	3
BZ 505	Cognitive Ecology	3
BZ 535	Behavioral Ecology	3
PSY 600E	Advanced Psychology: Animal Learning	3
Breeding/Reproduction		
ANEQ 310	Animal Reproduction	3
ANEQ 312	Animal Ultrasonography	2
ANEQ 328	Foundations in Animal Genetics	3
ANEQ 330	Principles of Animal Breeding	3
ANEQ 334	Principles of Equine Genetics	3
BMS 521	Comparative Reproductive Physiology	3
BMS 640	Reproductive Physiology and Endocrinology	4
BMS 642	Research Techniques for Gametes and Embryos	1
BZ 346	Population and Evolutionary Genetics	3
BZ 577/MIP 577	Computer Analysis in Population Genetics	2
BZ 578/MIP 578	Genetics of Natural Populations	4
Comparative Physiology/Taxonomy		
BZ 329	Herpetology	3
BZ 330	Mammalogy	3
BZ 335	Ornithology	3
BZ 401	Comparative Animal Physiology	3
FW 300	Biology and Diversity of Fishes	2
Companion Animal		
ANEQ 322	Pet Nutrition	2
BZ 479/VS 479	Biology and Behavior of Dogs	3
SOWK 550	Animal Assisted Therapy/Human-Animal Bond	3

Education and Human Dimensions		
EDRM 707	Quantitative Data Collection Methods/ Analysis	3
EDRM 708	Narrative Inquiry	3
EDRM 711	Ethnographic Research	3
NRRT 505	Environmental Education History and Theory	3
NRRT 506	Methods in Environmental Education Research	3
NRRT 507	Environmental Education Planning	3
NRRT 508	Current Issues in Environmental Education	3
Habitat Design		
HORT 331	Landscape Design	2
LAND 365	Landscape Contract Drawing and Specifications	3
LAND 366	Landscape Design Expression	4
LAND 620	Topics in Park Design	4
Nutrition		
ANEQ 322	Pet Nutrition	2
ANEQ 323	Zoo Nutrition	2
ANEQ 345	Principles of Nutrition: Equine Applications	3
ANEQ 720	Nutritional Energetics	3
ANEQ 725	Rumen Metabolism	3
NR 367	Concepts in Vertebrate Nutrition	3
Management		
BUS 500	Business Systems and Processes	2
BUS 614	Accounting Concepts	2
BUS 615	Managerial Accounting	2
FIN 305	Fundamentals of Finance	3
MKT 370	Digital Marketing	3
NR 401	Techniques in Public Relations	2
NR 501	Leadership and Public Communications	3
NR 535	Action for Sustainable Behavior	3
NR 555	Preparation of Grant Proposals	2
NRRT 460	Tourism Event and Conference Planning	3
NRRT 471	Starting and Managing Tourism Enterprise	3

Ph.D. in Materials Science and Engineering

Materials Science and Engineering (MSE) research is aimed at educating and training the next generation of thinkers to solve the biggest global challenges.

By fostering a multidisciplinary approach, MSE degree programs strive to endow students with the tools to strategically question current design paradigms and drive innovative materials and manufacturing solutions across a diverse range of sectors. Motivated by modern materials challenges in energy, computing, transportation, impact protection, robotics, and global health care, MSE programs' comprehensive, experiential training is designed to equip graduates with a modernized skill set tailored to confront those challenges head-on.

The MSE PhD degree program is designed to engage students with:

- Active hands-on training in the latest materials characterization and computational methods, materials-focused intellectual property protection and technology transfer, and professional soft skill development.
- Enhanced educational opportunities promoted through industry partnerships, facilitating internships and class time spent in active commercial manufacturing labs.
- A diverse core of faculty mentors driving advances in controlling structure at the nanoscale, predictive property modeling, high performance metal, polymer and ceramic composites, photovoltaics, and additive manufacturing.

The overall objective of the Materials Science and Engineering Ph.D. is developing science and engineering professionals with multidisciplinary problem solving skills to address global challenges in the field of materials science and engineering.

Requirements Effective Fall 2017

Code	Title	Credits
Core Courses		
MSE 501	Materials Technology Transfer	1
MSE 502A	Materials Science & Engineering Methods: Materials Structure and Scattering	1
MSE 502B	Materials Science & Engineering Methods: Computational Materials Methods	1
MSE 503	Mechanical Behaviors of Materials	3
MSE 504	Thermodynamics of Materials	3
MSE 793	Professional Development Seminar [1]	4
MSE 799	Dissertation [2]	6
Select at least one course from the following:		1
MSE 502C	Materials Science & Engineering Methods: Materials Microscopy	
MSE 502D	Materials Science & Engineering Methods: Materials Spectroscopy	
MSE 502E	Materials Science & Engineering Methods: Bulk Properties and Performance	
MSE 502F	Materials Science & Engineering Methods: Experimental Methods for Materials Research	
Select one course from the following:		3
CHEM 511	Solid State Chemistry	
CHEM 517	Chemistry of Electronic Materials	
ECE 574	Optical Properties in Solids (Select 1)	
PH 531	Introductory Condensed Matter Physics	
Specialty Courses		6
Select at least 6 credits: [3]		
BIOM 570/ MECH 570	Bioengineering	
BIOM 592	Seminar	
CBE 501	Chemical Engineering Thermodynamics	
CBE 514	Polymer Science and Engineering	
CHEM 515	Polymer Chemistry	
CHEM 550A	Materials Chemistry: Hard Materials	
CHEM 550B	Materials Chemistry: Soft Materials	

CHEM 550C	Materials Chemistry: Nanomaterials
CHEM 567	Crystallographic Computation
CHEM 569	Chemical Crystallography
CHEM 577	Surface Chemistry
CIVE 560	Advanced Mechanics of Materials
CIVE 565	Finite Element Method
CIVE 662	Foundations of Solid Mechanics
CIVE 664	Mechanics of Fatigue and Fracture
ECE 505	Nanostructures: Fundamentals and Applications
ECE 569/ MECH 569	Micro-Electro-Mechanical Devices
ECE 673	Thin Film Growth
GRAD 544	Ethical Conduct of Research
MATH 535	Foundations of Applied Mathematics
MATH 550/ ENGR 550	Numerical Methods in Science and Engineering
MATH 560	Linear Algebra
MATH 561	Numerical Analysis I
MATH 750	Numerical Methods and Models I
MECH 525/ BIOM 525	Cell and Tissue Engineering
MECH 530	Advanced Composite Materials
MECH 531/ BIOM 531	Materials Engineering
MECH 532/ BIOM 532	Materials Issues in Mechanical Design
MECH 573/ BIOM 573	Structure and Function of Biomaterials
MECH 628	Applied Fracture Mechanics
MSE 505	Kinetics of Materials
PH 631	Modern Topics in Condensed Matter Physics
PH 731	Condensed Matter Theory
Research and Teaching	
The Ph.D. requires a minimum of 72 credit hours, some of which may be fulfilled with the following:	
MSE 651	Special Topics in Materials Science
MSE 695	Independent Study
MSE 784	Supervised College Teaching
MSE 795	Independent Study
Program Total Credits	72

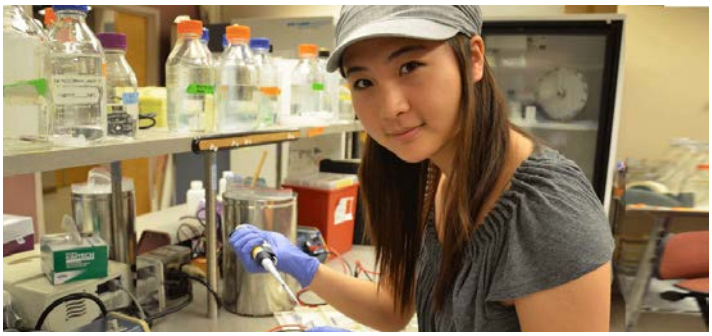
A minimum of 72 credits are required to complete this program.

1 Students must register for 1 credit of MSE 793 each of their first 4 semesters in the program.

2 Complete a minimum of 6 credits of MSE 799.

3 CHEM 511, CHEM 517, ECE 574, and PH 531 can be used as specialty courses, if not used to fulfill core requirements.

Department of Biochemistry and Molecular Biology



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Professor Laurie A. Stargell, Chair
Dr. Aaron Sholders, Undergraduate Program Coordinator
Dr. Brian Kalet, Academic Success Coordinator
Stasi Brazil-Engleman, Academic Program Assistant
Kristen DeQuasie, Assistant to the Chair

Undergraduate Majors

- Major in Biochemistry
  - ASBMB Concentration
  - General Biochemistry Concentration (No new students are being admitted to this concentration.)
  - Health and Medical Sciences Concentration
  - Pre-Pharmacy Concentration

Minor

- Minor in Biochemistry

Graduate Graduate Programs in Biochemistry

The department offers graduate programs leading to Master of Science and Doctor of Philosophy degrees. Students interested in graduate work should refer to the Graduate and Professional Bulletin, and the department's website (http://www.bmb.colostate.edu/graduates).

Master's Programs

- Master of Science in Biochemistry, Plan A*
- Master of Science in Biochemistry, Plan B*
- Professional Science Master's in Natural Sciences, Biological Data Analytics Specialization
- Professional Science Master's in Natural Sciences, Microscope Imaging Technology Specialization

Ph.D.

- Ph.D. in Biochemistry*

* Please see department for program of study.

Courses
Biochemistry and Molecular Biology (BC)

BC 192 Biochemistry Freshman Seminar Credits: 2 (1-0-1)
Course Description: Introduction to curriculum and career options for biochemistry majors.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 295 Introductory Independent Study Credits: Var[1-3] (0-0-0)
Course Description: Apply principles and knowledge being learned in first and second year life sciences and chemistry courses.
Prerequisite: LIFE 102 or CHEM 112, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 351 Principles of Biochemistry Credits: 4 (4-0-0)
Course Description: Structure and function of biological molecules; biocatalysis; metabolism and energy transduction.
Prerequisite: (BZ 110 or BZ 120 or LIFE 102) and (CHEM 245 or CHEM 341 or CHEM 345).
Registration Information: For majors in biological sciences, engineering, and preprofessional students in the health sciences. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 353 Pre-Health Genetics Credits: 4 (4-0-0)
Course Description: Applies and extends the biochemical concepts learned in BC 351 to macromolecules and molecular processes based on nucleic acids.
Prerequisite: BC 351.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 360 Responsible Conduct in Biochemical Research Credit: 1 (1-0-0)
Course Description: Research ethics and the responsible conduct of research.
Prerequisite: LIFE 212.
Registration Information: Sophomore standing. Biochemistry majors only. This is a partial semester course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 401 Comprehensive Biochemistry I Credits: 3 (3-0-0)
Course Description: Macromolecular structure and dynamics; membranes; enzymes; bioenergetics.
Prerequisite: (CHEM 245 or CHEM 343, may be taken concurrently or CHEM 346, may be taken concurrently) and (MATH 155 or MATH 160).
Registration Information: Sophomore standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 403 Comprehensive Biochemistry II Credits: 3 (3-0-0)
Course Description: Metabolic pathways and their regulation; cellular biochemistry.
Prerequisite: CHEM 245 or CHEM 341 or CHEM 345.
Registration Information: Sophomore standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 404 Comprehensive Biochemistry Laboratory Credits: 2 (0-6-0)
Course Description: Experimental approaches to studying macromolecules, metabolism, and gene expressions.
Prerequisite: (BC 401, may be taken concurrently) and (CHEM 246 or CHEM 344 or CHEM 346) and (LIFE 212 and LIFE 203).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BC 405 Comprehensive Biochemistry II--Honors Recitation Credit: 1 (0-0-1)
Course Description: Read and discuss current literature related to material presented in BC 403.
Prerequisite: None.
Registration Information: Must have concurrent registration in BC 403. For students participating in the Honors program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 406A Investigative Biochemistry: Protein Biochemistry Credits: 2 (0-4-0)
Course Description: Advanced inquiry-based protein chemistry and molecular biology lab.
Prerequisite: BC 404.
Registration Information: This is a partial semester course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 406B Investigative Biochemistry: Molecular Genetics Credits: 2 (1-3-0)
Course Description: Advanced biochemical and molecular biological techniques and a problem-solving approach to molecular genetics.
Prerequisite: BC 404.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 406C Investigative Biochemistry: Cellular Biochemistry Credits: 2 (1-3-0)
Course Description: Advanced biochemical and molecular biological techniques and a problem-solving approach to cellular biochemistry.
Prerequisite: BC 404.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 411 Physical Biochemistry Credits: 4 (3-0-1)
Course Description: Thermodynamics; reaction rates; quantum chemistry; spectroscopy; macromolecular folding and interactions; ligand binding; enzyme kinetics; membranes.
Prerequisite: (BC 351 with a minimum grade of B or BC 401) and (CHEM 113) and (MATH 161 or MATH 255).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 441 3D Molecular Models for Biochemistry Credit: 1 (0-1.5-.5)
Course Description: Computer instruction to construct 3D models of proteins and nucleic acids using leading software.
Prerequisite: BC 401, may be taken concurrently.
Registration Information: Must register for laboratory and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 463 Molecular Genetics Credits: 3 (3-0-0)
Course Description: Molecular basis of gene structure, replication, repair, recombination, and expression.
Prerequisite: (BC 401 with a minimum grade of C, may be taken concurrently or BC 351 with a minimum grade of C) and (LIFE 201B with a minimum grade of C or BZ 350 with a minimum grade of C).
Registration Information: Credit not allowed for both BC 463 and BC 563.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 464 Molecular Genetics Recitation Credit: 1 (0-0-1)
Course Description: Methods used to study the molecular basis of gene structure, replication, repair, recombination, and expression.
Prerequisite: (LIFE 201B) and (BC 351, may be taken concurrently or BC 401, may be taken concurrently).
Registration Information: Must have concurrent registration in BC 463.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 465 Molecular Regulation of Cell Function Credits: 3 (3-0-0)
Course Description: Molecular regulation of cell organization, membrane formation, organelle biogenesis, cell communication, shape and motility, growth, aging, and death.
Prerequisite: (LIFE 210) and (BC 403, may be taken concurrently or BC 351).
Registration Information: Credit not allowed for both BC 465 and BC 565.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 466 Molecular Regulation of Cell Function-Honors Credit: 1 (0-0-1)
Course Description: Discussions of current articles in cell biology including methods and molecular mechanisms that explain cell behavior in health and disease.
Prerequisite: None.
Registration Information: Must have concurrent registration in BC 465.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 467 Biochemistry of Disease Credits: 3 (3-0-0)
Course Description: Biochemical basis of specific human diseases.
Prerequisite: BC 401.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 475 Mentored Research Credits: 3 (0-6-1)
Course Description: Plan and conduct mentored research with weekly discussion of progress, presentation at all-university symposium, and submission of written report.
Prerequisite: BC 404.
Registration Information: Must register for laboratory and recitation. Maximum of 9 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 484 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: Assist in teaching selected courses in biochemistry and molecular biology.
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 487A Internship Credits: Var[1-18] (0-0-0)
Course Description: Work experience with an approved preceptor outside of a university laboratory environment.
Prerequisite: BC 401 and BC 403 and BC 404.
Registration Information: Written consent of instructor. Minimum GPA of 2.0.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 487B Internship: International Credits: Var[1-18] (0-0-0)
Course Description: Research in foreign host laboratory in contact with CSU mentor.
Prerequisite: BC 401 and BC 463 and BC 495 - at least 1 credit.
Registration Information: Selection by departmental committee. BC 495 (one credit in lab of CSU mentor).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 493 Senior Seminar Credit: 1 (0-0-1)
Course Description: Critical analysis of selected literature in biochemistry and molecular biology.
Prerequisite: None.
Registration Information: BC 401 or concurrent registration.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Minimum cumulative GPA of 3.0.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description: Faculty-directed exploration of areas of special interest in biochemistry and molecular biology.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 498 Research Credits: Var[1-6] (0-0-0)
Course Description: Supervised laboratory research in biochemistry and molecular biology.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 499A Thesis: Laboratory Research-Based Credits: 3 (0-0-3)
Course Description: Laboratory-based research thesis.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 499B Thesis: Literature Based Credits: 3 (0-0-3)
Course Description: Thesis - Literature-based in Gen. Biochemistry.
Prerequisite: BC 493.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 499C Thesis: Literature-based in Health and Med Sci Credits: 3 (0-0-3)
Course Description: Thesis - Literature-based in Health and Med. Sci.
Prerequisite: BC 493.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 499D Thesis: Literature-based in Pre-Pharmacy Credits: 3 (0-0-3)
Course Description: Thesis - Literature-based in Pre-Pharmacy.
Prerequisite: BC 493.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 499E Thesis: Literature-based in Neurobiochemistry Credits: 3 (0-0-3)
Course Description: Thesis - Literature-based in Neurobiochemistry.
Prerequisite: BC 493, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 511 Structural Biology I Credits: 4 (3-0-1)
Course Description: Structural principles of biological macromolecules and techniques of structural analysis.
Prerequisite: BC 401, may be taken concurrently.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 512 Principles of Macromolecular Structure Credit: 1 (1-0-0)
Course Description: Physical interactions controlling folding and solution behavior of biological macromolecules, including proteins, nucleic acids, and membranes.
Prerequisite: BC 411, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 513 Enzymology Credit: 1 (1-0-0)
Course Description: Kinetic methods, mechanism, and regulation of enzyme catalysis.
Prerequisite: BC 403.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 517 Metabolism Credits: 2 (2-0-0)
Course Description: Design and regulation of metabolic pathways.
Prerequisite: BC 351 and BC 403.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 521 Principles of Chemical Biology Credits: 3 (3-0-0)
Also Offered As: CHEM 521.
Course Description: Principles of chemical biology. Chemical methods for understanding and controlling the structure and function of biopolymers.
Prerequisite: CHEM 245 or CHEM 343 or CHEM 346.
Registration Information: Credit not allowed for both BC 521 and CHEM 521.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 563 Molecular Genetics Credits: 4 (3-0-1)
Course Description: Mechanisms of replication, transcription, processing, translation, and packaging of genetic material, emphasizing original literature and methods.
Prerequisite: BC 401 and LIFE 201B.
Registration Information: Must register for lecture and recitation. Credit not allowed for both BC 563 and BC 463.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 565 Molecular Regulation of Cell Function Credits: 4 (3-0-1)
Course Description: Molecular regulation of cell organization, membrane formation, organelle biogenesis, cell communication, shape and motility, growth, aging, and death.
Prerequisite: (LIFE 210) and (BC 351 or BC 403, may be taken concurrently).
Registration Information: Credit not allowed for both BC 565 and BC 465. Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 566 Advanced Topics in Mitotic Processes Credit: 1 (1-0-0)
Course Description: Mitotic spindle, microtubules, kinetochores, and molecular motors, specifically during cell division.
Prerequisite: BC 465 or BC 565.
Restriction: .
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 571 Quantitative Biochemistry Credit: 1 (1-0-0)
Course Description: Introduction to statistics, error analysis, and curve fitting of biochemical data with a focus on practical examples.
Prerequisite: BC 511, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 589 Current Trends in Molecular Biosciences Credits: 2 (1-2-0)
Course Description: Biochemical and molecular biological foundations of molecular genetics/genetic engineering; molecular analysis of genes.
Prerequisite: None.
Registration Information: B.S. or B.A. in biology or chemistry; secondary school teaching certification required. Offered as an online course only.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

BC 601 Responsible Conduct in Biochemistry Credit: 1 (1-0-0)
Course Description: Design of experiments; error and fraud, publishing/grant application submission, scientific misconduct, classic examples of fraud, case studies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring. (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BC 611 Structural Biology II Credits: 2 (2-0-0)
Course Description: Structure and interactions of biological macromolecules related to function.
Prerequisite: BC 511.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 663 Gene Expression Credits: 2 (2-0-0)
Course Description: Eukaryotic transcription mechanisms with emphasis on methods of study and regulatory mechanisms.
Prerequisite: BC 563.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 665A Advanced Topics in Cell Regulation: Microscopic Methods Credits: 2 (2-0-0)
Course Description: Analysis of cell behavior, function and regulation.
Prerequisite: BC 565.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 665B Advanced Topics in Cell Regulation: Modern Methods Credits: 2 (2-0-0)
Course Description: Modern methods in cell biology.
Prerequisite: BC 565.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BC 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BC 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BC 701 Grant Proposal Writing and Reviewing Credit: 1 (1-0-0)
Course Description: Didactic and hands-on experience with locating funding sources, writing effective grant proposals, and the review process in the bio-molecular sciences.
Prerequisite: (BC 403) and (BC 511, may be taken concurrently) and (BC 563, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 711A Advanced Topics in Structural Biology: Protein Structure and Function Credit: 1 (1-0-0)
Course Description:
Prerequisite: BC 511 and BC 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 711B Advanced Topics in Structural Biology: Membrane Proteins Credit: 1 (1-0-0)
Course Description:
Prerequisite: BC 511 and BC 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 711C Advanced Topics in Structural Biology: Protein-DNA Interactions Credit: 1 (1-0-0)
Course Description:
Prerequisite: BC 511 and BC 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 711D Advanced Topics in Structural Biology: Biomolecular Spectroscopy Credit: 1 (1-0-0)
Course Description:
Prerequisite: BC 511 and BC 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 711E Advanced Topics in Structural Biology: Biomolecular NMR Credit: 1 (1-0-0)
Course Description:
Prerequisite: BC 511 and BC 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 711F Advanced Topics in Structural Biology: Macromolecular X-ray Crystallography Credit: 1 (1-0-0)
Course Description:
Prerequisite: BC 511 and BC 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 763A Advanced Molecular Genetics Topics: Chromatin and Transcription Credit: 1 (1-0-0)
Course Description:
Prerequisite: BC 663, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 763B Advanced Molecular Genetics Topics: Transcriptional Control - Co-Activators and Corepressors Credit: 1 (1-0-0)
Course Description:
Prerequisite: BC 663, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 763C Advanced Molecular Genetics Topics: Concepts and Techniques of Genetic Analysis Credit: 1 (1-0-0)
Course Description:
Prerequisite: BC 663, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 784 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 793 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BC 796 Group Study Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BC 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BC 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Major in Biochemistry

As the name suggests, biochemistry links biology and chemistry. Biochemistry is most simply defined as the chemistry of living systems. It is the science that tries to explain how “lifeless” molecules work together to make “living” organisms. The methods of chemistry and molecular biology are used to study the structure and behavior of the complex molecules found in biological materials and the ways these molecules interact to form cells, tissues, and whole organisms. Biochemistry provides the basis for advances in human and veterinary medicine, agriculture, and biotechnology. Biochemists may participate in interdisciplinary research and development projects alongside chemical engineers, biologists, microbiologists, agronomists, physicians, and other professionals. They investigate the molecular mechanisms of such diseases as AIDS, diabetes, cancer, heart disease and stroke, and develop solutions to environmental problems through biotechnology.

The Biochemistry major provides a student with a strong, well-balanced background in the biological, physical, and mathematical sciences. As a Biochemistry major, studies include macromolecular structure and function; cellular biochemistry; metabolism; gene expression, DNA and protein structure, DNA replication and repair; cell organization, communication, growth, aging, and death. Students are also required to take courses in physics, organic chemistry, and statistical measurements and methods used in research. Independent study and internships (typically during the junior and senior years, but could start in the freshman year) provide opportunities for experiential learning and working closely with the faculty, sometimes leading to authorship of original publications.

Learning Outcomes

Students will obtain:

- A command of the basic concepts of chemistry, biology, biochemistry, molecular biology, and cellular biology
- The ability to critically analyze, and present the methods, results, and conclusions of scientific papers in the current biochemical literature, and orally present technical material in a clear and comprehensible form
- Experience in use of a variety of laboratory techniques; critically interpret experimental results; and design new experiments
- Demonstrate the ability to perform original research in biochemistry and molecular biology

Potential Occupations

Possible career opportunities include, but are not limited to: process research technician, production/quality assurance lab technician, biomedical/pharmaceutical researcher or salesperson, molecular biologist, biophysicist, cytologist, toxicologist, crime scene investigator, industrial hygienist, dairy technologist, environmental analyst, hygienist, chemist, wastewater treatment chemist, food and drug inspector, museum technician, teacher, writer, fisheries biologist, research analyst, and medical or clinical lab technologist. Many biochemistry majors go on to earn higher degrees in graduate school or health care related professional schools, leading to careers in medicine, veterinary medicine, pharmacy, or law.

Concentrations

- ASBMB Concentration (American Society for Biochemistry and Molecular Biology)
- Health and Medical Sciences Concentration
- Pre-Pharmacy Concentration

Major in Biochemistry, ASBMB Concentration

The American Society for Biochemistry and Molecular Biology (ASBMB) concentration in Biochemistry is composed of a "core" set of courses comprised of 24 credits of primarily upper division coursework (22/24 credits are 400 level), along with a total of 9 "bioscience elective" credits selected from a list provided by the department. This option gives the student 13 "free elective" credits, which they can use to pursue a minor, a double major, and/or other academic interests. Thus, this concentration is designed to provide a broad background in biochemistry and can be tailored to meet the individual needs of specific students. The ASBMB concentration is recommended for students considering teaching and/or research as a career. Students who graduate from this program can state on their resume that they graduated from an "ASBMB program." If desired, students can take a 1-hour ASBMB exam during the spring semester of their senior year. Students who pass the exam will additionally receive degree certification from ASBMB. Accreditation (and certification) by ASBMB confirms that our undergraduate degree program meets very high standards, and thus will enhance the credentials of our graduating seniors.

Requirements Effective Fall 2019

A minimum grade of C (2.000) must be earned for BC 493 and all biochemistry (BC) and LIFE subject code lecture and laboratory courses at or above the 200-level required in the biochemistry major.

Freshman

		AUCC	Credits
BC 192	Biochemistry Freshman Seminar		2
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CO 150	College Composition (GT-CO2)	1A	3
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
LIFE 201B	Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2)	3A	3
LIFE 203	Introductory Genetics Laboratory		2
Select one group from the following:			8
Group A:			
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	
MATH 255	Calculus for Biological Scientists II	1B	
Group B:			
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	

MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	
	Total Credits		31
Sophomore			
CHEM 341	Modern Organic Chemistry I		3
CHEM 343	Modern Organic Chemistry II		3
CHEM 344	Modern Organic Chemistry Laboratory		2
LIFE 210	Introductory Eukaryotic Cell Biology		3
LIFE 212	Introductory Cell Biology Laboratory		2
Select one course from the following:			5
PH 121	General Physics I (GT-SC1)	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	
AUCC Category 3 courses[1]		3B-3E	6
Bioscience Elective (see list below)			3
Elective			3
	Total Credits		30
Junior			
BC 360	Responsible Conduct in Biochemical Research		1
BC 401	Comprehensive Biochemistry I	4A	3
BC 403	Comprehensive Biochemistry II	4B	3
BC 404	Comprehensive Biochemistry Laboratory	4B	2
Select one from the following:			5
PH 122	General Physics II (GT-SC1)	3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	
Select one course from the following:			3
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
STAT 315	Statistics for Engineers and Scientists		
Bioscience Elective (see list below)			3
Advanced Writing		2	3
AUCC Category 3 courses[1]		3B-3E	3
Electives			3
	Total Credits		29
Senior			
BC 411	Physical Biochemistry		4
BC 463	Molecular Genetics		3
BC 465	Molecular Regulation of Cell Function		3
BC 493	Senior Seminar	4A,4C	1
BC 499A or 499B	Thesis: Laboratory Research-Based Thesis: Literature Based	4C	3
Bioscience Elective (see list below)			3
AUCC Category 3 courses[1]		3B-3E	6
Electives[2]			7
	Total Credits		30
	Program Total Credits:		120

Biosciences Electives List – Select a minimum of 9 credits in consultation with advisor

A minimum of 3 credits must be selected from Group A; a maximum of 6 credits may be selected from group B; a maximum of 3 credits may be selected from Group C.

Code	Title	Credits
Group A – Select 3-9 credits from the following:		
BMS 300	Principles of Human Physiology	4
BMS 301	Human Gross Anatomy	5
BMS 305	Domestic Animal Gross Anatomy	4
BMS 330	Microscopic Anatomy	4
BMS 345	Functional Neuroanatomy	4
BMS 360	Fundamentals of Physiology	4
BMS 420	Cardiopulmonary Physiology	3
BMS 430	Endocrinology	3
BMS 450	Pharmacology	3
BMS 500	Mammalian Physiology I	4
ERHS 332	Principles of Epidemiology	3
FSHN 350	Human Nutrition	3
HES 319	Neuromuscular Aspects of Human Movement	4
HES 403	Physiology of Exercise	4
VS 331	Histology	4
Group B – Select 0-6 credits from the following:		
BC 467	Biochemistry of Disease	3
BIOM 306/BTEC 306	Bioprocess Engineering	4
BIOM 504/CBE 504	Fundamentals of Biochemical Engineering	3
BMS 325	Cellular Neurobiology	3
BMS 405	Nerve and Muscle-Toxins, Trauma and Disease	3
BSPM 462/BZ 462/ MIP 462	Parasitology and Vector Biology	5
BZ 220	Introduction to Evolution	3
BZ 311	Developmental Biology	4
BZ 346	Population and Evolutionary Genetics	3
BZ 360	Bioinformatics and Genomics	3
BZ 401	Comparative Animal Physiology	3
BZ 440	Plant Physiology	3
BZ 455	Human Heredity and Birth Defects	3
BZ 476/BZ 576	Genetics of Model Organisms	3
CHEM 334	Quantitative Analysis Laboratory	1
CHEM 335	Introduction to Analytical Chemistry	3
CHEM 433	Clinical Chemistry	3
ERHS 450	Introduction to Radiation Biology	3
FSHN 470	Integrative Nutrition and Metabolism	3
FTEC 350	Fermentation Microbiology	2
FTEC 460	Brewing Science II	4
MIP 300	General Microbiology	3
MIP 302	General Microbiology Laboratory	2
MIP 342	Immunology	4
MIP 343	Immunology Laboratory	2
MIP 351	Medical Bacteriology	3
MIP 352	Medical Bacteriology Laboratory	3
MIP 420	Medical and Molecular Virology	4
MIP 425	Virology and Cell Culture Laboratory	2
MIP 443	Microbial Physiology	4
MIP 450	Microbial Genetics	3
NB 501	Cellular and Molecular Neurophysiology	2
Group C – Select 0-3 credits from the following:		
BC 475	Mentored Research	3
BC 487A	Internship	Var.
BC 495	Independent Study	Var.
BC 496	Group Study	Var.

1 Select from the list of courses in categories 3B-3E (six credits [two courses] must come from 3B; one course each from categories 3C, 3D, and 3E) in the AUCC. Only 3 of the 6 credits required for Arts and Humanities may come from intermediate (L*** 200 and L*** 201) foreign language courses.

2 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

TO PREPARE FOR FIRST SEMESTER: The curriculum for the Biochemistry major - ASBMB concentration assumes students enter college prepared to begin a year-long calculus sequence (either MATH 155/MATH 255 or MATH 160/MATH 161) in the first semester of their first year. LIFE 102 requires high school chemistry as a prerequisite; CHEM 111 requires Algebra II as a prerequisite (this prerequisite is met by having Algebra II by test credit, transfer credit, or placement out of MATH 117 and MATH 118 on Math Placement Exam).

A minimum grade of C (2.000) must be earned for BC 493 and all biochemistry (BC) and LIFE subject code lecture and laboratory courses at or above the 200-level required in the biochemistry major.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
BC 192	Biochemistry Freshman Seminar				2
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	4
Select one course from the following:					4
MATH 155	Calculus for Biological Scientists I (GT-MA1)	X		1B	

MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II	X			3
CHEM 114	General Chemistry Lab II	X			1
CO 150	College Composition (GT-CO2)			1A	3
LIFE 201B	Introductory Genetics: Molecular/Immunological/ Developmental (GT-SC2)	X		3A	3
LIFE 203	Introductory Genetics Laboratory	X			2
Select one course from the following:					4
MATH 255	Calculus for Biological Scientists II	X		1B	
MATH 161	Calculus for Physical Scientists II (GT-MA1)	X		1B	
	Total Credits				16
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 341	Modern Organic Chemistry I	X			3
LIFE 210	Introductory Eukaryotic Cell Biology	X			3
LIFE 212	Introductory Cell Biology Laboratory	X			2
AUCC Category 3 courses				3B, 3C, 3D, 3E	3
Elective					3
	Total Credits				14
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 343	Modern Organic Chemistry II	X			3
CHEM 344	Modern Organic Chemistry Laboratory	X			2
Select one course from the following:					5
PH 121	General Physics I (GT-SC1)	X		3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)	X		3A	
AUCC Category 3 courses				3B, 3C, 3D, 3E	3
Bioscience Elective (See List on Concentration Requirements Tab)			X		3
	Total Credits				16
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 360	Responsible Conduct in Biochemical Research	X			1
BC 401	Comprehensive Biochemistry I	X		4A	3
Select one course from the following:					5
PH 122	General Physics II (GT-SC1)		X	3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)		X	3A	
Select one course from the following:					3
STAT 301	Introduction to Statistical Methods		X		
STAT 307	Introduction to Biostatistics		X		
STAT 315	Statistics for Engineers and Scientists		X		
Advanced Writing				2	3
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 403	Comprehensive Biochemistry II	X		4B	3
BC 404	Comprehensive Biochemistry Laboratory		X	4B	2
AUCC Category 3 courses				3B, 3C, 3D, 3E	3
Bioscience Elective (See List on Concentration Requirements Tab)		X			3
Elective					3
PH 122 or PH 142 must be completed by the end of Semester 6.		X			
	Total Credits				14

Senior

Semester 7		Critical	Recommended	AUCC	Credits
BC 411	Physical Biochemistry	X			4
BC 463	Molecular Genetics	X			3
BC 493	Senior Seminar	X		4A,4C	1
AUCC Category 3 courses				3B, 3C, 3D, 3E	3
Electives					4
	Total Credits				15

Semester 8		Critical	Recommended	AUCC	Credits
BC 465	Molecular Regulation of Cell Function	X			3
Select one course from the following:					3
BC 499A	Thesis: Laboratory Research-Based	X		4C	
BC 499B	Thesis: Literature Based	X		4C	
Bioscience Electives (See List on Concentration Requirements Tab)		X			3
AUCC Category 3 courses		X		3B, 3C, 3D, 3E	3
Electives		X			3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Biochemistry, General Biochemistry Concentration

No new students are being admitted to this concentration.

Requirements Effective Spring 2019

A minimum grade of C (2.000) must be earned for BC 493 and all biochemistry (BC) and LIFE subject code lecture and laboratory courses at or above the 200-level required in the biochemistry major.

Freshman

		AUCC	Credits
BC 192	Biochemistry Freshman Seminar		2
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CO 150	College Composition (GT-CO2)	1A	3
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
LIFE 201B	Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2)	3A	3
LIFE 203	Introductory Genetics Laboratory		2
Select one group from the following:			8
Group A:			
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	
MATH 255	Calculus for Biological Scientists II	1B	
Group B:			
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	
	Total Credits		31

Sophomore

CHEM 341	Modern Organic Chemistry I		3
CHEM 343	Modern Organic Chemistry II		3
CHEM 344	Modern Organic Chemistry Laboratory		2

LIFE 210	Introductory Eukaryotic Cell Biology		3
LIFE 212	Introductory Cell Biology Laboratory		2
Select one from the following:			5
PH 121	General Physics I (GT-SC1)	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	
AUCC Category 3 courses[1]		3B-3E	6
Bioscience Elective (see list below)			3
Elective			3
	Total Credits		30

Junior

BC 401	Comprehensive Biochemistry I	4A	3
BC 403	Comprehensive Biochemistry II	4B	3
BC 404	Comprehensive Biochemistry Laboratory	4B	2
Select one from the following:			5
PH 122	General Physics II (GT-SC1)	3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	
Select one course from the following:			3
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
STAT 315	Statistics for Engineers and Scientists		
Bioscience Elective (see list below)			3
Advanced Writing		2	3
AUCC Category 3 courses[1]		3B-3E	3
Electives			3
	Total Credits		28

Senior

BC 411	Physical Biochemistry		4
BC 463	Molecular Genetics		3
BC 465	Molecular Regulation of Cell Function		3
BC 493	Senior Seminar	4A,4C	1
BC 499A or 499B	Thesis: Laboratory Research-Based Thesis: Literature Based	4C	3
Bioscience Elective (see list below)			3
AUCC Category 3 courses[1]		3B-3E	6
Electives[2]			8
	Total Credits		31
	Program Total Credits:		120

Biosciences Electives List – Select a minimum of 9 credits in consultation with advisor

A minimum of 3 credits must be selected from Group A; a maximum of 6 credits may be selected from group B; a maximum of 3 credits may be selected from Group C.

Code	Title	Credits
Group A – Select 3-9 credits from the following:		
BMS 300	Principles of Human Physiology	4
BMS 301	Human Gross Anatomy	5
BMS 305	Domestic Animal Gross Anatomy	4
BMS 330	Microscopic Anatomy	4
BMS 345	Functional Neuroanatomy	4
BMS 360	Fundamentals of Physiology	4
BMS 420	Cardiopulmonary Physiology	3
BMS 430	Endocrinology	3
BMS 450	Pharmacology	3
BMS 500	Mammalian Physiology I	4
ERHS 332	Principles of Epidemiology	3
FSHN 350	Human Nutrition	3
HES 319	Neuromuscular Aspects of Human Movement	4
HES 403	Physiology of Exercise	4
VS 331	Histology	4
Group B – Select 0-6 credits from the following:		
BC 467	Biochemistry of Disease	3

BIOM 306/BTEC 306	Bioprocess Engineering	4
BIOM 470/MECH 470	Biomedical Engineering	3
BMS 325	Cellular Neurobiology	3
BMS 405	Nerve and Muscle-Toxins, Trauma and Disease	3
BSPM 462/BZ 462/ MIP 462	Parasitology and Vector Biology	5
BZ 220	Introduction to Evolution	3
BZ 311	Developmental Biology	4
BZ 346	Population and Evolutionary Genetics	3
BZ 360	Bioinformatics and Genomics	3
BZ 401	Comparative Animal Physiology	3
BZ 440	Plant Physiology	3
BZ 455	Human Heredity and Birth Defects	3
BZ 476/BZ 576	Genetics of Model Organisms	3
CBE 504	Fundamentals of Biochemical Engineering	3
CHEM 334	Quantitative Analysis Laboratory	1
CHEM 335	Introduction to Analytical Chemistry	3
CHEM 433	Clinical Chemistry	3
ERHS 450	Introduction to Radiation Biology	3
FSHN 470	Integrative Nutrition and Metabolism	3
FTEC 350	Fermentation Microbiology	2
FTEC 460	Brewing Science II	3
MIP 300	General Microbiology	3
MIP 302	General Microbiology Laboratory	2
MIP 342	Immunology	4
MIP 343	Immunology Laboratory	2
MIP 351	Medical Bacteriology	3
MIP 352	Medical Bacteriology Laboratory	3
MIP 420	Medical and Molecular Virology	4
MIP 425	Virology and Cell Culture Laboratory	2
MIP 443	Microbial Physiology	4
MIP 450	Microbial Genetics	3
NB 501	Cellular and Molecular Neurophysiology	2
Group C – Select 0-3 credits from the following:		
BC 475	Mentored Research	3
BC 487A	Internship	1-18
BC 495	Independent Study	1-18
BC 496	Group Study	1-18

[1] Select from the list of courses in categories 3B-3E (six credits [two courses] must come from 3B; one course each from categories 3C, 3D, and 3E) in the AUCC. Only 3 of the 6 credits required for Arts and Humanities may come from intermediate (L*** 200 and L*** 201) foreign language courses.

[2] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

TO PREPARE FOR FIRST SEMESTER: The curriculum for the Biochemistry major - General Biochemistry concentration assumes students enter college prepared to begin a year-long calculus sequence (either MATH 155/MATH 255 or MATH 160/MATH 161) in the first semester of their first year. LIFE 102 requires high school chemistry as a prerequisite; CHEM 111 requires Algebra II as a prerequisite (this prerequisite is met by having Algebra II by test credit, transfer credit, or placement out of MATH 117 and MATH 118 on Math Placement Exam).

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 192	Biochemistry Freshman Seminar				2
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	4
Select one course from the following:					4
MATH 155	Calculus for Biological Scientists I (GT-MA1)	X		1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II	X			3
CHEM 114	General Chemistry Lab II	X			1
CO 150	College Composition (GT-CO2)			1A	3
LIFE 201B	Introductory Genetics: Molecular/Immunological/ Developmental (GT-SC2)	X		3A	3
LIFE 203	Introductory Genetics Laboratory	X			2
Select one course from the following:					4
MATH 255	Calculus for Biological Scientists II	X		1B	
MATH 161	Calculus for Physical Scientists II (GT-MA1)	X		1B	
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 341	Modern Organic Chemistry I	X			3
LIFE 210	Introductory Eukaryotic Cell Biology	X			3
LIFE 212	Introductory Cell Biology Laboratory	X			2
AUCC Category 3 courses				3B, 3C, 3D, 3E	3
Elective					3
	Total Credits				14
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 343	Modern Organic Chemistry II	X			3
CHEM 344	Modern Organic Chemistry Laboratory	X			2
Select one course from the following:					5
PH 121	General Physics I (GT-SC1)	X		3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)	X		3A	
AUCC Category 3 courses				3B, 3C, 3D, 3E	3
Bioscience Elective (See List on Concentration Requirements Tab)			X		3
	Total Credits				16

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 401	Comprehensive Biochemistry I	X		4A	3
Select one course from the following:					5
PH 122	General Physics II (GT-SC1)		X	3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)		X	3A	
Select one course from the following:					3
STAT 301	Introduction to Statistical Methods		X		
STAT 307	Introduction to Biostatistics		X		
STAT 315	Statistics for Engineers and Scientists		X		
Advanced Writing				2	3
	Total Credits				14
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 403	Comprehensive Biochemistry II	X		4B	3
BC 404	Comprehensive Biochemistry Laboratory		X	4B	2
AUCC Category 3 courses				3B, 3C, 3D, 3E	3
Bioscience Elective (See List on Concentration Requirements Tab)		X			3
Elective					3
PH 122 or PH 142 must be completed by the end of Semester 6.		X			
	Total Credits				14

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 411	Physical Biochemistry	X			4
BC 463	Molecular Genetics	X			3
BC 493	Senior Seminar	X		4A	1
AUCC Category 3 courses				3B, 3C, 3D, 3E	3
Electives					4
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 465	Molecular Regulation of Cell Function	X			3
Select one course from the following:					3
BC 499A	Thesis: Laboratory Research-Based	X		4C	
BC 499B	Thesis: Literature Based	X		4C	
Bioscience Electives (See List on Concentration Requirements Tab)		X			3
AUCC Category 3 courses		X		3B, 3C, 3D, 3E	3

Electives		X	4
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X	
	Total Credits		16
	Program Total Credits:		120

Major in Biochemistry, Health and Medical Sciences Concentration

This concentration augments the ASBMB Concentration with additional coursework in anatomy and physiology, biochemistry of disease, and either a medical internship or mentored research by requiring an additional 14-15 credits of concentration-specific coursework. The Health and Medical Sciences concentration is geared toward students interested in a number of health professions including, but not limited to, medicine, veterinary, dentistry, physician assistant and physical therapy.

Requirements Effective Fall 2019

A minimum grade of C (2.000) must be earned for BC 493 and all biochemistry (BC) and LIFE subject code lecture and laboratory courses at or above the 200-level required in the biochemistry major.

If students successfully complete an additional 1-credit course, Responsible Conduct in Biochemical Research BC 360, they can state on their resume that they graduated from an "American Society for Biochemistry and Molecular Biology (ASBMB) accredited program." Further, students also have the option of taking a 1-hour ASBMB exam during the spring semester of their senior year. Student who pass the exam will additionally receive degree certification from ASBMB.

Freshman

		AUCC	Credits
BC 192	Biochemistry Freshman Seminar		2
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CO 150	College Composition (GT-CO2)	1A	3
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
LIFE 201B	Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2)	3A	3
LIFE 203	Introductory Genetics Laboratory		2
Select one group from the following:			8
Group A:			
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	
MATH 255	Calculus for Biological Scientists II	1B	
Group B:			
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	
	Total Credits		31

Sophomore

BMS 300 or 360	Principles of Human Physiology Fundamentals of Physiology		4
CHEM 341	Modern Organic Chemistry I		3
CHEM 343	Modern Organic Chemistry II		3
CHEM 344	Modern Organic Chemistry Laboratory		2
LIFE 210	Introductory Eukaryotic Cell Biology		3
LIFE 212	Introductory Cell Biology Laboratory		2
Select one from the following:			5
PH 121	General Physics I (GT-SC1)	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	
AUCC Category 3 courses[1]		3B-3E	6

Elective			3
	Total Credits		31
Junior			
BC 401	Comprehensive Biochemistry I	4A	3
BC 403	Comprehensive Biochemistry II	4B	3
Select one course from the following:			3
BC 475	Mentored Research		
BC 487A	Internship		
BC 495	Independent Study		
BC 496	Group Study		
Select one course from the following:			4-5
BMS 301	Human Gross Anatomy		
BMS 305	Domestic Animal Gross Anatomy		
Select one course from the following:			5
PH 122	General Physics II (GT-SC1)	3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	
Select one course from the following:			3
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
STAT 315	Statistics for Engineers and Scientists		
AUCC Category 3 courses[1]		3B-3E	3
Advanced Writing		2	3
Elective			3-4
	Total Credits		31
Senior			
BC 404	Comprehensive Biochemistry Laboratory	4B	2
BC 411	Physical Biochemistry		4
BC 463	Molecular Genetics		3
BC 465	Molecular Regulation of Cell Function		3
BC 467	Biochemistry of Disease		3
BC 493	Senior Seminar	4A,4C	1
BC 499A or 499C	Thesis: Laboratory Research-Based Thesis: Literature-based in Health and Med Sci	4C	3
AUCC Category 3 courses[1]		3B-3E	6
Elective[2]			2
	Total Credits		27
	Program Total Credits:		120

1 Select from the list of courses in categories 3B-3E (six credits [two courses] must come from 3B; one course each from categories 3C, 3D, and 3E) in the AUCC. Only 3 of the 6 credits required for Arts and Humanities may come from intermediate (L*** 200 and L*** 201) foreign language courses.

2 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

TO PREPARE FOR FIRST SEMESTER: The curriculum for the Biochemistry major - Health and Medical Sciences concentration assumes students enter college prepared to begin a year-long calculus sequence (either MATH 155/MATH 255 or MATH 160/MATH 161) in the first semester of their first year. LIFE 102 requires high school chemistry as a prerequisite; CHEM 111 requires Algebra II as a prerequisite (this prerequisite is met by having Algebra II by test credit, transfer credit, or placement out of MATH 117 and MATH 118 on Math Placement Exam).

A minimum grade of C (2.000) must be earned for BC 493 and all biochemistry (BC) and LIFE subject code lecture and laboratory courses at or above the 200-level required in the biochemistry major.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 192	Biochemistry Freshman Seminar				2
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	4
Select one course from the following:					4
MATH 155	Calculus for Biological Scientists I (GT-MA1)	X		1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	
	Total Credits				15

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II	X			3
CHEM 114	General Chemistry Lab II	X			1
CO 150	College Composition (GT-CO2)	X		1A	3
LIFE 201B	Introductory Genetics: Molecular/Immunological/ Developmental (GT-SC2)	X		3A	3
LIFE 203	Introductory Genetics Laboratory	X			2
Select one course from the following:					4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	X		1B	
MATH 255	Calculus for Biological Scientists II	X		1B	
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 341	Modern Organic Chemistry I	X			3
LIFE 210	Introductory Eukaryotic Cell Biology	X			3
LIFE 212	Introductory Cell Biology Laboratory	X			2
AUCC Category 3 courses				3B, 3C, 3D, 3E	3
Elective					3
	Total Credits				14

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 343	Modern Organic Chemistry II	X			3
CHEM 344	Modern Organic Chemistry Laboratory	X			2
Select one course from the following:					4
BMS 300	Principles of Human Physiology				
BMS 360	Fundamentals of Physiology				
Select one course from the following:					5
PH 121	General Physics I (GT-SC1)		X	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)		X	3A	
AUCC Category 3 courses				3B, 3C, 3D, 3E	3
	Total Credits				17

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 401	Comprehensive Biochemistry I	X		4A	3
Select one course from the following:			X		5
PH 122	General Physics II (GT-SC1)			3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)			3A	
Select one course from the following:			X		3
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
STAT 315	Statistics for Engineers and Scientists				
AUCC Category 3 courses				3B, 3C, 3D, 3E	3

Advanced Writing				2	3
	Total Credits				17
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 403	Comprehensive Biochemistry II	X		4B	3
Select one course from the following:					3
BC 475	Mentored Research				
BC 487A	Internship				
BC 495	Independent Study				
BC 496	Group Study				
Select one course from the following:			X		4-5
BMS 301	Human Gross Anatomy				
BMS 305	Domestic Animal Gross Anatomy				
Elective					3-4
PH 122 or PH 142 must be completed by the end of Semester 6.		X			
	Total Credits				14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 404	Comprehensive Biochemistry Laboratory		X	4B	2
BC 411	Physical Biochemistry	X			4
BC 463	Molecular Genetics	X			3
BC 493	Senior Seminar	X		4A,4C	1
AUCC Category 3 courses		X		3B, 3C, 3D, 3E	3
	Total Credits				13
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 465	Molecular Regulation of Cell Function	X			3
BC 467	Biochemistry of Disease	X			3
Select one course from the following:		X			3
BC 499A	Thesis: Laboratory Research-Based			4C	
BC 499C	Thesis: Literature-based in Health and Med Sci			4C	
AUCC Category 3 courses		X		3B, 3C, 3D, 3E	3
Elective		X			2
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				14
	Program Total Credits:				120

Major in Biochemistry, Pre-Pharmacy Concentration

This concentration augments the **ASBMB Concentration** with additional coursework in physiology, microbiology, immunology, economics and public speaking. This concentration fulfills the prerequisite courses for admission to most pharmacy schools. It is also an appropriate concentration for a career as a medical technician.

Requirements Effective Fall 2019

A minimum grade of C (2.000) must be earned for BC 493 and all biochemistry (BC) and LIFE subject code lecture and laboratory courses at or above the 200-level required in the biochemistry major.

If students successfully complete an additional 1-credit course, Responsible Conduct in Biochemical Research BC 360, they can state on their resume that they graduated from an "American Society for Biochemistry and Molecular Biology (ASBMB) accredited program." Further, students also have the option of taking a 1-hour ASBMB exam during the spring semester of their senior year. Student who pass the exam will additionally receive degree certification from ASBMB.

Freshman

		AUCC	Credits
BC 192	Biochemistry Freshman Seminar		2
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CO 150	College Composition (GT-CO2)	1A	3
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
LIFE 201B	Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2)	3A	3
LIFE 203	Introductory Genetics Laboratory		2
Select one group from the following:			8
Group A:			
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	
MATH 255	Calculus for Biological Scientists II	1B	
Group B:			
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	
	Total Credits		31

Sophomore

CHEM 341	Modern Organic Chemistry I		3
CHEM 343	Modern Organic Chemistry II		3
CHEM 344	Modern Organic Chemistry Laboratory		2
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
LIFE 210	Introductory Eukaryotic Cell Biology		3
LIFE 212	Introductory Cell Biology Laboratory		2
SPCM 200	Public Speaking		3
Select one course from the following:			4
BMS 300	Principles of Human Physiology		
BMS 360	Fundamentals of Physiology		
Select one course from the following:			5
PH 121	General Physics I (GT-SC1)	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	
	Total Credits		28

Junior

BC 401	Comprehensive Biochemistry I	4A	3
BC 403	Comprehensive Biochemistry II	4B	3
BMS 301	Human Gross Anatomy		5
BMS 302	Laboratory in Principles of Physiology		2
MIP 300	General Microbiology		3
MIP 302	General Microbiology Laboratory		2
Select one course from the following:			5
PH 122	General Physics II (GT-SC1)	3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	
Select one course from the following:			3
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
STAT 315	Statistics for Engineers and Scientists		
Advanced Writing		2	3

Foundations and Perspectives[1]		3B, 3D, 3E	3
	Total Credits		32
Senior			
BC 404	Comprehensive Biochemistry Laboratory	4B	2
BC 411	Physical Biochemistry		4
BC 493	Senior Seminar	4A,4C	1
Select one course from the following:			3
BC 463	Molecular Genetics		
BC 465	Molecular Regulation of Cell Function		
Select one course from the following:			3
BC 499A	Thesis: Laboratory Research-Based	4C	
BC 499D	Thesis: Literature-based in Pre-Pharmacy	4C	
Foundations and Perspectives[1]		3B, 3D, 3E	9
Electives[2]			7
	Total Credits		29
	Program Total Credits:		120

1 Select from the list of courses in categories 3B, 3D, 3E (six credits [two courses] must come from 3B; one course each from categories 3D and 3E) in the AUCC. Only 3 of the 6 credits required for Arts and Humanities may come from intermediate (L*** 200 and L*** 201) foreign language courses. Students should plan on taking ECON 202 as the AUCC Cat 3C requirement.

2 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

TO PREPARE FOR FIRST SEMESTER: The curriculum for the Biochemistry major - Pre-Pharmacy concentration assumes students enter college prepared to begin a year-long calculus sequence (either MATH 155/MATH 255 or MATH 160/MATH 161) in the first semester of their first year. LIFE 102 requires high school chemistry as a prerequisite; CHEM 111 requires Algebra II as a prerequisite (this prerequisite is met by having Algebra II by test credit, transfer credit, or placement out of MATH 117 and MATH 118 on Math Placement Exam).

A minimum grade of C (2.000) must be earned for BC 493 and all biochemistry (BC) and LIFE subject code lecture and laboratory courses at or above the 200-level required in the biochemistry major.

Major Completion Map

Distinctive Requirements for Degree Program:

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 192	Biochemistry Freshman Seminar				2
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	4
Select one course from the following:					4
MATH 155	Calculus for Biological Scientists I (GT-MA1)	X		1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II	X			3
CHEM 114	General Chemistry Lab II	X			1
CO 150	College Composition (GT-CO2)	X		1A	3
LIFE 201B	Introductory Genetics: Molecular/Immunological/ Developmental (GT-SC2)	X		3A	3
LIFE 203	Introductory Genetics Laboratory	X			2
Select one course from the following:					4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	X		1B	
MATH 255	Calculus for Biological Scientists II	X		1B	
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 341	Modern Organic Chemistry I	X			3
ECON 202	Principles of Microeconomics (GT-SS1)			3C	3
LIFE 210	Introductory Eukaryotic Cell Biology	X			3
LIFE 212	Introductory Cell Biology Laboratory	X			2
SPCM 200	Public Speaking				3
	Total Credits				14

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 343	Modern Organic Chemistry II	X			3
CHEM 344	Modern Organic Chemistry Laboratory	X			2
Select one course from the following:					4
BMS 300	Principles of Human Physiology				
BMS 360	Fundamentals of Physiology				
Select one course from the following:					5
PH 121	General Physics I (GT-SC1)		X	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)		X	3A	
	Total Credits				14

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 401	Comprehensive Biochemistry I	X		4A	3
BMS 302	Laboratory in Principles of Physiology				2
Select one course from the following:					5
PH 122	General Physics II (GT-SC1)		X	3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)		X	3A	
Select one course from the following:					3
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
STAT 315	Statistics for Engineers and Scientists				
Foundations and Perspectives				3B, 3D, 3E	3
	Total Credits				16

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 403	Comprehensive Biochemistry II	X		4B	3
BMS 301	Human Gross Anatomy		X		5
MIP 300	General Microbiology				3
MIP 302	General Microbiology Laboratory				2
Advanced Writing				2	3
PH 122 or PH 142 must be completed by the end of Semester 6.		X			
	Total Credits				16

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 404	Comprehensive Biochemistry Laboratory		X	4B	2
BC 411	Physical Biochemistry	X			4
BC 493	Senior Seminar	X		4A,4C	1
Select one course from the following:					3
BC 463	Molecular Genetics	X			
Foundations and Perspectives				3B, 3D, 3E	
Electives					4
Students that elect to take BC 463 must do so Fall (Semester 7) and plan to take AUCC 3B, 3D, 3E (Foundations and Perspectives) in Spring (Semester 8).					
	Total Credits				14

Semester 8		Critical	Recommended	AUCC	Credits
Select one course from the following:		X			3
BC 465	Molecular Regulation of Cell Function	X			
Foundations and Perspectives		X		3B, 3D, 3E	
Select one course from the following:					3
BC 499A	Thesis: Laboratory Research-Based	X		4C	
BC 499D	Thesis: Literature-based in Pre-Pharmacy	X		4C	
Foundations and Perspectives		X		3B, 3D, 3E	6
Elective		X			3
Students that elect to take BC 465 must do so Spring (Semester 8) and plan to take AUCC 3B, 3D, 3E (Foundations and Perspectives) in Fall (Semester 7).		X			
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Minor in Biochemistry

The minor in Biochemistry is valuable to students majoring in any biological or physical science, or in engineering. The minor requires a sound chemistry background, provides fundamental courses in molecular biosciences, and augments the latter with more specialized courses in biochemistry and molecular genetics.

Requirements Effective Fall 2010

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Lower Division		
LIFE 201B	Introductory Genetics: Molecular/ Immunological/Developmental (GT-SC2)	3
LIFE 203	Introductory Genetics Laboratory	2
LIFE 210	Introductory Eukaryotic Cell Biology	3
LIFE 212	Introductory Cell Biology Laboratory	2
Upper Division		
BC 401	Comprehensive Biochemistry I	3
BC 403	Comprehensive Biochemistry II	3
BC 404	Comprehensive Biochemistry Laboratory	2
Select one from the following:		3-4
BC 411	Physical Biochemistry	
BC 463	Molecular Genetics	
BC 465	Molecular Regulation of Cell Function	
BC 493	Senior Seminar	1
Program Total Credits:		22-23

Professional Science Master's in Natural Sciences, Biological Data Analytics Specialization

The Professional Science Master's (PSM) program with a specialization in Biological Data Analytics is a graduate degree program that was designed in coordination with leaders in the biotechnology industries in order to ensure that students will have the scientific, business, and communication skills required to be competitive for jobs in these industries. Students will develop skills that will allow them to analyze data from genomic, transcriptomic, proteomic, and metabolomic studies to find statistically relevant information, while interfacing with biologists in data interpretation and experimental design.

Requirements Effective Fall 2019

Because this program is intended to serve students with a wide range of backgrounds, each student must work with an advisor to determine an appropriate selection of courses.

First Year		Credits
BUS 500	Business Systems and Processes	2
DSCI 510	Linux as a Computational Platform	1
DSCI 511	Genomics Data Analysis in Python	2
NSCI 693C	Graduate Seminar: Biological Data Analytics	1
Select one course from the following:		1-3
BC 601	Responsible Conduct in Biochemistry	
BUS 505	Legal and Ethical Environment of Business	
CM 666/PHIL 666	Science and Ethics	

GRAD 544	Ethical Conduct of Research	
NSCI 575	Ethical Issues in Big Data Research	
Select one course from the following:		3-4
ERHS 535	R Programming for Research	
STAT 511A	Design and Data Analysis for Researchers I: R Software	
Select a minimum of 3 credits from the following:		3-4
BC 563[1]	Molecular Genetics	
CM 505	Nucleic Acids for Non-Life Scientists	
CM 506	Protein Basics for NonBiologists	
MIP 543	RNA Biology	
	Total Credits	13-17
Second Year		
DSCI 512	RNA-Sequencing Data Analysis	1
MGT 340	Fundamentals of Entrepreneurship	3
NSCI 693C	Graduate Seminar: Biological Data Analytics	1
NSCI 696F	Group Study: Biological Data Analytics Project Proposal	6
Select one course from the following:		3-4
BC 563[1]	Molecular Genetics	
MIP 543	RNA Biology	
Select one course from the following:		3-4
ERHS 544/STAT 544	Biostatistical Methods for Quantitative Data	
STAT 512	Design and Data Analysis for Researchers II	
Electives (select from the list below with approval of advisor)[2]		4-10
	Total Credits	21-29
	Program Total Credits:	40

A minimum of 40 credits are required to complete this program.

Electives

Code	Title	Credits
Math/Computational Electives:		
BC 571	Quantitative Biochemistry	
CS 548/STAT 548	Bioinformatics Algorithms	
DSCI 475	Topological Data Analysis	
MATH 532	Mathematical Modeling of Large Data Sets	
Statistics Electives:		
ERHS 534	SAS and Epidemiologic Data Management	
HORT 579	Mass Spectrometry Omics-Methods and Analysis	
STAT 511B	Design and Data Analysis for Researchers I: SAS Software	
Science Electives:		
BC 512	Principles of Macromolecular Structure	
BC 565	Molecular Regulation of Cell Function	
BC 663	Gene Expression	
MIP 543	RNA Biology	
MIP 565/BZ 565	Next Generation Sequencing Platform/ Libraries	
MIP 570	Functional Genomics	
MIP 576/ BSPM 576	Bioinformatics	
Business Electives:		
MGT 430	Leadership and Social Responsibility	
MGT 450	Biomedical Entrepreneurship I	
Communications Electives:		
GRAD 550	STEM Communication	

1 BC 563 is generally required in either the first or second year, but may be waived if the student has sufficient prior coursework.

2 Select enough elective credits to bring the program total to a minimum of 40 credits. Students are required to take elective courses from at least 2 of the 5 categories. Electives may be taken in the first or second year with the approval of advisor.

Professional Science Master's in Natural Sciences, Microscope Imaging Technology Specialization

The Professional Science Masters (PSM) program with a specialization in Microscope Imaging Technology is a graduate degree program preparing students for employment as microscopists or managers of light microscope cores in academic, government or private sector businesses, or in research laboratories. Students will have the scientific, business, and communication skills required to be competitive for management jobs in these positions. Students will learn how to analyze images, automate data collection and analysis, deal with large data sets and interface between bioscientists and engineers for experimental design, selecting the optimal imaging system, and in data acquisition and interpretation. Students will also obtain skills for business management and operation.

Requirements Effective Fall 2019

Students may need to take additional coursework in Biochemistry, Biology, Chemistry, Computer Science, Mathematics, Physics, or Statistics.

Code	Title	Credits
BC 565	Molecular Regulation of Cell Function	4
BC 665A	Advanced Topics in Cell Regulation: Microscopic Methods	2
GRAD 510	Fundamentals of High Performance Computing	3

GRAD 544	Ethical Conduct of Research	1
GRAD 550	STEM Communication	1
MGT 340	Fundamentals of Entrepreneurship	3
NSCI 677	Microscopic Image Collection & Processing	2
NSCI 687D	Internship: Microscopy (4 x 10 weeks; var. Cr)	8
NSCI 693D	Graduate Seminar: Microscopy	1
NSCI 696D	Group Study: Microscopy Proposal	6
Select one of the following Business/Marketing electives:		2-3
BUS 500	Business Systems and Processes	
BUS 501	Business Communication–Multicultural Audience	
MGT 430	Leadership and Social Responsibility	
MGT 440	New Venture Management	
Select one:		2
BC 404	Comprehensive Biochemistry Laboratory	
CM 502/NB 502	Techniques in Molecular & Cellular Biology	
Program Total Credits:		35-36

A minimum of 35 credits are required to complete this program.

Department of Biology

Office in the Biology Building, Room 111
(970) 491-7011
biology.colostate.edu (http://www.biology.colostate.edu)

Professor Michael F. Antolin, Chair

Undergraduate Majors

- Major in Biological Science
  - Biological Science Concentration
  - Botany Concentration
- Major in Zoology

Minors

- Minor in Botany
- Minor in Zoology

Graduate

Graduate Programs in Biology

The department offers graduate programs leading to Master of Science and Doctor of Philosophy degrees in Biological Science. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Biology (http://www.biology.colostate.edu).

Master's Programs

- Master of Science in Biological Science, Plan A and Plan B
- Professional Science Master's in Natural Sciences – Zoo, Aquarium, and Animal Shelter Management Specialization

Ph.D. Programs

- Ph.D. in Biological Science

Courses

BZ 100 Introduction to Biology Credits: 3 (0-0-3)
Course Description: Basic concepts in biology, including genetics, the human body, and interactions with their environment.
Prerequisite: None.
Registration Information: Offered as a telecourse only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 101 Humans and Other Animals (GT-SC2) Credits: 3 (3-0-0)
Course Description: Characteristics of animals, their evolution and diversity; humans considered as an animal.
Prerequisite: None.
Registration Information: Credit not allowed for students who have already taken BZ 110 or LIFE 102 or LIFE 103. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

BZ 104 Basic Concepts of Plant Life (GT-SC2) Credits: 3 (3-0-0)
Course Description: Broad concepts of biology with major emphasis on plant life.
Prerequisite: None.
Registration Information: For nonscience and physical science majors. Sections may be offered: Online. Credit not allowed for students who have already taken BZ 120 or LIFE 102 or LIFE 103.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

BZ 105 Basic Concepts of Plant Life Laboratory (GT-SC1) Credit: 1 (0-2-0)
Course Description: Laboratory exercises covering fundamental biological concepts related to plants and plant-like organisms.
Prerequisite: BZ 104, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

BZ 110 Principles of Animal Biology (GT-SC2) Credits: 3 (3-0-0)
Course Description: General features (body form, physiology, life history, ecology) and evolutionary relationships of major phyla of animals.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

BZ 111 Animal Biology Laboratory (GT-SC1) Credit: 1 (0-3-0)
Course Description: Laboratory exercises demonstrating major features of animal biology and major phyla of animals.
Prerequisite: BZ 110, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

BZ 120 Principles of Plant Biology (GT-SC1) Credits: 4 (3-3-0)
Course Description: Diversity of relationships of plants and their structural and functional characteristics.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

BZ 192 First Year Seminar—Biology/Zoology Credit: 1 (1-0-0)
Course Description: Introduction to the biological science and zoology majors through development of academic skills necessary for success within the sciences, exposure to academic resources, science career pathways, research, and relevant topics like globalization and diversity in science fields.
Prerequisite: None.
Registration Information: Freshman only. This is a partial semester course. Credit not allowed for both BZ 180A1 and BZ 192.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 212 Animal Biology-Invertebrates Credits: 4 (3-3-0)
Course Description: General biology of invertebrates; their characteristics, classification, and adaptations.
Prerequisite: LIFE 103 or BZ 110 and BZ 111.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 214 Animal Biology-Vertebrates Credits: 4 (3-3-0)
Course Description: General biology of vertebrates; their characteristics, classification, and adaptations.
Prerequisite: BZ 111 and BZ 110 or LIFE 103.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 220 Introduction to Evolution Credits: 3 (3-0-0)
Course Description: Fundamental concepts in evolutionary biology.
Prerequisite: BZ 110 or BZ 120 or LIFE 103.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 223 Plant Identification Credits: 3 (2-2-0)
Course Description: Relationships and identification of flowering plants.
Prerequisite: BZ 120 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 296 Group Study-Biology Credits: Var[1-3] (0-0-0)
Course Description: Faculty-directed group investigation of areas of special interest in biology.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 300 Animal Behavior Credits: 3 (3-0-0)
Course Description: Principles of ethology, behaviors of nonhuman animals emphasizing their adaptive significance and phylogenetic relationships.
Prerequisite: BZ 111 and BZ 110 or LIFE 103.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 310 Cell Biology Credits: 4 (3-3-0)
Course Description: Structure and function of cells emphasizing molecular mechanisms. Communication, metabolism, motility, genetics, growth, and reproduction.
Prerequisite: (BZ 110 or BZ 120 or LIFE 103) and (CHEM 113).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 311 Developmental Biology Credits: 4 (3-2-0)
Course Description: Developmental aspects of growth and differentiation stressed in higher plants and animals.
Prerequisite: BZ 310.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 325 Plant Systematics Credits: 4 (3-2-0)
Course Description: Principles and contemporary methods of classification of plants, and the application of modern phylogenetic theory in comparative biology.
Prerequisite: BZ 220.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 329 Herpetology Credits: 3 (2-2-0)
Course Description: Biology of amphibians and reptiles.
Prerequisite: BZ 110 and BZ 111 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 330 Mammalogy Credits: 3 (2-2-0)
Course Description: Evolution, classification, and biology of mammals; practice in identifying and preparing specimens.
Prerequisite: BZ 111 and BZ 110 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 331 Developmental Plant Anatomy Credits: 4 (2-4-0)
Course Description: Structure of plant cells, tissues, and organs as they develop.
Prerequisite: BZ 120 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 332 Introductory Phycology Credits: 4 (3-2-0)
Course Description: Evolution, diversity, ecology and global impact of algae.
Prerequisite: BZ 120 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 333 Introductory Mycology Credits: 4 (2-4-0)
Course Description: Groups of fungi including classification, structure, morphogenesis, phylogeny, and genetics and reproduction.
Prerequisite: BZ 120 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 335 Ornithology Credits: 3 (2-3-0)
Course Description: Biology of birds, especially behavior, ecology, and identification in the laboratory and field.
Prerequisite: BZ 111 and BZ 110 or LIFE 103.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 338 Comparative Morphology of Vascular Plants Credits: 4 (2-4-0)
Course Description: Origin, evolution, structure, and reproduction of the vascular plants, including comparative study of organs occurring in each group.
Prerequisite: BZ 120 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 340 Field Mammalogy Credits: 4 (1-6-0)
Course Description: An intensive field course that introduces field wildlife techniques through the lens of studying the evolutionary relationships, ecology, and conservation of Colorado mammals. Opportunities to learn about wildlife handling and study techniques and apply them in independent research projects. A significant portion of the course is spent in the field, primarily at the Semi-arid Grasslands Research Center northeast of Fort Collins.
Prerequisite: BZ 110 or LIFE 103.
Registration Information: Must register for lecture and laboratory. Required field trips. Credit not allowed for both BZ 340 and BZ 380A3.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 346 Population and Evolutionary Genetics Credits: 3 (3-0-0)
Course Description: Evolutionary theories and history; heredity mechanisms that are basis for variation, evolution, and biological communication between generations.
Prerequisite: (BZ 220) and (MATH 155) and (STAT 301 or STAT 307 or ERHS 307).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 348 Theory of Population and Evolutionary Ecology Credits: 4 (3-3-0)
Also Offered As: MATH 348.
Course Description: Principles and methods for building, analyzing, and interpreting mathematical models of ecological and evolutionary problems in biology.
Prerequisite: MATH 155 or MATH 160.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: BZ 348, BZ 548, MATH 348.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 349 Tropical Ecology and Evolution Credits: 3 (3-0-0)
Course Description: Broad introduction to terrestrial and aquatic tropical biodiversity and the ecological and evolutionary processes that generate and maintain it.
Prerequisite: BZ 220.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 350 Molecular and General Genetics Credits: 4 (3-0-1)
Course Description: Mendelian, molecular, and population genetics emphasizing the molecular basis of genetics.
Prerequisite: (BZ 110 or BZ 120 or LIFE 102) and (STAT 201, may be taken concurrently or STAT 301, may be taken concurrently or STAT 307, may be taken concurrently or ERHS 307, may be taken concurrently).
Registration Information: Must register for lecture and recitation. Primarily for students in biological sciences.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 353 Global Change Ecology, Impacts and Mitigation Credits: 3 (3-0-0)
Also Offered As: NR 353.
Course Description: Ecological impacts of human-induced global change, and the strategies that can/are being used to adapt to and mitigate these impacts.
Prerequisite: LIFE 320 or LIFE 220 or LAND 220.
Registration Information: Credit not allowed for both BZ 353 and NR 353.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 360 Bioinformatics and Genomics Credits: 3 (3-0-0)
Course Description: Genomics, bioinformatics, and basic computer programming for biologists.
Prerequisite: BZ 110 or BZ 120 or LIFE 102.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: 3.0 overall GPA; written consent of instructor; grade of A in course with which student assists. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 401 Comparative Animal Physiology Credits: 3 (3-0-0)
Course Description: Physiological mechanisms of digestion, metabolism, osmoregulation, excretion, circulation, and respiration in vertebrate and invertebrate animals.
Prerequisite: BZ 214.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 415 Marine Biology Credits: 4 (3-0-1)
Course Description: Marine organisms, habitats, and communities.
Prerequisite: LIFE 320.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 418 Ecology of Infectious Diseases Credits: 4 (3-0-1)
Course Description: Ecological perspectives of infectious disease outbreaks in wildlife and human populations.
Prerequisite: LIFE 320.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 420 Evolutionary Medicine Credits: 3 (3-0-0)
Course Description: Integration of evolutionary biology with behavior, genetics, and ecology to understand health and disease. Exploration of insights into medical research and practice (diagnosis and therapy) and human health from an evolutionary standpoint. Fundamentals of evolution, and the importance of evolutionary biology in understanding the ultimate and proximate causes of human disease. Engage in scientific discourse.
Prerequisite: BZ 110 and BZ 111 or LIFE 102.
Registration Information: Sophomore standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 424 Principles of Systematic Zoology Credits: 3 (3-0-0)
Also Offered As: BSPM 424.
Course Description: Principles and methods of classification, zoological nomenclature, taxonomic decisions regarding species and higher categories.
Prerequisite: BZ 111 and BZ 110 or LIFE 103.
Registration Information: Credit not allowed for both BZ 424 and BSPM 424.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 425 Molecular Ecology Credits: 3 (3-0-0)
Course Description: Introduction to molecular genetic markers for questions in ecology, evolution, behavior, and conservation.
Prerequisite: (BZ 220 and BZ 350) and (STAT 301 or STAT 307).
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 430 Animal Behavior and Conservation Credits: 3 (3-0-0)
Course Description: The interface between animal behavior and conservation biology, exploring how behavioral tools can be applied to conservation problems.
Prerequisite: (BZ 110 and BZ 111 or LIFE 103) and (BZ 300).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 433 Behavioral Genetics Credits: 4 (3-0-1)
Course Description: An integrative view of genetic basis of animal behavior, with emphasis on complex behaviors and societal implications of genetics research.
Prerequisite: BZ 310.
Registration Information: Must register for lecture and recitation. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 440 Plant Physiology Credits: 3 (3-0-0)
Course Description: Functions and activities of plants.
Prerequisite: BZ 120 or LIFE 103.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 441 Plant Physiology Laboratory Credits: 2 (0-2-1)
Course Description: Laboratory applications of plant physiology principles.
Prerequisite: BZ 440, may be taken concurrently.
Registration Information: Must register for laboratory and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 449A Study Abroad: Ecology/Conservation—Ecuadorian Biodiversity Credits: 4 (0-0-4)
Course Description: Winter (January) study abroad experience in Ecuador. First-hand exposure to the unparalleled biodiversity of Ecuador. Ecuador is an ideal location to learn about tropical biodiversity, because it houses an enormous diversity of tropical ecosystems in a relatively small geographic area, all of which are very accessible. Students will visit these ecosystems—including cloud forest, páramo, and lowland Amazonian rainforest.
Prerequisite: BZ 220.
Registration Information: Junior standing. Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 450 Plant Ecology Credits: 4 (3-2-0)
Course Description: Relation of plants to their environment.
Prerequisite: LIFE 103 or BZ 120.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 455 Human Heredity and Birth Defects Credits: 3 (3-0-0)
Course Description: Human heredity and its individual and social implications; causes of congenital defects.
Prerequisite: BZ 110 and BZ 111 or LIFE 103.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 460 Genome Evolution Credits: 4 (3-0-1)
Course Description: Evolution of DNA, RNA, and proteins; use of genomic data to infer evolutionary history and processes.
Prerequisite: BZ 220 and BZ 350.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 462 Parasitology and Vector Biology Credits: 5 (3-4-0)
Also Offered As: BSPM 462 and MIP 462.
Course Description: Protozoa, helminths, and insects and related anthropods of medical importance; systematics, epidemiology, host damage and control.
Prerequisite: (BZ 110 or LIFE 103) and (BZ 212 or LIFE 206 or MIP 302).
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: BZ 462, BSPM 462, MIP 462.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 466 Biological Basis of Animal Behavior Credits: 4 (3-2-0)
Course Description: An integrative view of mechanisms of animal behavior spanning genetics, neural systems, development, functional morphology, and evolution.
Prerequisite: (BMS 325 or BZ 310 or LIFE 210) and (STAT 301 or STAT 307).
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 471 Stream Biology and Ecology Credits: 3 (3-0-0)
Course Description: Biology and ecology of running waters.
Prerequisite: LIFE 320 or LAND 220 or LIFE 220.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 472 Stream Biology and Ecology Laboratory Credit: 1 (0-3-0)
Course Description: Field sampling and laboratory analysis of habitats, biota, and ecological relationships in running waters.
Prerequisite: BZ 471, may be taken concurrently.
Registration Information: Required field trips.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 474 Limnology Credits: 3 (2-2-0)
Also Offered As: ESS 474.
Course Description: Biology, chemistry, and physics of lakes including limnological methods.
Prerequisite: LAND 220 or LIFE 220 or LIFE 320.
Registration Information: Must register for lecture and laboratory. Required field trips. Credit not allowed for both BZ 474 and ESS 474.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 476 Genetics of Model Organisms Credits: 3 (3-0-0)
Also Offered As: BZ 576.
Course Description: Advanced topics in model genetic systems including molecular and developmental genetics.
Prerequisite: BZ 350 or LIFE 201A or LIFE 201B or SOCR 330.
Registration Information: Junior standing. Credit not allowed for both BZ 476 and BZ 576.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 479 Biology and Behavior of Dogs Credits: 3 (3-0-0)
Also Offered As: VS 479.
Course Description: Interactions of physiology, neurobiology, and genetics on behavior of domestic dogs, and how evolution and domestication influence behavioral traits.
Prerequisite: BZ 110 or LIFE 103.
Registration Information: Credit not allowed for both BZ 479 and VS 479. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 482A Study Abroad: Field Marine Biology Credits: 4 (0-0-4)
Course Description: Exposure to two of the most productive and biologically diverse marine areas in North America. Field sampling and exploration of marine ecosystems from levels of primary production to the top level predators. Students will learn a wide variety of hands on sampling techniques and data analyses with the goal of comparing the marine ecology of the Baja peninsula.
Prerequisite: BZ 415 and BZ 496.
Registration Information: Junior Standing. Written consent of instructor. Students to apply through Office of International Programs.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 482B Study Abroad: Field Course in Dolphin Behavior & Physiology Credits: 2 (0-0-2)
Course Description: This field program offers an 8–day research experience to Roatan, Honduras, where students will study animal behavior, animal physiology and conservation methods at the Roatan Institute for Marine Science (RIMS). Classroom lectures and discussions provide the framework to develop an understanding of the subject matter. Fieldwork allows students to develop the skills necessary to conduct preliminary research.
Prerequisite: BZ 110 and BZ 111 or BZ 120 or LIFE 102.
Registration Information: Sophomore standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 482C Study Abroad--Baja California Sur: Practices in Marine Ecology Credits: 3 (0-0-3)
Course Description: Practical experience in techniques used to observe marine ecosystems. Apply these techniques to three distinct ecosystems found in Baja California Sur: Tidal mangroves, pelagic open ocean systems, and coral reefs.
Prerequisite: LIFE 320.
Registration Information: Sophmore Standing. Written consent of instructor. Students apply through Office of International Programs.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 487 Internship Credits: Var[1-12] (0-0-0)
Course Description: Supervised work-related research experience in laboratory or field setting with consultation and approval of a regular faculty member.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 492A Seminar: Behavior Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 492B Seminar: Ecology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 492C Seminar: Genetics Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 492D Seminar: Ornithology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 492E Seminar: Herpetology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 492F Seminar: Evolution Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 492G Seminar: Departmental Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 7 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 496 Group Study—Biology Credits: Var[1-3] (0-0-0)
Course Description: Faculty-directed group investigation of areas of special interest in biology.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 498 Laboratory or Field Research Credits: Var[1-6] (0-0-0)
Course Description: Supervised laboratory or field research in biology, botany, or zoology.
Prerequisite: None.
Registration Information: Written consent of research mentor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 505 Cognitive Ecology Credits: 3 (3-0-0)
Course Description: The evolutionary ecology of mechanisms related to information processing and decision-making in animals.
Prerequisite: BZ 300.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 510 Zoophysiological Ecology Credits: 3 (3-0-0)
Course Description: Concepts, principles, and examples of adaptive physiological strategies used by animals.
Prerequisite: (BMS 300 or BMS 360 or BZ 401) and (LIFE 320 or LAND 220 or LIFE 220).
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 515 Physiological Ecology of Marine Vertebrates Credits: 3 (3-0-0)
Course Description: Physiological adaptations of vertebrates to different marine environments.
Prerequisite: (BZ 214 and BZ 330) and (BC 351 or BC 401 or BMS 300 or BZ 401).
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 520 Advanced Systematics Credits: 3 (3-0-0)
Also Offered As: BSPM 520.
Course Description: Theory and practice of modern systematics.
Prerequisite: BZ 325 or BZ 424 or BSPM 424.
Registration Information: Credit not allowed for both BZ 520 and BSPM 520.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 525 Advanced Conservation & Evolutionary Genomics Credits: 4 (3-0-1)
Course Description: Population genetic theory and application of genomic methods to conservation.
Prerequisite: (BZ 220 and BZ 350) and (STAT 301 or STAT 307).
Registration Information: Junior standing. Must register for lecture and recitation.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 526 Evolutionary Ecology Credits: 3 (3-0-0)
Also Offered As: BSPM 526.
Course Description: Adaptation to abiotic and biotic environments; how current ecological processes interact with evolutionary history.
Prerequisite: LIFE 320 or LAND 220 or LIFE 220.
Registration Information: Credit not allowed for both BZ 526 and BSPM 526.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 530 Ecological Plant Morphology Credits: 2 (2-0-0)
Course Description: Adaptive significance and evolution of plant form and structure.
Prerequisite: (BZ 220) and (LIFE 320 or BZ 450).
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 535 Behavioral Ecology Credits: 3 (3-0-0)
Course Description: Evolutionary and theoretical perspectives in animal behavior using examples from model empirical systems; emphasis on decision rules and social behavior.
Prerequisite: BZ 220.
Registration Information: Graduate standing. Written consent of instructor.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 537 Topics in Mycology Credits: 3 (2-2-0)
Course Description: Features common to all fungi; trends in structure, function, and behavior.
Prerequisite: BZ 333.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 540 Translocation in Plants Credits: 2 (2-0-0)
Course Description: Transport of sugars, organic and inorganic ions, water, and hormones across membranes and through vascular systems of plants.
Prerequisite: BZ 331 and BZ 440.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 544 Presenting Research in Biology Credits: 2 (2-0-0)
Course Description: Procedures for preparing and presenting results of biological research in scientific journals and at professional meetings.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BZ 548 Theory of Population and Evolutionary Ecology Credits: 4 (3-3-0)
Course Description: Principles and methods for building, analyzing, and interpreting mathematical models of ecological and evolutionary problems in biology; research module.
Prerequisite: MATH 155 or MATH 160.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: BZ 548, BZ 348, MATH 348.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 555 Reproductive Biology of Higher Plants Credits: 3 (3-0-0)
Course Description: Reproductive processes influencing evolution in higher plant groups.
Prerequisite: (BZ 310 or LIFE 210) and (BZ 350 or LIFE 201A or LIFE 201B or SOCR 330).
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 561 Landscape Ecology Credits: 3 (3-0-0)
Course Description: Concepts, methods, and models for examining spatial patterns and processes of natural and managed landscapes and their effects on ecological dynamics.
Prerequisite: (LIFE 320) and (STAT 301 or STAT 307).
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 565 Next Generation Sequencing Platform/Libraries Credit: 1 (0-2-0)
Also Offered As: MIP 565.
Course Description: Theoretical and experimental aspects of next generation sequencing experiments with a focus on the Illumina platform. Students will create and sequence metagenomic and 16S rDNA libraries from soil samples and unknown bacterial cultures.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Credit allowed for only one of the following: BZ 565, CM 581A2, or MIP 565.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 568 Sustaining River Ecosystems in Changing World Credits: 3 (3-0-0)
Also Offered As: FW 568.
Course Description: Applying the concepts and principles of freshwater ecosystem structure and function to develop a multidisciplinary and integrated understanding of the approaches and methods for restoring and sustainably managing these systems in the face of increasing human demands and rapid climate change.
Prerequisite: None.
Restriction: .
Registration Information: Senior standing. Credit allowed for only one of the following: BZ 568, BZ 680A2, FW 568, and FW 680A2.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 570 Molecular Aspects of Plant Development Credits: 3 (3-0-0)
Course Description: Various aspects of plant development at the molecular level.
Prerequisite: BC 463 or BZ 350 or MIP 450 or SOCR 330.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 572 Phytoremediation Credits: 3 (3-0-0)
Course Description: Environmental cleanup using plants.
Prerequisite: BZ 120 or LIFE 103.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 575 Molecular and Genomic Evolution Credits: 3 (3-0-0)
Also Offered As: BSPM 575.
Course Description: Molecular, biological mechanisms of evolutionary change: mutation; selection; gene expression/regulation; changes in whole-genome architecture.
Prerequisite: BZ 220 and BZ 350.
Registration Information: Credit not allowed for both BZ 575 and BSPM 575.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 576 Genetics of Model Organisms Credits: 4 (3-0-1)
Also Offered As: BZ 476.
Course Description: Advanced topics in model genetic systems including molecular and developmental genetics.
Prerequisite: BZ 350 or LIFE 201A or LIFE 201B or SOCR 330.
Registration Information: Junior standing. Credit not allowed for both BZ 576 and BZ 476.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 577 Computer Analysis in Population Genetics Credits: 2 (0-4-0)
Also Offered As: MIP 577.
Course Description: Computational and statistical techniques and practical exercises in discrete and quantitative genetics.
Prerequisite: BZ 578, may be taken concurrently or MIP 578, may be taken concurrently.
Registration Information: Credit not allowed for both BZ 577 and MIP 577.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 578 Genetics of Natural Populations Credits: 4 (3-0-1)
Also Offered As: MIP 578.
Course Description: Theoretical and empirical aspects of the genetics of natural populations; current molecular techniques and statistical analysis.
Prerequisite: (BZ 350 or LIFE 201A or LIFE 201B or SOCR 330) and (STAT 201 or STAT 301 or STAT 307 or ERHS 307).
Registration Information: Must register for lecture and recitation. Credit not allowed for both BZ 578 and MIP 578.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 584 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 587A Internship: General Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 587B Internship: Herbarium Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 594 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 642 Plant Metabolism Credits: 3 (3-0-0)
Course Description: Biosyntheses and transformations of important plant metabolites.
Prerequisite: BC 351 and BZ 440.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 670 Teaching Scientific Reasoning & Argumentation Credits: 3 (3-0-0)
Course Description: Nature of science (NoS), scientific reasoning, scientific argumentation, and instructional strategies develop science argumentation and communication skills in undergraduate courses. Creation of instructional materials for a teaching portfolio.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: BS or BA in natural sciences. Credit not allowed for both BZ 670 and BZ 680A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 692A Seminar: Behavior Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 692C Seminar: Ecology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 692D Seminar: Genetics Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 692E Seminar: Ornithology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 692G Seminar: Evolution Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 692H Seminar: Departmental Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 695 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 784 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 792 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 795 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Biological Science

Biology is the study of all living things—including microscopic bacteria and viruses, plants, and animals, and their relationship to their environments. Biology majors study the structure and function of cells, organ systems and tissues of animals and plants, ecology (the relationship between living things and their environment), animal behavior, genetics/genomics and evolution. They learn about physiology, behavior, genetics and heredity, aquatic systems, microscopic organisms such as bacteria, and techniques for diverse areas ranging from field research to biotechnology. This major provides a solid foundation of understanding the basic biological sciences. It also offers an opportunity to choose an area of emphasis within life sciences that relates to particular career goals (for example: the ecology of organisms, cell and molecular biology, biomedical professions, aquatic biology, marine biology, plant molecular biology for agricultural biotechnology and bioenergy, evolutionary biology, etc.).

Learning Outcomes

Students will:

- Interpret scientific data both mathematically and statistically.
- Demonstrate organizational and laboratory skills.
- Define scientific hypotheses and design experiments or observations to test them.
- Work effectively in groups.
- Demonstrate strong writing and oral communication skills.

Potential Occupations

Training in biology prepares students for a wide variety of occupations. Some involve daily interaction within teams; others can be done in relative isolation; some are highly focused, but most require knowledge far beyond the sciences. Career options related to biology include water quality assessments, field and lab technician work, biotechnology in biomedical sciences and agriculture, genetic research, agriculture, or sales (i.e., pharmaceutical, agricultural). Graduates work in small businesses, multinational corporations, academia, and government research laboratories and policy agencies. A degree in biological science offers a broad foundation for professional degrees in nursing, dental, medical or veterinary school, and a number of health professions such as physician's assistant, physical therapy, occupational therapy, optometry or public health. Graduates often pursue advanced degrees in life sciences to carry out basic research or advance into leadership positions in industry. Participation in internships and/or laboratory research experience is highly recommended and strongly encouraged by the department to enhance practical training and development.

Combining biology with additional skills can lead to exciting careers. Biology and computer science can be linked to the ever-expanding and exciting area of bioinformatics. Biology and writing can be incorporated into a career as a technical writer or science fiction novelist. Biology and visual arts combine in medical and scientific illustration. Biology and other humanities may lead to studies of the history of science or medicine. Work in both biology and philosophy/religion can be incorporated in careers in bioethics. Biology is linked with psychology for the neuroscientist or genetic counselor. Study biology and political science to work in environmental law or be a patent lawyer in biotechnology. Try mixing biology and business to get into hospital administration, small business or biotechnology administration. Specialized master's degrees are designed for many of these unique career paths.

Some career opportunities include, but are not limited to: aquarium, zoo, and museum worker; assistant research scientist; research technician in industry or university laboratories; biology photographer; biotechnologist; brewery laboratory assistant; consumer product researcher; marine bacteriologist, field ecologist; nuclear medicine technician; park naturalist; pharmaceutical researcher or salesperson; public health officer; science librarian; environmental educator, health specialist, or impact specialist; fisheries biologist or conservationist; industrial hygienist; occupational therapist (with a master's degree); and medical or clinical laboratory technologist.

Concentrations

- Biological Science Concentration
- Botany Concentration

Major in Biological Science, Biological Science Concentration

The curriculum includes a two-semester introductory biology sequence, cell biology, developmental biology, ecology, evolution, and genetics. Required courses in the physical sciences include a minimum of one year in introductory chemistry and in physics (with labs), and at least one course in organic chemistry (with lab), and one in biochemistry. A calculus course and a statistics course are also required. In addition, students choose a selected field of 12 credits in one of the following: anatomy/physiology, aquatic biology, behavioral biology, cellular/molecular and genetic biology, ecology, evolution/genetics, and systematics, microbiology, or integrative organismal biology. There is an additional requirement of one course in two other fields, which assures a broad base of study.

Requirements Effective Fall 2019

To be qualified for graduation, students in the Biological Science major must have a minimum grade of C- in each of their biological, physical science, and mathematical courses used to meet requirements for

the major. This applies to courses taken as substitutions for meeting these requirements. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

Freshman

		AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
Select one group from the following:			8
Group A:			
BZ 110	Principles of Animal Biology (GT-SC2)	3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	3A	
BZ 120	Principles of Plant Biology (GT-SC1)	3A	
Group B:			
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
LIFE 103	Biology of Organisms-Animals and Plants		
Select one from the following:			4
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	
Arts and Humanities		3B	3
Electives			6
	Total Credits		29

Sophomore

BZ 220	Introduction to Evolution		3
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
Select one group from the following:			3-5
Group A:			
CHEM 245	Fundamentals of Organic Chemistry		
CHEM 246	Fundamentals of Organic Chemistry Laboratory		
Group B:			
CHEM 341	Modern Organic Chemistry I		
Select one course from the following:			3
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
Selected Field (see Selected Field lists below)			6
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
	Total Credits		31-33

Junior

BZ 350	Molecular and General Genetics	4A,4B	4
Select one group from the following:			4-6
Group A:			
BC 351	Principles of Biochemistry		
Group B:			
BC 401	Comprehensive Biochemistry I		
BC 403	Comprehensive Biochemistry II		
Students should take the following two courses only if CHEM 341 was selected in the sophomore year:			0-5

CHEM 343	Modern Organic Chemistry II		
CHEM 344	Modern Organic Chemistry Laboratory		
Select one group from the following:			10
Group A:			
PH 121	General Physics I (GT-SC1)	3A	
PH 122	General Physics II (GT-SC1)	3A	
Group B:			
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	
Selected Field (see Selected Field lists below)			3
Advanced Writing		2	3
Elective			0-5
	Total Credits		29-31

Senior

BZ 310	Cell Biology		4
BZ 311	Developmental Biology		4
LIFE 320	Ecology	4C	3
Selected Field (see Selected Field lists below)			3
Additional fields[1]			6
Electives[2]			7-11
	Total Credits		27-31
	Program Total Credits:		120

Twelve credits must be taken from one Selected Field list below. Additional coursework may be required due to prerequisites.

Pre-Health Biology Field Department List

Code	Title	Credits
Select one course from the following:		4
BMS 300	Principles of Human Physiology	
BMS 360	Fundamentals of Physiology	
Selected Courses:		8
Select enough credits from the following courses to complete the 12-credit field requirement:		
ANEQ 310	Animal Reproduction	
BC 353	Pre-Health Genetics	
BMS 301	Human Gross Anatomy	
BMS 302	Laboratory in Principles of Physiology	
BMS 305	Domestic Animal Gross Anatomy	
BMS 310	Anatomy for the Health Professions	
BMS 320	Virtual Laboratory in Physiology	
BMS 325	Cellular Neurobiology	
BMS 345	Functional Neuroanatomy	
BMS 400	Neuroanatomy Through Clinical Case Studies	
BMS 405	Nerve and Muscle-Toxins, Trauma and Disease	
BMS 409	Human and Animal Reproductive Biology	
BMS 420	Cardiopulmonary Physiology	
BMS 421	Perspectives in Cardiopulmonary Diseases	
BMS 425	Introduction to Systems Neurobiology	
BMS 430	Endocrinology	
BMS 450	Pharmacology	
BMS 460	Essentials of Pathophysiology	
BMS 461	Pathophysiology Perspectives	
BZ 212	Animal Biology-Invertebrates	
BZ 214	Animal Biology-Vertebrates	
BZ 300	Animal Behavior	
BZ 329	Herpetology	
BZ 330	Mammalogy	
BZ 335	Ornithology	
BZ 346	Population and Evolutionary Genetics	
BZ 360	Bioinformatics and Genomics	
BZ 401	Comparative Animal Physiology	
BZ 418	Ecology of Infectious Diseases	
BZ 420	Evolutionary Medicine	
BZ 433	Behavioral Genetics	
BZ 455	Human Heredity and Birth Defects	
BZ 460	Genome Evolution	
BZ 462/ BSPM 462/ MIP 462	Parasitology and Vector Biology	
BZ 466	Biological Basis of Animal Behavior	
BZ 476/BZ 576	Genetics of Model Organisms	
BZ 479/VS 479	Biology and Behavior of Dogs	
BZ 505	Cognitive Ecology	
BZ 515	Physiological Ecology of Marine Vertebrates	
BZ 577/MIP 577	Computer Analysis in Population Genetics	
BZ 578/MIP 578	Genetics of Natural Populations	

ERHS 332	Principles of Epidemiology
ERHS 450	Introduction to Radiation Biology
FSHN 350	Human Nutrition
FW 300	Biology and Diversity of Fishes
FW 301	Ichthyology Laboratory
FW 405	Fish Physiology
HES 403	Physiology of Exercise
MIP 300	General Microbiology
MIP 302	General Microbiology Laboratory
MIP 303	General Microbiology–Honors Recitation
MIP 315	Pathology of Human and Animal Disease
MIP 342	Immunology
MIP 343	Immunology Laboratory
MIP 351	Medical Bacteriology
MIP 352	Medical Bacteriology Laboratory
MIP 420	Medical and Molecular Virology
PSY 454	Biological Psychology
VS 331	Histology
VS 333	Domestic Animal Anatomy

Aquatic Biology Field Department List

Code	Title	Credits
Select a minimum of 12 credits from the following:		12
BSPM 445	Aquatic Insects	
BZ 332	Introductory Phycology	
BZ 415	Marine Biology	
BZ 471	Stream Biology and Ecology	
BZ 472	Stream Biology and Ecology Laboratory	
BZ 474/ESS 474	Limnology	
BZ 515	Physiological Ecology of Marine Vertebrates	
FW 300	Biology and Diversity of Fishes	
FW 301	Ichthyology Laboratory	
FW 400	Conservation of Fish in Aquatic Ecosystems	
FW 405	Fish Physiology	
NR 370	Coastal Environmental Ecology	

Behavioral Biology Field Department List

Code	Title	Credits
Required Courses:		
BMS 325	Cellular Neurobiology	3
BZ 300	Animal Behavior	3
Selected Courses:		
Select a minimum of 6 credits from the following:		6
BZ 420	Evolutionary Medicine	
BZ 430	Animal Behavior and Conservation	
BZ 433	Behavioral Genetics	
BZ 466	Biological Basis of Animal Behavior	
BZ 479/VS 479	Biology and Behavior of Dogs	
BZ 505	Cognitive Ecology	
BZ 535	Behavioral Ecology	
PSY 352	Learning and Memory	
PSY 454	Biological Psychology	

Cellular, Molecular and Genetic Biology Field Department List

Code	Title	Credits
Select a minimum of 12 credits from the following:		12
ANEQ 330	Principles of Animal Breeding	
BC 353	Pre-Health Genetics	
BC 401	Comprehensive Biochemistry I	
BC 403	Comprehensive Biochemistry II	
BC 463	Molecular Genetics	
BMS 325	Cellular Neurobiology	
BMS 330	Microscopic Anatomy	
BMS 405	Nerve and Muscle-Toxins, Trauma and Disease	
BZ 331	Developmental Plant Anatomy	
BZ 346	Population and Evolutionary Genetics	
BZ 360	Bioinformatics and Genomics	
BZ 420	Evolutionary Medicine	
BZ 425	Molecular Ecology	
BZ 433	Behavioral Genetics	
BZ 455	Human Heredity and Birth Defects	
BZ 460	Genome Evolution	
BZ 476/BZ 576	Genetics of Model Organisms	
BZ 570	Molecular Aspects of Plant Development	
BZ 577/MIP 577	Computer Analysis in Population Genetics	
BZ 578/MIP 578	Genetics of Natural Populations	
HORT 460/ SOCR 460	Plant Breeding	
MIP 300	General Microbiology	
MIP 302	General Microbiology Laboratory	
MIP 342	Immunology	
MIP 343	Immunology Laboratory	
MIP 450	Microbial Genetics	
VS 331	Histology	

Ecology Field Department List

Code	Title	Credits
Group A:		2-4
Select one course from the following:		
BSPM 302	Applied and General Entomology	
BZ 325	Plant Systematics	
BZ 329	Herpetology	
BZ 330	Mammalogy	
BZ 332	Introductory Phycology	
BZ 333	Introductory Mycology	
BZ 335	Ornithology	
BZ 338	Comparative Morphology of Vascular Plants	
FW 300	Biology and Diversity of Fishes	
MIP 300	General Microbiology	
Group B:		8-10

Select enough credits from the following to fulfill the 12-credit field requirement:	
ANTH 370	Primates
BZ 346	Population and Evolutionary Genetics
BZ 348/MATH 348	Theory of Population and Evolutionary Ecology
BZ 349	Tropical Ecology and Evolution
BZ 415	Marine Biology
BZ 418	Ecology of Infectious Diseases
BZ 425	Molecular Ecology
BZ 430	Animal Behavior and Conservation
BZ 449A	Study Abroad: Ecology/Conservation–Ecuadorian Biodiversity
BZ 450	Plant Ecology
BZ 466	Biological Basis of Animal Behavior
BZ 471	Stream Biology and Ecology
BZ 472	Stream Biology and Ecology Laboratory
BZ 474/ESS 474	Limnology
BZ 505	Cognitive Ecology
BZ 510	Zoophysiological Ecology
BZ 535	Behavioral Ecology
BZ 561	Landscape Ecology
BZ 572	Phytoremediation
ERHS 332	Principles of Epidemiology
F 311	Forest Ecology
FW 400	Conservation of Fish in Aquatic Ecosystems
MIP 432/ESS 432	Microbial Ecology
MIP 433/ESS 433	Microbial Ecology Laboratory
NR 370	Coastal Environmental Ecology
RS 331	Wildland Plants and Plant Communities
RS 351	Wildland Ecosystems in a Changing World
RS 478	Ecological Restoration

Evolution, Genetics and Systematics Field Department List

Code	Title	Credits
Required Course		3
BZ 346	Population and Evolutionary Genetics	
Selected Courses:		
Select enough credits from the following courses to complete the 12-credit field requirement:		9
ANTH 373	Human Evolution	
ANTH 374	Human Biological Variation	
BC 463	Molecular Genetics	
BSPM 302	Applied and General Entomology	
BSPM 303A	Entomology Laboratory: General	
BSPM 423	Evolution and Classification of Insects	
BZ 300	Animal Behavior	
BZ 325	Plant Systematics	
BZ 329	Herpetology	
BZ 330	Mammalogy	
BZ 332	Introductory Phycology	
BZ 333	Introductory Mycology	
BZ 335	Ornithology	
BZ 338	Comparative Morphology of Vascular Plants	
BZ 348/MATH 348	Theory of Population and Evolutionary Ecology	
BZ 349	Tropical Ecology and Evolution	
BZ 360	Bioinformatics and Genomics	
BZ 418	Ecology of Infectious Diseases	
BZ 420	Evolutionary Medicine	
BZ 424/BSPM 424	Principles of Systematic Zoology	
BZ 425	Molecular Ecology	
BZ 430	Animal Behavior and Conservation	
BZ 433	Behavioral Genetics	
BZ 449A	Study Abroad: Ecology/Conservation–Ecuadorian Biodiversity	
BZ 455	Human Heredity and Birth Defects	
BZ 460	Genome Evolution	
BZ 462/ BSPM 462/ MIP 462	Parasitology and Vector Biology	
BZ 476/BZ 576	Genetics of Model Organisms	
BZ 520/BSPM 520	Advanced Systematics	
BZ 530	Ecological Plant Morphology	
BZ 535	Behavioral Ecology	
BZ 577/MIP 577	Computer Analysis in Population Genetics	
BZ 578/MIP 578	Genetics of Natural Populations	
ERHS 332	Principles of Epidemiology	
FW 300	Biology and Diversity of Fishes	
FW 301	Ichthyology Laboratory	
GEOL 342	Paleontology	
MIP 300	General Microbiology	
MIP 302	General Microbiology Laboratory	
MIP 303	General Microbiology--Honors Recitation	
MIP 450	Microbial Genetics	

Integrative Organismal Biology Field Department List

Code	Title	Credits
Select a minimum of 12 credits total, to include at least one course from each of the following lists:		12
List A: Botany		
BZ 223	Plant Identification	
BZ 325	Plant Systematics	
BZ 331	Developmental Plant Anatomy	
BZ 332	Introductory Phycology	
BZ 333	Introductory Mycology	
BZ 338	Comparative Morphology of Vascular Plants	
BZ 360	Bioinformatics and Genomics	
BZ 440	Plant Physiology	
BZ 441	Plant Physiology Laboratory	
BZ 450	Plant Ecology	
BZ 476/BZ 576	Genetics of Model Organisms	

BZ 561	Landscape Ecology
BZ 570	Molecular Aspects of Plant Development
BZ 572	Phytoremediation
List B: Zoology	
ANTH 470	Paleontology Field School
BSPM 302	Applied and General Entomology
BSPM 303A	Entomology Laboratory: General
BZ 212	Animal Biology-Invertebrates
BZ 214	Animal Biology-Vertebrates
BZ 300	Animal Behavior
BZ 329	Herpetology
BZ 330	Mammalogy
BZ 335	Ornithology
BZ 349	Tropical Ecology and Evolution
BZ 415	Marine Biology
BZ 418	Ecology of Infectious Diseases
BZ 420	Evolutionary Medicine
BZ 424/BSPM 424	Principles of Systematic Zoology
BZ 430	Animal Behavior and Conservation
BZ 449A	Study Abroad: Ecology/Conservation–Ecuadorian Biodiversity
BZ 462/ BSPM 462/ MIP 462	Parasitology and Vector Biology
BZ 466	Biological Basis of Animal Behavior
BZ 471	Stream Biology and Ecology
BZ 472	Stream Biology and Ecology Laboratory
BZ 474/ESS 474	Limnology
BZ 479/VS 479	Biology and Behavior of Dogs
BZ 505	Cognitive Ecology
BZ 515	Physiological Ecology of Marine Vertebrates
BZ 535	Behavioral Ecology
FW 300	Biology and Diversity of Fishes
FW 301	Ichthyology Laboratory
FW 400	Conservation of Fish in Aquatic Ecosystems
GEOL 342	Paleontology

Microbiology Field Department List

Code	Title	Credits
Select a minimum of 12 credits from the following:		
BSPM 361	Elements of Plant Pathology	
BZ 332	Introductory Phycology	
BZ 333	Introductory Mycology	
BZ 418	Ecology of Infectious Diseases	
BZ 420	Evolutionary Medicine	
BZ 462/ BSPM 462/ MIP 462	Parasitology and Vector Biology	
BZ 537	Topics in Mycology	
BZ 577/MIP 577	Computer Analysis in Population Genetics	
BZ 578/MIP 578	Genetics of Natural Populations	
MIP 300	General Microbiology	
MIP 302	General Microbiology Laboratory	
MIP 303	General Microbiology--Honors Recitation	
MIP 315	Pathology of Human and Animal Disease	
MIP 334	Food Microbiology	
MIP 335	Food Microbiology Laboratory	
MIP 342	Immunology	
MIP 343	Immunology Laboratory	
MIP 350	Microbial Diversity	
MIP 351	Medical Bacteriology	
MIP 352	Medical Bacteriology Laboratory	
MIP 420	Medical and Molecular Virology	
MIP 425	Virology and Cell Culture Laboratory	
MIP 432/ESS 432	Microbial Ecology	
MIP 433/ESS 433	Microbial Ecology Laboratory	
MIP 436	Industrial Microbiology	
MIP 443	Microbial Physiology	
MIP 450	Microbial Genetics	
SOCR 455	Soil Microbiology	
SOCR 456	Soil Microbiology Laboratory	

Self-Designed Field

A student may, with the approval of their advisor and the Biology Curriculum Committee, define their own individual selected field. Students wishing to pursue this option should consult with their advisor to develop a proposal for a self-designed field. The proposal should include a description of the field of interest, the student's reason or rationale for wishing to pursue a self-designed field, and a list of relevant classes (totaling 12 credits) to be completed. To be included, courses should be upper-division classes that are primarily biological in content. Once approved by the advisor, a student's request for a self-designed field must be submitted to the Biology Curriculum Committee for approval. The Curriculum Committee's approval should be obtained before the end of the sophomore year.

1 A minimum of one course must be selected from two additional fields (cannot use courses that were used to fulfill selected field). Courses in additional fields must be at least three credits.

2 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

TO PREPARE FOR FIRST SEMESTER: The curriculum for the Biological Sciences major -Biological Sciences concentration assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester. LIFE 102 requires high school chemistry as a prerequisite; CHEM 111 requires Algebra II as a prerequisite (this prerequisite is met by having Algebra II by test credit, transfer credit, or placement out of MATH 117 and MATH 118 on Math Placement Exam). Earned grade of C or better is required in each of their biological, physical science, and mathematical courses used to meet requirements for the major. Semester 4 may have to be adjusted if the student chooses 2 semesters of Organic Chemistry. The selected and additional field must

be a minimum of 18 credits. Do not attempt BZ 310 and BZ 350 before Junior year. Do not take BZ 310 and BZ 350 together.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
Select one group from the following:					4
Group A:					
BZ 110	Principles of Animal Biology (GT-SC2)	X		3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	X		3A	
Group B:					
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	
Arts and Humanities				3B	3
Electives					6
MATH 117, MATH 118 may be necessary for some students to fulfill pre-calculus requirements.			X		
	Total Credits				16

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
Select one course from the following:					4
BZ 120	Principles of Plant Biology (GT-SC1)	X		3A	
LIFE 103	Biology of Organisms-Animals and Plants	X			
Select one course from the following:					4
MATH 155	Calculus for Biological Scientists I (GT-MA1)		X	1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)		X	1B	
CO 150 must be completed by the end of Semester 2.		X			
MATH 124, MATH 125 may be necessary for some students to fulfill pre-calculus requirements.		X			
	Total Credits				13

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 220	Introduction to Evolution				3
CHEM 113	General Chemistry II	X			3
CHEM 114	General Chemistry Lab II	X			1
Selected Field (See Department List on Concentration Requirements tab)					3
Arts and Humanities				3B	3
Historical Perspectives				3D	3
MATH 155 or MATH 160 must be completed by the end of Semester 3.		X			
	Total Credits				16

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one group from the following:					3-5
Group A:					
CHEM 245	Fundamentals of Organic Chemistry	X			
CHEM 246	Fundamentals of Organic Chemistry Laboratory				
Group B:					
CHEM 341	Modern Organic Chemistry I	X			
Select one course from the following:					3
STAT 301	Introduction to Statistical Methods		X		
STAT 307	Introduction to Biostatistics		X		
Selected Field (See List on Concentration Requirements Tab)					3
Diversity and Global Awareness				3E	3

Social and Behavioral Sciences				3C	3
	Total Credits				15-17
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3-4
BC 351	Principles of Biochemistry				
BC 401	Comprehensive Biochemistry I				
To complete CHEM 341 series option:					0-5
CHEM 343	Modern Organic Chemistry II				
CHEM 344	Modern Organic Chemistry Laboratory				
Select one course from the following:					5
PH 121	General Physics I (GT-SC1)		X	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)		X	3A	
Selected Field (See List on Concentration Requirements Tab)					3
Electives					0-5
STAT 301 or STAT 307 must be completed by the end of Semester 5.		X			
	Total Credits				16-17
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 350	Molecular and General Genetics		X	4A,4B	4
To complete BC 401 series option:					0-3
BC 403	Comprehensive Biochemistry II				
Select one course from the following:					5
PH 122	General Physics II (GT-SC1)		X	3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)		X	3A	
Advanced Writing				2	3
	Total Credits				12-15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 310	Cell Biology	X			4
Selected Field (See List on Concentration Requirements Tab)					3
Additional Field (See List on Concentration Requirements Tab)					3
Electives					5
PH 121 or PH 141 must be completed by the end of Semester 7.		X			
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 311	Developmental Biology	X			4
LIFE 320	Ecology	X		4C	3
Additional Field (See List on Concentration Requirements Tab)		X			3
Electives		X			2-6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12-16
	Program Total Credits:				120

Major in Biological Science, Botany Concentration

Botany is the general study of plants and plant-like organisms from microscopic algae to giant redwoods, from mushrooming fungi to flowering angiosperms. Plant anatomy, how plants grow and develop, and how they survive and interrelate within their environments are topics of study. For students who like the outdoors, a career in plant ecology, taxonomy, or forestry might be appealing. Students attracted to the beauty and design of the microscopic world might enjoy a career in plant anatomy or plant developmental biology. Those interested in chemistry might enjoy plant biochemistry, molecular biology, or plant biotechnology. Those intrigued by plant diseases might become plant pathologists and the mathematically oriented might explore systems ecology, genetics, or plant biotechnology.

The botany curriculum begins with a solid foundation in mathematics, the biological sciences, chemistry, organic chemistry, physics, evolution, and genetics. Botany emphasizing terrestrial plant studies including

plant systematics, anatomy, and ecology, biochemistry, and earth sciences round out the core. Botany students also take liberal arts and communications courses to give breadth to their education.

Requirements
Effective Fall 2015

To be qualified for graduation, students in the Biological Science major must have a minimum grade of C- in each of their biological, physical science, and mathematical courses used to meet requirements for the major. This applies to courses taken as substitutions for meeting these requirements. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

Freshman

		AUCC	Credits
Select one group from the following:			8
Group A:			
BZ 110	Principles of Animal Biology (GT-SC2)	3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	3A	
BZ 120	Principles of Plant Biology (GT-SC1)	3A	
Group B:			
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
LIFE 103	Biology of Organisms-Animals and Plants		
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
Select one from the following:			4
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	
Arts and Humanities		3B	3
Historical Perspectives		3D	3
Elective			4
	Total Credits		30

Sophomore

CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
Select two courses from the following:			5-7
ATS 350	Introduction to Weather and Climate		
ESS 210/GR 210	Physical Geography		
GEOL 122	The Blue Planet - Geology of Our Environment (GT-SC2)	3A	
NR 130	Global Environmental Systems (GT-SC2)	3A	
SOCR 240	Introductory Soil Science		
BZ 220	Introduction to Evolution		3
Select one group from the following:			3-5
Group A:			
CHEM 245	Fundamentals of Organic Chemistry		
CHEM 246	Fundamentals of Organic Chemistry Laboratory		
Group B:			
CHEM 341	Modern Organic Chemistry I		
STAT 301 or 307	Introduction to Statistical Methods Introduction to Biostatistics		3
Arts and Humanities		3B	3
Social and Behavioral Sciences		3C	3
Electives			2-6
	Total Credits		30

Junior

Select one group from the following:			4-6
Group A:			
BC 351	Principles of Biochemistry		
Group B:			
BC 401	Comprehensive Biochemistry I		
BC 403	Comprehensive Biochemistry II		
BZ 325	Plant Systematics		4
BZ 331	Developmental Plant Anatomy		4
BZ 440	Plant Physiology		3
BZ 441	Plant Physiology Laboratory		2
Students should take the following two courses only if CHEM 341 was selected in the sophomore year:			0-5
CHEM 343	Modern Organic Chemistry II		
CHEM 344	Modern Organic Chemistry Laboratory		
Select one group from the following:			10
Group A:			
PH 121	General Physics I (GT-SC1)	3A	
PH 122	General Physics II (GT-SC1)	3A	
Group B:			
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	
	Total Credits		27-32

Senior

BZ 310	Cell Biology		4
Select at least two courses from the following:			8
BZ 332	Introductory Phycology		
BZ 333	Introductory Mycology		
BZ 338	Comparative Morphology of Vascular Plants		
BZ 350	Molecular and General Genetics	4A,4B	4
BZ 450	Plant Ecology	4C	4
Advanced Writing		2	3
Global and Cultural Awareness		3E	3
Electives[1]			2-7
	Total Credits		28-33
	Program Total Credits:		120

[1] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

TO PREPARE FOR FIRST SEMESTER: The curriculum for the Biological Sciences major - Botany concentration assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester. Talk to your advisor. LIFE 102 requires high school chemistry as a prerequisite; CHEM 111 requires Algebra II as a prerequisite (this prerequisite is met by having Algebra II by test credit, transfer credit, or placement out of MATH 117 and MATH 118 on Math Placement Exam). C or better in all biological, physical science, and mathematical courses used to meet requirements for the major. Term 4 may have to be adjusted if the student chooses 2 semesters of Organic Chemistry, do not attempt more than three science and math courses per term. Do not attempt BZ 310 and BZ 350 before Junior year. Do not take BZ 310 and BZ 350 together.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one group from the following:					4
Group A:					

BZ 110	Principles of Animal Biology (GT-SC2)	X		3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	X		3A	
Group B:					
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	
CO 150	College Composition (GT-CO2)			1A	3
Arts and Humanities				3B	3
Electives					4
MATH 117, MATH 118 may be necessary for some students to fulfill pre-calculus requirements.		X			
	Total Credits				14

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					4
BZ 120	Principles of Plant Biology (GT-SC1)	X		3A	
LIFE 103	Biology of Organisms-Animals and Plants	X			
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
Select one course from the following:					4
MATH 155	Calculus for Biological Scientists I (GT-MA1)			1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)			1B	
Historical Perspectives				3D	3
CO 150 must be completed by the end of Semester 2.		X			
MATH 124, MATH 125 may be necessary for some students to fulfill pre-calculus requirements.		X			
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					2-4
ATS 350	Introduction to Weather and Climate				
ESS 210/ GR 210	Physical Geography				
GEOL 122	The Blue Planet - Geology of Our Environment (GT-SC2)			3A	
NR 130	Global Environmental Systems (GT-SC2)			3A	
SOCR 240	Introductory Soil Science				
BZ 220	Introduction to Evolution	X			3
CHEM 113	General Chemistry II		X		3
CHEM 114	General Chemistry Lab II		X		1
Arts and Humanities				3B	3
Elective					1-3
MATH 155 or MATH 160 must be completed by the end of Semester 3.		X			
	Total Credits				13-17

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					2-4
ATS 350	Introduction to Weather and Climate				
ESS 210/ GR 210	Physical Geography				
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)			3A	
NR 130	Global Environmental Systems (GT-SC2)			3A	
SOCR 240	Introductory Soil Science				
Select one group from the following:					3-5
Group A:					
CHEM 245	Fundamentals of Organic Chemistry	X			
CHEM 246	Fundamentals of Organic Chemistry Laboratory	X			
Group B:					

CHEM 341	Modern Organic Chemistry I	X			
Select one course from the following:					3
STAT 301	Introduction to Statistical Methods		X		
STAT 307	Introduction to Biostatistics		X		
Social and Behavioral Sciences				3C	3
Elective					1-3
	Total Credits				13-17

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3-4
BC 351	Principles of Biochemistry				
BC 401	Comprehensive Biochemistry I				
BZ 331	Developmental Plant Anatomy				4
To complete CHEM 341 series option:					0-5
CHEM 343	Modern Organic Chemistry II				
CHEM 344	Modern Organic Chemistry Laboratory				
Select one course from the following:					5
PH 121	General Physics I (GT-SC1)			3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)			3A	
STAT 301 or STAT 307 must be completed by the end of Semester 5.		X			
	Total Credits				13-17

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
To complete BC 401 series option:					0-3
BC 403	Comprehensive Biochemistry II				
BZ 325	Plant Systematics				4
BZ 440	Plant Physiology				3
BZ 441	Plant Physiology Laboratory				2
Select one course from the following:					5
PH 122	General Physics II (GT-SC1)		X	3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)		X	3A	
	Total Credits				14-17

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 310	Cell Biology	X			4
Select one course from the following:					4
BZ 332	Introductory Phycology				
BZ 333	Introductory Mycology				
BZ 338	Comparative Morphology of Vascular Plants				
Advanced Writing				2	3
Electives					2-4
	Total Credits				13-15

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					4
BZ 332	Introductory Phycology	X			
BZ 333	Introductory Mycology	X			
BZ 338	Comparative Morphology of Vascular Plants	X			
BZ 350	Molecular and General Genetics	X		4A,4B	4
BZ 450	Plant Ecology	X		4C	4
Global and Cultural Awareness		X		3E	3
Elective		X			0-3

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X	
Total Credits		15-18
Program Total Credits:		120

Major in Zoology

Zoologists study animals—their origin, behavior, diseases, and life processes. Some experiment with live animals in controlled or natural surroundings while others study the structure and function of animal cells, tissues, and organ systems. Some zoologists go on to study veterinary medicine. Zoologists participate in research that has practical outcomes in farming, medicine, pharmacy, wildlife conservation, and pest control. Zoology encompasses many specialties. At CSU, students may focus on general training in animal biology or choose a concentration in the following areas: animal behavior, development, aquatic biology, ecology (how animals adapt to their environments), genetics and evolution, invertebrate organisms, cellular/molecular biology and physiology, systematics, and morphology of vertebrate organisms.

The curriculum is designed to provide a basic understanding of zoology through a variety of laboratory experiences in combination with the study of basic theories and defining concepts. The program encourages flexibility, strength, and depth. The course work includes a two-semester introductory biology sequence, one course each in invertebrates and vertebrates, and courses in evolution and ecology. Required courses in the physical sciences include a minimum of one year of introductory chemistry and at least one course in organic chemistry, two courses in physics (all with labs) and one in biochemistry. A course each in calculus and statistics is also required. In addition, students select a minimum of 15 credits of Zoology courses in their chosen areas of concentration.

Learning Outcomes

Students will:

- Interpret scientific data.
- Demonstrate strong organizational and laboratory skills.
- Define scientific hypotheses and design experiments to test them.
- Work effectively in groups.
- Demonstrate strong writing and oral communication skills.

Potential Occupations

This major prepares students to work in various areas of zoology, such as research or private industry, or to begin graduate school or professional studies. Career opportunities include medical biotechnology, research technician, protective agencies such as shelters and refuges, trainers and handlers, animal-related business, aquatic/marine biologists, exotic animal specialists, and wildlife conservation. It is an appropriate major for students planning to attend medical or veterinary school. Graduates often pursue advanced degrees to carry out basic research or advance into leadership positions in industry. Participation in internships, laboratory, or research opportunities is highly recommended and encouraged by the department to enhance practical training and development.

Additional careers for Zoology majors include, but are not limited to: aquarium and museum curator/director; zoo keeper, animal trainer and instructor, science librarian, environmental technician, fish and wildlife technician, veterinary technician/assistant, marine bacteriologist or biologist or ecologist, humane society positions, cytotechnologist, ecologist, fisheries biologist or conservationist, laboratory technician, marketing researcher, medical technologist, park ranger, pharmaceutical sales representative, production supervisor, quality analysis technician in food or pharmaceutical industry, radiation protection technician, research technician, industrial hygienist, wildlife photographer.

Requirements
Effective Fall 2019

To be qualified for graduation, students in the Zoology major must have a minimum grade of C- in each of their biological, physical science, and mathematical courses used to meet requirements for the major. This applies to courses taken as substitutions for meeting these requirements. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

Freshman

		AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
Select one group from the following:			8
Group A:			
BZ 110	Principles of Animal Biology (GT-SC2)	3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	3A	
BZ 120	Principles of Plant Biology (GT-SC1)	3A	
Group B:			
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
LIFE 103	Biology of Organisms-Animals and Plants		
Select one from the following:			4
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	

MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	
Arts and Humanities		3B	3
Social and Behavioral Sciences		3C	3
Electives			5
	Total Credits		31

Sophomore

BZ 212	Animal Biology-Invertebrates		4
BZ 214	Animal Biology-Vertebrates		4
BZ 220	Introduction to Evolution		3
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
Select one group from the following:			3-5
Group A:			
CHEM 245	Fundamentals of Organic Chemistry		
CHEM 246	Fundamentals of Organic Chemistry Laboratory		
Group B:			
CHEM 341	Modern Organic Chemistry I		
STAT 301 or 307	Introduction to Statistical Methods Introduction to Biostatistics		3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
	Total Credits		30-32

Junior

BZ 350	Molecular and General Genetics	4A,4B	4
Select one group from the following:			4-6
Group A:			
BC 351	Principles of Biochemistry		
Group B:			
BC 401	Comprehensive Biochemistry I		
BC 403	Comprehensive Biochemistry II		
Students should take the following two courses only if CHEM 341 was selected in the sophomore year:			0-5
CHEM 343	Modern Organic Chemistry II		
CHEM 344	Modern Organic Chemistry Laboratory		
Select one group from the following:			10
Group A:			
PH 121	General Physics I (GT-SC1)	3A	
PH 122	General Physics II (GT-SC1)	3A	
Group B:			
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	
Upper-Division Zoology Courses (see list below)			6
Electives			5
	Total Credits		29-36

Senior

BZ 310	Cell Biology		4
LIFE 320	Ecology	4C	3
Upper-Division Zoology Courses (see list below)			9
Advanced Writing		2	3

Electives[1]		2-11
	Total Credits	21-30
	Program Total Credits:	120

Upper-Division Zoology Department List

Code	Title	Credits
ANTH 470	Paleontology Field School	4
BSPM 302	Applied and General Entomology	2
BSPM 303A	Entomology Laboratory: General	2
BZ 300	Animal Behavior	3
BZ 311	Developmental Biology	4
BZ 329	Herpetology	3
BZ 330	Mammalogy	3
BZ 335	Ornithology	3
BZ 346	Population and Evolutionary Genetics	3
BZ 348/MATH 348	Theory of Population and Evolutionary Ecology	4
BZ 349	Tropical Ecology and Evolution	3
BZ 360	Bioinformatics and Genomics	3
BZ 401	Comparative Animal Physiology	3
BZ 415	Marine Biology	4
BZ 418	Ecology of Infectious Diseases	4
BZ 420	Evolutionary Medicine	3
BZ 424/BSPM 424	Principles of Systematic Zoology	3
BZ 425	Molecular Ecology	3
BZ 430	Animal Behavior and Conservation	3
BZ 433	Behavioral Genetics	4
BZ 449A	Study Abroad: Ecology/Conservation—Ecuadorian Biodiversity	4
BZ 455	Human Heredity and Birth Defects	3
BZ 460	Genome Evolution	4
BZ 462/MIP 462/ BSPM 462	Parasitology and Vector Biology	5
BZ 466	Biological Basis of Animal Behavior	4
BZ 471	Stream Biology and Ecology	3
BZ 472	Stream Biology and Ecology Laboratory	1
BZ 474/ESS 474	Limnology	3
BZ 476/BZ 576	Genetics of Model Organisms	3
BZ 479/VS 479	Biology and Behavior of Dogs	3
BZ 492A	Seminar: Behavior	1-3
BZ 492B	Seminar: Ecology	1-3
BZ 492C	Seminar: Genetics	1-3
BZ 492D	Seminar: Ornithology	1-3
BZ 492E	Seminar: Herpetology	1-3
BZ 492F	Seminar: Evolution	1-3
BZ 496	Group Study—Biology	1-3
BZ 505	Cognitive Ecology	3
BZ 510	Zoophysiological Ecology	3
BZ 515	Physiological Ecology of Marine Vertebrates	3
BZ 535	Behavioral Ecology	3
BZ 577/MIP 577	Computer Analysis in Population Genetics	2
BZ 578/MIP 578	Genetics of Natural Populations	4
GEOL 342	Paleontology	3
FW 300	Biology and Diversity of Fishes	2
FW 301	Ichthyology Laboratory	1
FW 400	Conservation of Fish in Aquatic Ecosystems	3
FW 405	Fish Physiology	3

A maximum of 6 credits may be selected from the following courses:

BMS 300	Principles of Human Physiology
or BMS 360	Fundamentals of Physiology
BMS 305	Domestic Animal Gross Anatomy
MIP 300	General Microbiology
MIP 302	General Microbiology Laboratory
MIP 315	Pathology of Human and Animal Disease
MIP 342	Immunology
MIP 343	Immunology Laboratory

A maximum of 3 credits may be selected from the following courses:

BZ 384	Supervised College Teaching
BZ 487	Internship
BZ 495	Independent Study
BZ 498	Laboratory or Field Research

[1] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

TO PREPARE FOR FIRST SEMESTER: The curriculum for the Zoology major assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester. LIFE 102 requires high school chemistry as a prerequisite; CHEM 111 requires Algebra II as a prerequisite (this prerequisite is met by having Algebra II by test credit, transfer credit, or placement out of MATH 117 and MATH 118 on Math Placement Exam). Earned grade of C or better is required in each of their biological, physical science, and mathematical courses used to meet requirements for the major. Term 5 may have to be adjusted if the student chooses 2 semesters of Organic Chemistry. Do not attempt BZ 310 and BZ 350 before Junior year. Do not take BZ 350 and BZ 310 together.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
Select one group from the following:		X			4
Group A:					
BZ 110	Principles of Animal Biology (GT-SC2)			3A	
BZ 111	Animal Biology Laboratory (GT-SC1)			3A	
Group B:					
LIFE 102	Attributes of Living Systems (GT-SC1)			3A	
Social and Behavioral Sciences				3C	3
Electives					5
MATH 117, MATH 118 may be necessary for some students to fulfill pre-calculus requirements.		X			
	Total Credits				15

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
Select one course from the following:		X			4
BZ 120	Principles of Plant Biology (GT-SC1)			3A	
LIFE 103	Biology of Organisms-Animals and Plants				
Select one course from the following:					4
MATH 155	Calculus for Biological Scientists I (GT-MA1)			1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)			1B	
Arts and Humanities				3B	3
CO 150 must be completed by the end of Semester 2.		X			
MATH 124, MATH 125 may be necessary for some students to fulfill pre-calculus requirements.		X			
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 212	Animal Biology-Invertebrates				4
BZ 220	Introduction to Evolution				3
CHEM 113	General Chemistry II	X			3
CHEM 114	General Chemistry Lab II	X			1
Arts and Humanities				3B	3
Historical Perspectives				3D	3
MATH 155 or MATH 160 must be completed by the end of Semester 3.		X			
	Total Credits				17

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 214	Animal Biology-Vertebrates				4
Select one group from the following:		X			3-5
Group A:					
CHEM 245	Fundamentals of Organic Chemistry				
CHEM 246	Fundamentals of Organic Chemistry Laboratory				
Group B:					
CHEM 341	Modern Organic Chemistry I				
Select one course from the following:			X		3
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
Diversity and Global Awareness				3E	3
	Total Credits				13-15

Junior

Semester 5		Critical	Recommended	AUCC	Credits
Select one course from the following:					3-4
BC 351	Principles of Biochemistry				
BC 401	Comprehensive Biochemistry I				
To complete CHEM 341 series option:					0-5
CHEM 343	Modern Organic Chemistry II				
CHEM 344	Modern Organic Chemistry Laboratory				
Select one course from the following:			X		5
PH 121	General Physics I (GT-SC1)			3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)			3A	
Upper-Division Zoology Course (See List on Requirements Tab)					3
Elective					2
STAT 301 or STAT 307 must be completed by the end of Semester 5.		X			
	Total Credits				14-19

Semester 6		Critical	Recommended	AUCC	Credits
BZ 350	Molecular and General Genetics		X	4A,4B	4
To complete BC 401 series option:					0-3
BC 403	Comprehensive Biochemistry II				
Select one course from the following:			X		5
PH 122	General Physics II (GT-SC1)			3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)			3A	
Upper-Division Zoology Course (See List on Requirements Tab)					3
Elective					2-3
	Total Credits				15-17

Senior

Semester 7		Critical	Recommended	AUCC	Credits
BZ 310	Cell Biology				4
Upper-Division Zoology Course (See List on Requirements Tab)					3
Advanced Writing				2	3
Electives					0-5
PH 121 must be completed by the end of Semester 7.		X			
	Total Credits				10-15

Semester 8		Critical	Recommended	AUCC	Credits
LIFE 320	Ecology	X		4C	3
Upper-Division Zoology Courses (See List on Requirements Tab)		X			6
Electives		X			2-6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				11-15
	Program Total Credits:				120

Minor in Botany

The minor in Botany is offered to provide interested students with maximum breadth and depth in botanical science utilizing a limited number of requirements. The program also serves to broaden the academic background of students seeking employment in the interdisciplinary job market associated with the plant sciences.

Requirements Effective Fall 2007

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Lower Division		
Select one group from the following:		4-8

Group A:		
BZ 120	Principles of Plant Biology (GT-SC1)	
Group B:		
LIFE 102	Attributes of Living Systems (GT-SC1)	
LIFE 103	Biology of Organisms-Animals and Plants	
Upper Division		
Minimum of 10 credits of BZ courses specified for the botany concentration.		10
A minimum of 7 additional credits from BZ courses or other courses approved by the department.		7
Program Total Credits:		21-25

Minor in Zoology

The minor in Zoology is a useful complement to a major in animal science, fishery biology, geology, natural resource recreation and tourism, or wildlife biology.

Requirements Effective Fall 2019

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Lower Division		
BZ 212	Animal Biology-Invertebrates	4
BZ 214	Animal Biology-Vertebrates	4
Select one group from the following:		4-8
Group A:		
BZ 110	Principles of Animal Biology (GT-SC2)	
BZ 111	Animal Biology Laboratory (GT-SC1)	
Group B:		
LIFE 102	Attributes of Living Systems (GT-SC1)	
LIFE 103	Biology of Organisms-Animals and Plants	
Upper Division		
Select a minimum of 12 credits in zoologically oriented courses from the list below.		12
Program Total Credits:		24-28

Upper Division Course List

Code	Title	Credits
BSPM 302	Applied and General Entomology	2
BSPM 303A	Entomology Laboratory: General	2
BZ 300	Animal Behavior	3
BZ 311	Developmental Biology	4
BZ 329	Herpetology	3
BZ 330	Mammalogy	3
BZ 335	Ornithology	3
BZ 346	Population and Evolutionary Genetics	3
BZ 348/MATH 348	Theory of Population and Evolutionary Ecology	4
BZ 349	Tropical Ecology and Evolution	3
BZ 350	Molecular and General Genetics	4
BZ 360	Bioinformatics and Genomics	3
BZ 401	Comparative Animal Physiology	3
BZ 415	Marine Biology	4
BZ 418	Ecology of Infectious Diseases	4
BZ 420	Evolutionary Medicine	3
BZ 424/BSPM 424	Principles of Systematic Zoology	3
BZ 425	Molecular Ecology	3
BZ 430	Animal Behavior and Conservation	3
BZ 433	Behavioral Genetics	4
BZ 449A	Study Abroad: Ecology/Conservation–Ecuadorian Biodiversity	4
BZ 455	Human Heredity and Birth Defects	3
BZ 460	Genome Evolution	4
BZ 462/MIP 462/ BSPM 462	Parasitology and Vector Biology	5
BZ 466	Biological Basis of Animal Behavior	4
BZ 471	Stream Biology and Ecology	3
BZ 472	Stream Biology and Ecology Laboratory	1
BZ 474/ESS 474	Limnology	3
BZ 476/BZ 576	Genetics of Model Organisms	3
BZ 479/VS 479	Biology and Behavior of Dogs	3
BZ 492A	Seminar: Behavior	1-3
BZ 492B	Seminar: Ecology	1-3
BZ 492C	Seminar: Genetics	1-3
BZ 492D	Seminar: Ornithology	1-3
BZ 492E	Seminar: Herpetology	1-3
BZ 492F	Seminar: Evolution	1-3
BZ 505	Cognitive Ecology	3
BZ 510	Zoophysiological Ecology	3
BZ 515	Physiological Ecology of Marine Vertebrates	3
BZ 535	Behavioral Ecology	3
BZ 577/MIP 577	Computer Analysis in Population Genetics	2
BZ 578/MIP 578	Genetics of Natural Populations	4
FW 300	Biology and Diversity of Fishes	2
FW 301	Ichthyology Laboratory	1
FW 400	Conservation of Fish in Aquatic Ecosystems	3
FW 405	Fish Physiology	3
LIFE 320	Ecology	3

Master of Science in Biological Science

Studies in the Department of Biology's M.S. (Plan A and Plan B) degree program in Biological Science span everything from molecules to ecosystems, and involve the study of organisms across all domains of life. Topics are rooted in both basic and applied research. Students work and study at sites within Colorado, across the United States, and around the world. Some general areas of investigation include anatomy/morphology, behavior, bioinformatics, biological science education, biotechnology, cell biology, conservation biology, developmental

biology, disease biology, ecology, ecosystem science, evolutionary biology, genetics, genomics, global change biology, molecular biology, neurobiology, physiology, systematics, systems biology, synthetic biology, and theoretical/mathematical biology.

Plan A
Effective Fall 2018

Code	Title	Credits
Coursework completed in consultation with advisor		30
BZ 699	Thesis	
Minimum of 24 credits earned at CSU		
Minimum of 21 credits earned at CSU since admission to the Graduate School		
Minimum of 16 credits earned at CSU at the 500-level or higher		
Minimum of 12 credits earned at CSU in regular courses at the 500-level or higher (which excludes courses ending in -82 through -99)		
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

Additional Program Requirements:

- No specific courses must be taken in satisfaction of Departmental degree requirements; however, the candidate must be able to demonstrate a general knowledge of biological science as well as competence in specific areas of concentration.
- A graduate student participating in an advanced degree program of the Department of Biology must meet with the Graduate Advisory Committee at least once annually, and the student shall submit an annual report of progress toward the degree, signed by her/his Graduate Advisory Committee, to the Department Chair for review.
- A graduate degree in Biological Science indicates that the individual has achieved a professional level of competence in research as well as formal classwork. Consequently satisfactory progress in a research program must parallel the effort in coursework.
- A completed thesis must be submitted to the Graduate Advisory Committee and approved following a successful oral defense (final examination).

Plan B
Effective Fall 2018

Code	Title	Credits
Coursework completed in consultation with advisor		30
Scholarly paper, exam, portfolio, or similar project		
Minimum of 24 credits earned at CSU		
Minimum of 21 credits earned at CSU since admission to the Graduate School		
Minimum of 16 credits earned at CSU at the 500-level or higher		
Minimum of 12 credits earned at CSU in regular courses at the 500-level or higher (which excludes courses ending in -82 through -99)		
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

Additional Program Requirements:

- No specific courses must be taken in satisfaction of Departmental degree requirements; however, the candidate must be able to demonstrate a general knowledge of biological science as well as competence in specific areas of concentration.
- A graduate student participating in an advanced degree program of the Department of Biology must meet with the Graduate Advisory Committee at least once annually, and the student shall submit an annual report of progress toward the degree, signed by her/his Graduate Advisory Committee, to the Department Chair for review.
- A graduate degree in Biological Science indicates that the individual has achieved a professional level of competence in research as well as formal classwork. Consequently satisfactory progress in a research program must parallel the effort in coursework.
- A completed scholarly paper, exam, portfolio, or similar project must be submitted to and approved by the Graduate Advisory Committee.

Ph.D. in Biological Science

Studies in the Department of Biology's Ph.D. program in Biological Science span everything from molecules to ecosystems, and involve the study of organisms across all domains of life. Topics are rooted in both basic and applied research. Students work and study at sites within Colorado, across the United States, and around the world. Some general areas of investigation include anatomy/morphology, behavior, bioinformatics, biological science education, biotechnology, cell biology, conservation biology, developmental biology, disease biology, ecology, ecosystem science, evolutionary biology, genetics, genomics, global change biology, molecular biology, neurobiology, physiology, systematics, systems biology, synthetic biology, and theoretical/mathematical biology.

Requirements
Effective Fall 2018

Code	Title	Credits
Ph.D. with prior Master's Degree		
Credit from Master's Degree		30
Coursework completed in consultation with advisor [1]		42
BZ 799	Dissertation	
Program Total Credits		72

[1] A minimum of 32 credits earned at CSU since admission to the Graduate School. A minimum of 21 credits earned at CSU at the 500-level or higher.

Code	Title	Credits
Ph.D. without prior Master's Degree		
Coursework completed in consultation with advisor [1]		72
BZ 799	Dissertation	
Program Total Credits		72

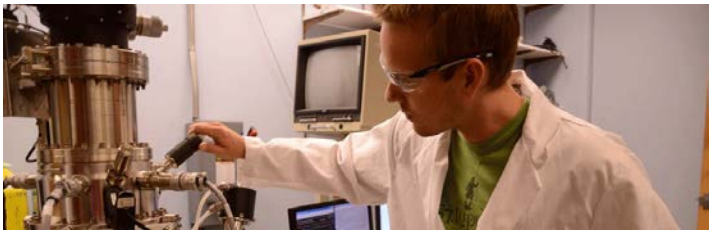
[1] A minimum of 62 credits earned at CSU since admission to the Graduate School. A minimum of 37 credits earned at CSU at the 500-level or higher. If students perform a continuous Master's/Ph.D. program at CSU, all credits earned for the Master's degree can be counted toward the Ph.D. credit requirements.

A minimum of 72 credits are required to complete this program.

Additional Program Requirements:

- No specific courses must be taken in satisfaction of Departmental degree requirements; however, the candidate must be able to demonstrate a general knowledge of biological science as well as competence in specific areas of concentration.
- A graduate student participating in an advanced degree program of the Department of Biology must meet with the Graduate Advisory Committee at least once annually, and the student shall submit an annual report of progress toward the degree, signed by her/his Graduate Advisory Committee, to the Department Chair for review.
- A graduate degree in Biological Science indicates that the individual has achieved a professional level of competence in research as well as formal classwork. Consequently satisfactory progress in a research program must parallel the effort in coursework.
- A preliminary examination, administered by the Graduate Advisory Committee and consisting of both written and oral components, must be passed at least two semesters prior to the dissertation defense and graduation.
- A completed dissertation must be submitted to the Graduate Advisory Committee and approved following a successful oral defense (final examination).

Department of Chemistry



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Professor Matthew Shores, Chair

Undergraduate Majors

- Major in Chemistry
  - ACS Certified Concentration
  - Non-ACS Certified Concentration

Minor

- Minor in Chemistry

Graduate

Graduate Programs in Chemistry

Master of Science and Doctor of Philosophy degree programs are offered in Analytical, Chemical Biology, Chemistry Education, Inorganic, Materials, Organic, and Physical Chemistry. Students interested in graduate work should refer to the Graduate and Professional Bulletin or contact the Department of Chemistry (http://www.chem.colostate.edu).

Master's Programs

- Master of Science in Chemistry, Plan A*
- Master of Science in Chemistry, Plan B

Ph.D.

- Ph.D. in Chemistry*

* Please see department for program of study.

Courses

Subjects in the department include: Chemistry (CHEM) and Materials Science and Engineering (MSE).

Chemistry (CHEM)

CHEM 103 Chemistry in Context (GT-SC2) Credits: 3 (3-0-0)
Course Description: Chemistry, chemical principles from more conceptual, less mathematical perspective; how chemical substances, chemical reactions affect our daily lives.
Prerequisite: None.
Registration Information: For students who do not plan to take additional courses in chemistry. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

CHEM 104 Chemistry in Context Laboratory (GT-SC1) Credit: 1 (0-2-0)
Course Description: Laboratory applications of principles covered in CHEM 103.
Prerequisite: CHEM 103, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

CHEM 105 Problem Solving in General Chemistry Credits: 2 (1-0-1)
Course Description: Foundational problem-solving skills in general chemistry to support students for later success in general chemistry courses.
Prerequisite: MATH 118 or MATH 141 or MATH 155 or MATH 160 or MATH 161 or MATH 229 or MATH 261.
Registration Information: Placement out of MATH 118. This is a partial semester course. Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 107 Fundamentals of Chemistry (GT-SC2) Credits: 4 (4-0-0)
Course Description: Atomic/molecular theory, gases, liquids, solids, solutions, acid/base and oxidation/reduction reactions, kinetics, selected topics. Quantitative reasoning but with less focus on mathematical calculations than CHEM 111/CHEM 113.
Prerequisite: MATH 117 or MATH 141, may be taken concurrently or MATH 155, may be taken concurrently or MATH 160, may be taken concurrently or MATH 161, may be taken concurrently or MATH 229, may be taken concurrently or MATH 261, may be taken concurrently.
Registration Information: For students in science-related programs requiring one semester of general chemistry. Sections may be offered: Online. Credit allowed for only one of the following: CHEM 107, CHEM 111, or CHEM 117.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

CHEM 108 Fundamentals of Chemistry Laboratory (GT-SC1) Credit: 1 (0-2-0)
Course Description: Laboratory applications of principles presented in CHEM 107.
Prerequisite: CHEM 107, may be taken concurrently.
Registration Information: Credit not allowed for both CHEM 108 and CHEM 112.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

CHEM 111 General Chemistry I (GT-SC2) Credits: 4 (3-0-1)
Course Description: Fundamental aspects of chemistry and chemical principles; emphasis on structure, bonding, and stoichiometry.
Prerequisite: (MATH 118 or MATH 141 or MATH 155 or MATH 160 or MATH 161 or MATH 229 or MATH 261) and (CHEM 105).
Registration Information: CHEM 105 or an appropriate score in the chemistry preparation module. Must register for lecture and recitation. Intended for science majors. Students should complete the sequence CHEM 111, CHEM 112, CHEM 113, and CHEM 114. Credit allowed for only one of the following: CHEM 111, CHEM 107, or CHEM 117.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

CHEM 112 General Chemistry Lab I (GT-SC1) Credit: 1 (0-3-0)
Course Description: Laboratory applications of principles covered in CHEM 111.
Prerequisite: CHEM 111, may be taken concurrently or CHEM 117, may be taken concurrently.
Registration Information: Credit not allowed for both CHEM 112 and CHEM 108.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

CHEM 113 General Chemistry II Credits: 3 (3-0-0)
Course Description: Acid/base equilibria, kinetics, thermodynamics, solubility, oxidation-reduction reactions, electrochemistry, selected topics.
Prerequisite: (CHEM 107 or CHEM 111 or CHEM 117) and (MATH 124 or MATH 155, may be taken concurrently or MATH 160, may be taken concurrently or MATH 161, may be taken concurrently or MATH 229, may be taken concurrently or MATH 261, may be taken concurrently or MATH 141).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 114 General Chemistry Lab II Credit: 1 (0-3-0)
Course Description: Laboratory applications of principles covered in CHEM 113.
Prerequisite: (CHEM 108 or CHEM 112) and (CHEM 113, may be taken concurrently).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 115 General Chemistry II Recitation Credit: 1 (0-0-1)
Course Description: Problem solving applied to topics in, e.g., acid/base equilibria, kinetics, thermodynamics, solubility, oxidation-reduction reactions, electrochemistry.
Prerequisite: None.
Registration Information: Must have concurrent registration in CHEM 113.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 117 General Chemistry I for Chemistry Majors Credits: 3 (3-0-0)
Course Description: Fundamental aspects of chemistry and chemical principles, with an emphasis placed on atomic and molecular structure, bonding and stoichiometry.
Prerequisite: MATH 118 or MATH 141 or MATH 155 or MATH 160 or MATH 161 or MATH 229 or MATH 261.
Registration Information: Must have concurrent registration in CHEM 192. Credit allowed for only one of the following: CHEM 107, CHEM 111, or CHEM 117.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 120 Foundations of Modern Chemistry Credits: 4 (3-0-1)
Course Description: Fundamental aspects of chemistry and chemical principles, with an emphasis placed on modern atomic and molecular structure theory, structure and reactivity.
Prerequisite: MATH 118 or MATH 141 or MATH 155 or MATH 160 or MATH 161 or MATH 229 or MATH 261.
Registration Information: Chemistry majors only. Must register for lecture and recitation. Credit not allowed for CHEM 111 and CHEM 120.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 121 Foundations of Modern Chemistry Laboratory Credit: 1 (0-3-0)
Course Description: Laboratory applications of principles covered in CHEM 120.
Prerequisite: CHEM 120, may be taken concurrently.
Registration Information: Chemistry majors only. Credit not allowed for CHEM 112 and CHEM 121.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 192 Introductory Seminar in Chemistry Credit: 1 (0-0-1)
Course Description: Small-group discussions of aspects of chemistry.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 231 Foundations of Analytical Chemistry Credits: 3 (3-0-0)
Course Description: Fundamental chemical measurement science. Measuring chemical composition, either qualitative or quantitative, is essential to interact with the world and understand chemistry. Importance of equilibrium in making measurements.
Prerequisite: CHEM 111 and CHEM 112 or CHEM 120 and CHEM 121.
Registration Information: Chemistry majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 232 Foundations of Analytical Chemistry Lab Credits: 2 (0-6-0)
Course Description: Laboratory applications of principles of analytical chemistry.
Prerequisite: CHEM 114 or CHEM 231, may be taken concurrently.
Registration Information: Chemistry majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 241 Foundations of Organic Chemistry Credits: 4 (3-0-1)
Course Description: Nomenclature, structure, bonding, reactions, mechanisms, synthesis, and the stereochemistry of organic compounds.
Prerequisite: CHEM 111 and CHEM 113 or CHEM 120.
Registration Information: Chemistry majors only. Must register for lecture and recitation. Credit allowed for only one of the following: CHEM 241, CHEM 245, CHEM 341, or CHEM 345.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 242 Foundations of Organic Chemistry Laboratory Credit: 1 (0-3-0)
Course Description: Laboratory applications of organic chemistry principles.
Prerequisite: CHEM 241, may be taken concurrently.
Registration Information: Chemistry majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 245 Fundamentals of Organic Chemistry Credits: 4 (4-0-0)
Course Description: Nomenclature, structure, bonding, reactions, mechanisms, synthesis, stereochemistry of organic compounds.
Prerequisite: CHEM 107 or CHEM 113.
Registration Information: Intended for students in science-related programs requiring one semester of organic chemistry. Credit allowed for only one of the following: CHEM 245, CHEM 341, and CHEM 345. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 246 Fundamentals of Organic Chemistry Laboratory Credit: 1 (0-2-0)
Course Description: Laboratory applications of principles presented in CHEM 245.
Prerequisite: (CHEM 108 or CHEM 112 or CHEM 114) and (CHEM 245, may be taken concurrently).
Registration Information: Credit not allowed for students who have already taken CHEM 344.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 261 Fundamentals of Inorganic Chemistry Credits: 3 (3-0-0)
Course Description: Preparation, structures, properties, and reactions of chemical elements and inorganic compounds; periodic trends, organizing principles; applications.
Prerequisite: CHEM 113, may be taken concurrently.
Registration Information: Credit not allowed for both CHEM 261 and CHEM 263.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 263 Foundations of Inorganic Chemistry Credits: 4 (3-0-1)
Course Description: Preparation, structures, properties, and reactions of chemical elements and inorganic compounds; periodic trends, organizing principles; applications.
Prerequisite: CHEM 111 and CHEM 112 or CHEM 120 and CHEM 121.
Registration Information: Must have concurrent registration in CHEM 264. Must register for lecture and recitation. Chemistry majors only. Credit not allowed for both CHEM 261 and CHEM 263.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 264 Foundations of Inorganic Chemistry Laboratory Credit: 1 (0-3-0)
Course Description: Synthetic techniques and instrumental methods in inorganic chemistry.
Prerequisite: CHEM 111 and CHEM 112 or CHEM 120 and CHEM 121.
Registration Information: Must have concurrent registration in CHEM 263. Chemistry majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 301 Advanced Scientific Writing--Chemistry (GT-CO3) Credits: 3 (1-4-0)
Course Description: Advanced scientific writing using the read-analyze-write approach and scientific poster preparation and presentation.
Prerequisite: (CO 150) and (CHEM 334 or CHEM 345).
Registration Information: CHEM 334 or CHEM 345 or a 300-level science laboratory course with written approval of instructor; CO 150. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Advanced Writing 2, Advanced Writing (GT-CO3).

CHEM 311 Introduction to Nanoscale Science Credits: 3 (3-0-0)
Course Description: Synthesis, characterization, and applications of nanoscale materials.
Prerequisite: (CHEM 113) and (CHEM 346 or CHEM 343).
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 320 Chemistry of Addictions Credits: 3 (3-0-0)
Course Description: Chemical processes of addiction; receptor binding, molecular deactivation, and feedback in the context of protein-substrate molecular interactions.
Prerequisite: CHEM 103 or CHEM 107 or CHEM 111.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 334 Quantitative Analysis Laboratory Credit: 1 (0-3-0)
Course Description: Laboratory applications of principles presented in CHEM 335.
Prerequisite: CHEM 114 and CHEM 335, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 335 Introduction to Analytical Chemistry Credits: 3 (3-0-0)
Course Description: Modern and classical applications and methods in analytical chemistry including statistical, kinetic, spectroscopic, and chromatographic analysis.
Prerequisite: CHEM 113 with a minimum grade of C and CHEM 334, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 338 Environmental Chemistry Credits: 3 (3-0-0)
Course Description: Processes that control the fate of chemicals in the environment. Focus on the chemistry of the atmosphere, hydrosphere, and soils, especially as it pertains to pollution of these environmental compartments. Topics covered in the course may include smog and air pollution, ocean acidification, acid mine drainage, pesticide chemistry, and heavy metal contamination.
Prerequisite: (CHEM 113) and (CHEM 245 or CHEM 341 or CHEM 345).
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 341 Modern Organic Chemistry I Credits: 3 (3-0-0)
Course Description: Structures, nomenclature, dynamics, spectroscopy, and reactions of organic molecules.
Prerequisite: CHEM 113.
Registration Information: Credit allowed for only one of the following: CHEM 341, CHEM 245, and CHEM 345.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 343 Modern Organic Chemistry II Credits: 3 (3-0-0)
Course Description: Continued studies of reactions and mechanisms of organic molecules and biological chemistry.
Prerequisite: CHEM 245 or CHEM 341 or CHEM 345.
Registration Information: Credit not allowed for both CHEM 343 and CHEM 346.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 344 Modern Organic Chemistry Laboratory Credits: 2 (0-6-0)
Course Description: Laboratory applications of modern organic chemistry.
Prerequisite: CHEM 114 and CHEM 343, may be taken concurrently.
Registration Information: Intended for science majors. Credit not allowed for both CHEM 344 and CHEM 246.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 345 Organic Chemistry I Credits: 4 (3-3-0)
Course Description: Structure, nomenclature, dynamics, spectroscopy, reactions of organic molecules. Laboratory applications of principles presented in lecture.
Prerequisite: CHEM 113 and CHEM 114.
Registration Information: Chemistry majors only. Must register for lecture and laboratory. Students should plan to complete the sequence CHEM 345, CHEM 346. Credit allowed for only one of the following: CHEM 245, CHEM 341, and CHEM 345.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 346 Organic Chemistry II Credits: 4 (3-3-0)
Course Description: Continue studies of reactions and mechanisms of organic molecules. Laboratory applications of principles presented in lecture.
Prerequisite: CHEM 345.
Registration Information: Chemistry majors only. Must register for lecture and laboratory. Students should plan to complete the sequence CHEM 345 and CHEM 346. Credit not allowed for both CHEM 343 and CHEM 346.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 384 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: CHEM 100 to 499 - at least 20 credits.
Registration Information: Written consent of department chair. Maximum of 12 credits for any combination of CHEM 384, CHEM 487, CHEM 495, CHEM 498. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 431 Instrumental Analysis Credits: 4 (3-3-0)
Course Description: Instrumental methods of chemical analysis.
Prerequisite: (CHEM 334) and (CBE 310, may be taken concurrently or CHEM 473, may be taken concurrently or CHEM 474, may be taken concurrently).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 433 Clinical Chemistry Credits: 3 (2-3-0)
Course Description: Principles and methodology of clinical chemistry. Laboratory experience in methodology and method development.
Prerequisite: (CHEM 334) and (BC 351 or BC 401).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 440 Advanced Organic Chemistry Laboratory Credits: 2 (0-6-0)
Course Description: Advanced techniques in organic synthesis, mechanisms of reactions, structure determination.
Prerequisite: CHEM 344 or CHEM 346.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 445 Synthetic Organic Chemistry Credits: 3 (3-0-0)
Course Description: Functional group interconversions, carbonyl chemistry, alkene synthesis, pericyclic reactions, metal-mediated reactions, synthetic planning and retrosynthesis, stereocontrolled reactions.
Prerequisite: CHEM 241 or CHEM 343 or CHEM 346.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 461 Inorganic Chemistry Credits: 3 (3-0-0)
Course Description: Concepts, models to explain structural, spectroscopic, magnetic, thermodynamic, and kinetic properties of inorganic compounds; symmetry, group theory.
Prerequisite: (CHEM 261) and (CBE 310 or CHEM 474).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 462 Inorganic Chemistry Laboratory Credits: 2 (0-6-0)
Course Description: Synthetic techniques and instrumental methods in inorganic chemistry.
Prerequisite: CHEM 461, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 473 Foundations of Physical Chemistry Credits: 4 (4-0-0)
Course Description: Quantum chemistry; molecular structure and spectroscopy; equilibrium thermodynamics; kinetics.
Prerequisite: (CHEM 113) and (MATH 161 or MATH 255 or MATH 271) and (PH 122 or PH 142).
Registration Information: Credit allowed for only one of the following CHEM 371, CHEM 473, or CHEM 474.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 474 Physical Chemistry I Credits: 3 (3-0-0)
Course Description: Quantum chemistry; applications to bonding, molecular structure, and spectroscopy.
Prerequisite: (CHEM 113) and (MATH 261 or MATH 272) and (PH 142).
Registration Information: Credit allowed for only one of the following CHEM 371, CHEM 473, or CHEM 474.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 475 Physical Chemistry Laboratory I Credit: 1 (0-3-0)
Course Description: Physiochemical experiments; emphasis on quantum mechanics/spectroscopy; interpretation/presentation of data; formal lab reports.
Prerequisite: (CBE 310, may be taken concurrently or CHEM 473, may be taken concurrently or CHEM 474, may be taken concurrently) and (CHEM 334).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 476 Physical Chemistry II Credits: 3 (3-0-0)
Course Description: Statistical thermodynamics; applications to phase and chemical equilibria; kinetics.
Prerequisite: CHEM 474.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 477 Physical Chemistry Laboratory II Credit: 1 (0-3-0)
Course Description: Physiochemical experiments; emphasis on thermodynamics/statistical mechanics/kinetics; interpretation/presentation of data; formal lab reports.
Prerequisite: CHEM 475.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 487 Internship Credits: Var[1-12] (0-0-0)
Course Description: Supervised work experience in approved off-campus chemical laboratory setting. Consultation with faculty adviser/instructor.
Prerequisite: CHEM 476.
Registration Information: Maximum of 12 credits allowed for any combination of CHEM 384, CHEM 487, CHEM 495, and CHEM 498.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 493 Seminar Credits: 2 (0-0-2)
Course Description: Critical analysis of selected literature; develop presentation of technical topic; required oral presentation.
Prerequisite: CHEM 473 or CHEM 474.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description: Satisfactory completion of course requires a written report, an oral presentation at a research group meeting, or a poster presentation.
Prerequisite: CHEM 100 to 499 - at least 9 credits.
Registration Information: Written consent of laboratory mentor and department chair. Maximum of 12 credits for any combination of CHEM 384, CHEM 487, CHEM 495, and CHEM 498.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 498 Research Credits: Var[1-3] (0-0-0)
Course Description: Supervised laboratory research in chemistry; written report consistent with ACS guidelines required.
Prerequisite: CHEM 100 to 499 - at least 20 credits.
Registration Information: Written consent of research mentor and department chair. Maximum of 12 credits for any combination of CHEM 384, CHEM 487, CHEM 495, and CHEM 498.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 499 Senior Thesis Credits: 2 (0-0-2)
Course Description: Preparation of a written thesis and an oral defense, based upon undergraduate research performed or an internship experience, under the guidance of a thesis advisor and thesis committee.
Prerequisite: CHEM 487 or CHEM 498.
Registration Information: Senior standing. Written consent of department chair.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 511 Solid State Chemistry Credits: 3 (3-0-0)
Course Description: Physical and descriptive chemistry of solids including characterization and synthetic methods.
Prerequisite: CHEM 461 and CHEM 476.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 515 Polymer Chemistry Credits: 3 (3-0-0)
Course Description: Fundamentals of polymer chemistry: synthesis, characterization, physical properties.
Prerequisite: CHEM 346 and CHEM 476.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 517 Chemistry of Electronic Materials Credits: 3 (3-0-0)
Course Description: Chemical aspects of preparation and processing of materials in electronic devices, "molecular electronics," and nanostructured materials.
Prerequisite: CHEM 571A, may be taken concurrently or CHEM 571B, may be taken concurrently.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 521 Principles of Chemical Biology Credits: 3 (3-0-0)
Also Offered As: BC 521.
Course Description: Principles of chemical biology. Chemical methods for understanding and controlling the structure and function of biopolymers.
Prerequisite: CHEM 245 or CHEM 343 or CHEM 346.
Registration Information: Credit not allowed for both CHEM 521 and BC 521.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 522 Methods of Chemical Biology Credits: 2 (2-0-0)
Course Description: Approaches to quantitative chemical biology, visualization, study and characterization of macromolecules and macromolecular-dependent processes.
Prerequisite: BC 351 with a minimum grade of B or BC 401 with a minimum grade of B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 530A Advanced Topics in Chemical Analysis: Environmental Chemical Analysis Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 431, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 530B Advanced Topics in Chemical Analysis: Absorption and Emission Spectroscopy Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 431, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 530C Advanced Topics in Chemical Analysis: Bioanalytical Chemistry Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 431, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 530D Advanced Topics in Chemical Analysis: Statistical Analysis in Analytical Chemistry Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 431, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 530E Advanced Topics in Chemical Analysis: Mass Spectrometry Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 431, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 530F Advanced Topics in Chemical Analysis: Analysis of Materials Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 431, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 532 Advanced Chemical Analysis II Credits: 3 (3-0-0)
Course Description: Advanced optics; instrumentation and methodology for analytical spectroscopy; computer applications.
Prerequisite: CHEM 431.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 533 Chemical Separations Credits: 3 (3-0-0)
Course Description: Fundamentals and applications of chemical separations.
Prerequisite: CHEM 335 and CHEM 431.
Terms Offered: Fall, Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 537 Electrochemical Methods Credits: 3 (3-0-0)
Course Description: Theory and methods of electrochemistry; applications of modern electrochemical techniques.
Prerequisite: CHEM 431.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 539A Principles of NMR and MRI: Basic NMR Principles Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 474.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 539B Principles of NMR and MRI: NMR Diffusion Measurements-2D NMR and MRI Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 474.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 539C Principles of NMR and MRI: Advanced NMR and MRI Techniques Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 474.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 541 Organic Molecular Structure Determination Credits: 2 (2-0-0)
Course Description: Determination of organic molecular structure by spectroscopic methods.
Prerequisite: CHEM 440.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 543 Structure/Mechanisms in Organic Chemistry Credits: 2 (2-0-0)
Course Description: Structure including stereochemistry and conformational isomerism; reactivity and mechanisms in organic chemistry.
Prerequisite: CHEM 343 or CHEM 346.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 545 Synthetic Organic Chemistry I Credits: 3 (3-0-0)
Course Description: Reactions and synthesis in organic chemistry.
Prerequisite: CHEM 543.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 547 Physical Organic Chemistry Credits: 3 (3-0-0)
Course Description: Mechanisms, theory, kinetics, and thermodynamics.
Prerequisite: CHEM 543.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 548 Organometallics in Synthesis Credits: 2 (2-0-0)
Course Description: Fundamental aspects of organometallic chemistry applied to organic synthesis.
Prerequisite: CHEM 545.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 549 Synthetic Organic Chemistry II Credits: 2 (2-0-0)
Course Description: Strategies for the total synthesis of natural products.
Prerequisite: CHEM 545.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 550A Materials Chemistry: Hard Materials Credit: 1 (1-0-0)
Course Description: Structure and bonding; crystallography; properties; synthesis; characterization of metals, semiconductors, and network solids.
Prerequisite: (CHEM 343 or CHEM 346) and (CHEM 461 and CHEM 476).
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 550B Materials Chemistry: Soft Materials Credit: 1 (1-0-0)
Course Description: Structure and bonding, mechanisms, properties, applications, synthesis, characterization of polymers, complex fluids, and biomaterials.
Prerequisite: (CHEM 343 or CHEM 346) and (CHEM 461 and CHEM 476).
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 550C Materials Chemistry: Nanomaterials Credit: 1 (1-0-0)
Course Description: Structure and bonding, synthesis, properties, characterization of carbon nanotubes, metal and semiconductor nanocrystals, and nanocomposites.
Prerequisite: (CHEM 343 or CHEM 346) and (CHEM 461 and CHEM 476).
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 551 Catalytic Chemistry Credits: 3 (3-0-0)
Course Description: Fundamental aspects of catalytic chemistry applied to homogeneous and heterogeneous systems utilizing molecular catalysts as well as nano and supported catalytic materials.
Prerequisite: (CHEM 343 or CHEM 346) and (CHEM 461 and CHEM 476).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 555 Chemistry of Sustainability Credits: 3 (3-0-0)
Course Description: The central role of chemistry for achieving sustainability in key areas including chemicals and materials, energy, and environment.
Prerequisite: (BC 411 or CBE 310 or CHEM 476) and (CHEM 343 or CHEM 346).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 560 Foundations of Inorganic Synthesis Credit: 1 (1-0-0)
Course Description: Preparation for advanced studies in metal-mediated chemistry; essential aspects of inorganic structure, thermodynamics and reactivity
Prerequisite: CHEM 461.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 561 Inorganic Synthesis Credits: 2 (2-0-0)
Course Description: Chemistry of compounds of representative elements and transition metals.
Prerequisite: CHEM 560, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 563A Physical Methods in Inorganic Chemistry: Group Theory Credit: 1 (1-0-0)
Course Description: Modern experimental methods in inorganic chemistry.
Prerequisite: CHEM 461.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 563B Physical Methods in Inorganic Chemistry: Vibrational Spectroscopy Credit: 1 (1-0-0)
Course Description: Modern experimental methods in inorganic chemistry.
Prerequisite: CHEM 461.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 563C Physical Methods in Inorganic Chemistry: Electronic Structure and Magnetism Credit: 1 (1-0-0)
Course Description: Modern experimental methods in inorganic chemistry.
Prerequisite: CHEM 461.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 563D Physical Methods in Inorganic Chemistry: Magnetic Spectroscopies Credit: 1 (1-0-0)
Course Description: Modern experimental methods in inorganic chemistry.
Prerequisite: CHEM 461.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 563E Physical Methods in Inorganic Chemistry: Advanced Nuclear Magnetic Resonance Spectroscopy Credit: 1 (1-0-0)
Course Description: Modern experimental methods in inorganic chemistry.
Prerequisite: CHEM 461.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 563F Physical Methods in Inorganic Chemistry: Other Structural Methods Credit: 1 (1-0-0)
Course Description: Modern experimental methods in inorganic chemistry.
Prerequisite: CHEM 461.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 565 Inorganic Mechanisms Credits: 3 (3-0-0)
Course Description: Fundamental tools, key principles, selected classic case histories of inorganic and organometallic mechanistic chemistry, emphasizing kinetic methods.
Prerequisite: CHEM 476.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 566 Bioinorganic Chemistry Credits: 3 (3-0-0)
Course Description: Biological-inorganic chemistry, including key principles, prototype systems, classic papers, and problems.
Prerequisite: CHEM 461.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 567 Crystallographic Computation Credit: 1 (1-0-0)
Course Description: Theory and practice of structural computations using single crystal X-ray diffraction data.
Prerequisite: CHEM 474 with a minimum grade of C-.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 569 Chemical Crystallography Credits: 3 (3-0-0)
Course Description: Theory and practice of determination of crystal and molecular structure by single crystal X-ray and neutron diffraction.
Prerequisite: CHEM 474.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 570 Chemical Bonding Credits: 3 (3-0-0)
Course Description: Electronic structure methods; chemical bonding models; intermolecular interactions.
Prerequisite: CBE 310 or CHEM 474.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 571A Quantum Chemistry: Foundations Credits: 2 (2-0-0)
Course Description: Simple systems; symmetry; approximate methods; time dependent methods; molecular structures.
Prerequisite: CBE 310 or CHEM 474.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 571B Quantum Chemistry: Electronic Structure Credit: 1 (1-0-0)
Course Description: Simple systems; symmetry; approximate methods; time dependent methods; molecular structures.
Prerequisite: CHEM 571A, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 573A Chemical Spectroscopy: Interactions of Light and Matter Credit: 1 (1-0-0)
Course Description: Introduction to the fundamentals of spectroscopies used in chemical analysis from the perspective of time dependent quantum mechanics. Time-dependent perturbation theory, absorption and emission of radiation, two-level systems, and electronic, vibrational and rotational transitions.
Prerequisite: CHEM 571A.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 573B Chemical Spectroscopy: Electromagnetic Fields in Practice Credit: 1 (1-0-0)
Course Description: Foundation in electromagnetic fields used in chemical spectroscopy. Dispersion and phase, the measurement of electromagnetic fields, properties of short optical pulses, and modulating electromagnetic fields.
Prerequisite: CHEM 431.
Registration Information: This is a partial semester course.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 573C Chemical Spectroscopy: Condensed Phase Spectroscopy Credits: 2 (2-0-0)
Course Description: Foundations of spectroscopic measurements conducted on condensed phase chemical systems. Use of quantum mechanics and statistical mechanics to describe Response Theory, density matrix formalism, correlation functions, line shapes and spectral fluctuations, response functions, and the use of polarization in spectroscopy.
Prerequisite: CHEM 571A and CHEM 576.
Registration Information: This is a partial semester course.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 573D Chemical Spectroscopy: Nonlinear Spectroscopy Credit: 1 (1-0-0)
Course Description: Foundations of multidimensional spectroscopic measurements conducted on chemical systems.
Prerequisite: CHEM 573A and CHEM 573C.
Registration Information: This is a partial semester course.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 573E Chemical Spectroscopy: Spectroscopic Instrumentation Credit: 1 (1-0-0)
Course Description: Instrumentation used to carry out spectroscopic measurements in chemistry research. Lasers and other light sources, optics, and detectors, spectroscopic techniques, and electronic and digital interfacing specific to spectroscopic instrumentation.
Prerequisite: CHEM 431.
Registration Information: This is a partial semester course.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 573F Chemical Spectroscopy: Computational Spectroscopy Credit: 1 (1-0-0)
Course Description: Theory and computational techniques to compute and analyze molecular spectra, including aspects of quantum mechanics and statistical mechanics. Emphasis on implementation and computation of molecular spectra.
Prerequisite: CHEM 571A and CHEM 571B and CHEM 575 and CHEM 576.
Registration Information: This is a partial semester course.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 575 Fundamentals of Chemical Thermodynamics Credit: 1 (1-0-0)
Course Description: Fundamental thermodynamic concepts and some applications to chemical problems.
Prerequisite: CBE 310 or CHEM 476 or PH 361.
Registration Information: This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 576 Statistical Mechanics Credits: 2 (2-0-0)
Course Description: Principles of statistical mechanics with applications to chemical systems.
Prerequisite: CHEM 575, may be taken concurrently.
Registration Information: This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 577 Surface Chemistry Credits: 3 (3-0-0)
Course Description: Capillarity; interfacial thermodynamics, electrical aspects of surface chemistry, absorbed layers.
Prerequisite: CBE 310 or CHEM 476.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 578A Computational Chemistry: Electronic Structure Credit: 1 (1-0-0)
Course Description: Electronic structure calculations of energetic and structural properties of molecules and chemical reactions.
Prerequisite: CHEM 571A and CHEM 571B.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 578B Computational Chemistry: Molecular Dynamics Credit: 1 (1-0-0)
Course Description: Molecular Dynamics simulations of liquids to compute static and time dependent properties. Applications include biological and materials chemistry.
Prerequisite: CHEM 576.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 579 Chemical Kinetics Credits: 3 (3-0-0)
Course Description: Elementary reactions, unimolecular reactions, reactions in solution, gas phase ion chemistry, photochemistry, and kinetic modeling.
Prerequisite: CBE 310 or CHEM 476.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 601 Responsible Conduct in Chemistry Research Credit: 1 (1-0-0)
Course Description: Appropriate conduct in research, publishing, intellectual property decisions, job hunting, and negotiating; social responsibilities of scientists.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 641 Organic Reaction Mechanisms Credits: 2 (2-0-0)
Course Description: Organic reaction mechanisms, including using arrows to show electron movement; heterolytic, radical, and pericyclic reactions.
Prerequisite: CHEM 545.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 651A Special Topics in Chemistry: Analytical Chemistry Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 651B Special Topics in Chemistry: Inorganic Chemistry Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 651C Special Topics in Chemistry: Organic Chemistry Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 651D Special Topics in Chemistry: Physical Chemistry Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 651E Special Topics in Chemistry: Materials Chemistry Credits: Var[1-4] (0-0-0)
Course Description: Discussion of current topics in materials chemistry.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 651F Special Topics in Chemistry: Chemical Biology Credits: Var[1-4] (0-0-0)
Course Description: Discussion of current topics in chemical biology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 651G Special Topics in Chemistry: Chemistry Education Credits: Var[1-4] (0-0-0)
Course Description: Discussion of current topics in chemistry education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 695 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 698 Research Credits: Var[1-9] (0-0-0)
Course Description: Graduate research in chemistry for students who do not plan to write an M.S. thesis.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing in chemistry.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 699 Thesis Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 702 Independent Research Proposal Credit: 1 (0-0-1)
Course Description: Preparation, submission, and defense of an independent research proposal; creative and original thinking about research problems in modern chemistry.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Ph.D. candidacy.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 751 Methods of Chemistry Laboratory Instruction Credit: 1 (1-0-0)
Course Description: Basic materials, methods, and skill development related to teaching undergraduate chemistry laboratory courses.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

CHEM 752 Advanced Chemical Instruction Credit: 1 (0-0-1)
Course Description: Advanced materials, methods, and presentation skills development related to teaching undergraduate chemistry courses.
Prerequisite: CHEM 751.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 773 Atomic and Molecular Spectroscopy Credits: 3 (3-0-0)
Course Description: Time-dependent methods; multiphoton and nonlinear spectroscopy; fundamentals of rotational, vibrational, electronic and magnetic resonance spectroscopy.
Prerequisite: CHEM 571A or CHEM 571B.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 784 Supervised College Teaching Credits: Var[1-2] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 793 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 795A Independent Study: Inorganic Chemistry Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 795B Independent Study: Analytical Chemistry Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 795C Independent Study: Biological Chemistry Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 795D Independent Study: Physical Chemistry Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 799 Dissertation Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Materials Science and Engineering (MSE)

MSE 465 Sustainable Strategies for E-Waste Management Credits: 3 (3-0-0)
Also Offered As: GES 465.
Course Description: Trans-disciplinary overview of the electronics industry, with an emphasis on sources and impacts of e-waste on human & natural systems. Systems approaches to mitigating environmental and social impacts of electronics--from product design, materials and manufacture to use, re-use, recycle and disposal. Apply learnings in trans-disciplinary project teams to evaluate opportunities for improving the sustainability of the industry and its products.
Prerequisite: None.
Registration Information: Junior standing. Sections may be offered: Online. Credit allowed for only one of the following: GES 465, GES 481A1, MSE 465, or MSE 481A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MSE 501 Materials Technology Transfer Credit: 1 (1-0-0)
Course Description: The pathways toward commercialization of materials from research. Case studies, technology readiness levels, proposal writing, entrepreneurship, and intellectual property practices.
Prerequisite: MECH 331.
Registration Information: Senior standing.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MSE 502A Materials Science & Engineering Methods: Materials Structure and Scattering Credit: 1 (1-0-0)
Course Description: Introduction to the atomic level arrangements of materials, defects related to these structures, and X-ray Diffraction, X-ray scattering, and electron diffraction methods.
Prerequisite: MATH 345 and MECH 331.
Registration Information: Senior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MSE 502B Materials Science & Engineering Methods: Computational Materials Methods Credit: 1 (1-0-0)
Course Description: Introduction to mathematical and computational methods that are used to model materials: Simulation/Modeling, Monte-Carlo, Monte-Carlo Potts, Density Functional Theory, and other approaches.
Prerequisite: (MATH 340 or MATH 345) and (MECH 331).
Registration Information: Senior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MSE 502C Materials Science & Engineering Methods: Materials Microscopy Credit: 1 (1-0-0)
Course Description: Introduction to modern microscopy techniques for materials research using optical microscopy. Interferometry and confocal techniques, scanning electron, microscopy transmission electron microscopy, and scanning probe microscopy.
Prerequisite: (CHEM 431 or MECH 331) and (MATH 340 or MATH 345).
Registration Information: Senior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MSE 502D Materials Science & Engineering Methods: Materials Spectroscopy Credit: 1 (1-0-0)
Course Description: The investigation and measurement of spectra produced when matter interacts with or emits electromagnetic radiation, including an introduction to X-ray photoelectron spectroscopy, electron energy loss spectroscopy, Raman and infrared, and energy dispersive spectroscopy for materials research.
Prerequisite: (MATH 340 or MATH 345) and (MECH 331).
Registration Information: Senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MSE 502E Materials Science & Engineering Methods: Bulk Properties and Performance Credit: 1 (1-0-0)
Course Description: Physical properties of materials and how they relate to the functionalization of materials, including their use in electronic, magnetic, optical, and other functional devices.
Prerequisite: (MATH 340 or MATH 345) and (MECH 331).
Registration Information: Senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MSE 502F Materials Science & Engineering Methods: Experimental Methods for Materials Research Credit: 1 (1-0-0)
Course Description: Modern experimental design methods and techniques for materials research. Topics include vacuum systems, cryogenic experimentation, temperature characterization, data acquisition and digitization, device and circuitry design in the context of materials research.
Prerequisite: (MATH 340 or MATH 345) and (MECH 331).
Registration Information: Senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MSE 503 Mechanical Behaviors of Materials Credits: 3 (3-0-0)
Course Description: The mechanical behavior of metals, polymeric, ceramic, and composite materials in mechanical designs from a structure to processing to properties perspective. Practical and specific performance analyses of structural materials are examined.
Prerequisite: (MSE 501 or MSE 502A or MECH 331) and (MATH 340 or MATH 345).
Registration Information: Senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MSE 504 Thermodynamics of Materials Credits: 3 (3-0-0)
Course Description: The determination of whether and the means by which a given reaction can occur. Macroscopic and microscopic solid-state thermodynamics with experimental methodologies for characterizing them, with a focus on thermodynamic and statistical mechanical aspects of material structure-property relationships.
Prerequisite: (CBE 210 or CHEM 476 or MECH 331 or PH 361) and (MATH 340 or MATH 345).
Registration Information: Senior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MSE 505 Kinetics of Materials Credits: 3 (3-0-0)
Course Description: The determination of whether and the means by which a given reaction can occur. Macroscopic and microscopic solid-state kinetics with experimental methodologies for characterizing them, with a focus on the kinetic aspects of material structure-property relationships.
Prerequisite: MSE 504.
Registration Information: Senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MSE 631 Defects in Crystals Credits: 3 (3-0-0)
Also Offered As: MECH 631.
Course Description: Mechanics, thermodynamics and kinetics of defects in crystalline solids including point defects, dislocations, and grain boundaries.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online. Credit allowed for only one of the following: MECH 631, MSE 631, or MECH 681A2.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MSE 651 Special Topics in Materials Science Credits: 3 (0-0-3)
Course Description: New or emerging topics in materials science and engineering.
Prerequisite: MECH 331.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

MSE 695 Independent Study Credits: Var[1-5] (0-0-0)
Course Description: Independent study of special topics in materials science and engineering.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MSE 699 Thesis Credits: Var[1-6] (0-0-0)
Course Description: Thesis in materials science and engineering.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MSE 784 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description: Supervised college teaching in materials science and engineering.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MSE 793 Professional Development Seminar Credit: 1 (1-0-0)
Course Description: Professional skills for careers in materials science and providing opportunities for students to see materials innovation and discovery up-close.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Required field trips. Restricted to students in MSE graduate programs or by consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MSE 795 Independent Study Credits: Var[1-5] (0-0-0)
Course Description: Advanced independent study of special topics in materials science and engineering.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MSE 799 Dissertation Credits: Var[1-12] (0-0-0)
Course Description: Dissertation in materials science and engineering.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Chemistry

Chemists study the atomic and molecular structure of physical matter and analyze how it changes. More specifically, they investigate how basic atomic and molecular components are combined and can be manipulated to produce useful or improved products. They also develop methods to measure atomic and molecular properties and their interactions, enabling insight into a range of processes from mining to clinical diagnostics. Chemistry majors develop a solid foundation in general chemistry and mathematics followed by course work in organic chemistry, analytical chemistry, physical chemistry, inorganic chemistry, biochemistry, and physics. The curriculum is rounded out by courses in the liberal and communications arts.

Chemistry majors are encouraged to participate in undergraduate research. Ample opportunities exist for undergraduate students to become involved in ground-breaking research in the laboratories of individual faculty members. Students have access to state-of-the-art equipment in faculty laboratories and the Central Instrument Facility including NMR, FTIR, UV/Vis, fluorescence, and mass spectrometers, vacuum lines, x-ray diffractometers and many more. Undergraduate research is strongly encouraged for any student considering a career in chemistry and many students complete supervised research for academic credit.

Learning Outcomes

Chemistry students will:

- Organize, critically evaluate, and present chemical information coherently through oral and written discourse
- Upon obtaining a Bachelor of Science degree in chemistry, demonstrate contemporary skills and knowledge necessary for entry-

level positions in chemical industry and allied fields, or for admission to a graduate or professional school
- Demonstrate original research skills, namely the ability to plan investigations allowing them to resolve research questions, conduct such theoretical and/or laboratory experimentation, solve problems arising in such situations and interpret and communicate results

Potential Occupations

Chemists are employed in a vast array of professional fields in private industry, government, and education. Chemists work in research and development, analysis and testing, consulting, industrial quality control and assurance, environmental resource management, and forensics. Principal employers are petrochemical firms, biotechnology firms, consumer chemical firms, environmental testing laboratories, pharmaceutical companies, agricultural companies, governmental regulatory agencies, governmental and educational research laboratories, and manufacturing firms. Many chemists are also engaged in startup companies. Chemistry is also an excellent major for those preparing for careers in veterinary medicine and the health professions. Students whose career goals involve teaching at the secondary school level have the opportunity to complete the teacher licensure program through the School of Education (http://soe.chhs.colostate.edu).

Many possible occupations for chemists include, but are not limited to: agricultural chemist, air and water quality analyst, biochemical technician, chemical sales and marketing representative, clinical chemist, consultant, educator, forensic analyst, laboratory technician/bench chemist, materials analyst, patent examiner, pharmaceutical chemist, polymer technician, technical writer, and toxicologist.

Concentrations

- ACS Certified Concentration
- Non-ACS Certified Concentration

Major in Chemistry, ACS Certified Concentration

Students who wish to work as professional chemists should select the ACS Certified Concentration to obtain professional certification by the American Chemical Society. The ACS-approved curriculum of this concentration offers an extensive and rigorous chemistry education that gives students intellectual, experimental, and communication skills to become effective chemistry professionals.

Requirements Effective Fall 2018

Chemistry majors must achieve a minimum grade of C in all the listed courses required for the major in chemistry.

Freshman

		AUCC	Credits
Select one course from the following:			3-4
CHEM 111	General Chemistry I (GT-SC2)	3A	
CHEM 117	General Chemistry I for Chemistry Majors		
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CHEM 192	Introductory Seminar in Chemistry		1
CHEM 261	Fundamentals of Inorganic Chemistry		3
CO 150	College Composition (GT-CO2)	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
STAT 301 or 315	Introduction to Statistical Methods Statistics for Engineers and Scientists		3
Arts and Humanities		3B	3
	Total Credits		30-31

Sophomore

CHEM 334	Quantitative Analysis Laboratory		1
CHEM 335	Introduction to Analytical Chemistry	4A	3
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	5
Select one group from the following:			8
Group A:			
CHEM 341	Modern Organic Chemistry I		
CHEM 343	Modern Organic Chemistry II		
CHEM 344	Modern Organic Chemistry Laboratory		
Group B:			
CHEM 345	Organic Chemistry I		

CHEM 346	Organic Chemistry II		
Select one group from the following:			8
Group A:			
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	
MATH 261	Calculus for Physical Scientists III		
Group B (strongly recommended for all Chemistry majors):			
MATH 271	Applied Mathematics for Chemists I		
MATH 272	Applied Mathematics for Chemists II		
Biological and Physical Sciences[1]			4
	Total Credits		29

Junior

BC 351 or 401	Principles of Biochemistry Comprehensive Biochemistry I		3-4
CHEM 440	Advanced Organic Chemistry Laboratory	4B	2
Select one group from the following:			8
Group A:			
CHEM 474	Physical Chemistry I		
CHEM 475	Physical Chemistry Laboratory I		
CHEM 476	Physical Chemistry II	4B	
CHEM 477	Physical Chemistry Laboratory II		
Group B:			
CHEM 473	Foundations of Physical Chemistry	4B	
CHEM 475	Physical Chemistry Laboratory I		
Select one course from the following:			
BC 403	Comprehensive Biochemistry II		
BC 463	Molecular Genetics		
BC 465	Molecular Regulation of Cell Function		
Advanced Writing		2	3
Arts and Humanities		3B	3
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
Electives			3
	Total Credits		28-29

Senior

CHEM 431	Instrumental Analysis		4
CHEM 461	Inorganic Chemistry		3
CHEM 462	Inorganic Chemistry Laboratory		2
Select one course from the following:			2
CHEM 493	Seminar	4C	
CHEM 499[2]	Senior Thesis	4C	
Advanced Science Electives (see list below)[3]			6-7
Global and Cultural Awareness		3E	3
Electives[4]			11-12
	Total Credits		31-33
	Program Total Credits:		120

Advanced Science Electives List

Code	Title	Credits
College of Natural Sciences		
AA 3XX or AA 4XX		
BC 3XX or BC 4XX		
BZ 3XX or BZ 4XX		
CHEM 3XX or CHEM 4XX		
CS 3XX or CS 4XX		

CT 3XX or CT 4XX		
LIFE 3XX or LIFE 4XX		
MATH 3XX or MATH 4XX		
NSCI 3XX or NSCI 4XX		
PH 3XX or PH 4XX		
PSY 3XX or PSY 4XX		
STAT 3XX or STAT 4XX		
College of Veterinary Medicine and Biomedical Sciences		
BMS 300	Principles of Human Physiology	4
BMS 301	Human Gross Anatomy	5
BMS 302	Laboratory in Principles of Physiology	2
BMS 310	Anatomy for the Health Professions	4
BMS 325	Cellular Neurobiology	3
BMS 330	Microscopic Anatomy	4
BMS 345	Functional Neuroanatomy	4
BMS 360	Fundamentals of Physiology	4
BMS 405	Nerve and Muscle-Toxins, Trauma and Disease	3
BMS 420	Cardiopulmonary Physiology	3
BMS 425	Introduction to Systems Neurobiology	3
BMS 450	Pharmacology	3
ERHS 320	Environmental Health--Water Quality	3
ERHS 332	Principles of Epidemiology	3
ERHS 410	Environmental Health-Air and Waste Management	3
ERHS 446	Environmental Toxicology	3
ERHS 450	Introduction to Radiation Biology	3
MIP 300	General Microbiology	3
MIP 302	General Microbiology Laboratory	2
MIP 334	Food Microbiology	3
MIP 335	Food Microbiology Laboratory	2
MIP 342	Immunology	4
MIP 343	Immunology Laboratory	2
College of Engineering		
ATS 350	Introduction to Weather and Climate	2
ATS 351	Introduction to Weather and Climate Lab	1
BIOM 306/BTEC 306	Bioprocess Engineering	4
BIOM 421	Transport Phenomena in Biomedical Engineering	3
BIOM 422	Kinetics of Biomolecular and Cellular Systems	3
BIOM 441	Biomechanics and Biomaterials	3
CBE 310	Molecular Concepts and Applications	3
CBE 320	Chemical and Biological Reactor Design	3
CBE 330	Process Simulation	3
CBE 331	Momentum Transfer and Mechanical Separations	3
CBE 332	Heat and Mass Transfer Fundamentals	3
CBE 439/CIVE 439	Environmental Engineering Chemical Concepts	3
CBE 442	Separation Processes	4
CIVE 300	Fluid Mechanics	3
CIVE 322	Basic Hydrology	3
ECE 341	Electromagnetic Fields and Devices I	3
ECE 342	Electromagnetic Fields and Devices II	3
ECE 404	Experiments in Optical Electronics	2
ECE 441	Optical Electronics	3
ECE 442	Numerical Algorithms for VLSI Modeling	4
ECE 457	Fourier Optics	3
ECE 471A	Semiconductor Physics	1
ECE 471B	Semiconductor Junctions	1
MECH 337	Thermodynamics	4
MECH 342	Mechanics and Thermodynamics of Flow Processes	3
MECH 344	Heat and Mass Transfer	3
Warner College of Natural Resources		
ESS 311	Ecosystem Ecology	3
ESS 411	Earth Systems Ecology	3
FW 300	Biology and Diversity of Fishes	2
FW 301	Ichthyology Laboratory	1
FW 400	Conservation of Fish in Aquatic Ecosystems	3
FW 405	Fish Physiology	3
FW 455	Principles of Conservation Biology	3
FW 467	Wildlife Disease Ecology	3
NR 300	Biological Diversity	3
NR 353/BZ 353	Global Change Ecology, Impacts and Mitigation	3
NR 367	Concepts in Vertebrate Nutrition	3
NR 370	Coastal Environmental Ecology	3
College of Agriculture		
ANEQ 300B/ BSPM 300	Topics in Animal Sciences: Livestock Entomology	1
ANEQ 305	Functional Large Animal Physiology	3
ANEQ 310	Animal Reproduction	3
ANEQ 320	Principles of Animal Nutrition	4
BSPM 302	Applied and General Entomology	2
BSPM 303A	Entomology Laboratory: General	2
BSPM 350		2
BSPM 361	Elements of Plant Pathology	3
BSPM 450	Molecular Plant-Microbe Interaction	3
HORT 401	Medicinal and Value-Added Uses of Plants	3
HORT 476	Environmental Plant Stress Physiology	3
SOCR 322	Principles of Microclimatology	3
SOCR 330	Principles of Genetics	3
SOCR 331	Genetics Laboratory	1
SOCR 341	Microbiology for Sustainable Agriculture	1
SOCR 455	Soil Microbiology	3
SOCR 467	Soil and Environmental Chemistry	3
SOCR 470	Soil Physics	3
College of Health and Human Sciences		
FTEC 350	Fermentation Microbiology	2
FTEC 360	Brewing Processes	3
FTEC 400	Food Safety	3
FTEC 447	Food Chemistry	2
FTEC 572	Food Biotechnology	2

HES 303	Biomechanics and Neurophysiology	3
HES 307	Biomechanical Principles of Human Movement	4
HES 319	Neuromuscular Aspects of Human Movement	4
HES 403	Physiology of Exercise	4
HES 420	Electrocardiography and Exercise Management	3

[1] Select from the list of courses in category 3A of the All-University Core Curriculum (AUCC) with BZ or LIFE subject codes. Must include a laboratory.

[2] CHEM 499 Senior Thesis by department approval. Students fulfilling the AUCC 4C requirement with CHEM 499 must write a thesis and present it to the department.

[3] Select additional Advanced Science Electives courses (upper-division, 300- to 400-level) to total at least 10 credits when combined with the choice of BC 351 or BC 401 in the junior year.

[4] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

TO PREPARE FOR FIRST SEMESTER: The curriculum for the Chemistry major - ACS Certified concentration assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester. CHEM 111 requires Algebra II as a prerequisite (this prerequisite is met by having Algebra II by test credit, transfer credit, or placement out of MATH 117 and MATH 118 on Math Placement Exam). Earned grades of C or better are required in all listed courses for the major in chemistry.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:		X			3-4
CHEM 111	General Chemistry I (GT-SC2)	X		3A	
CHEM 117	General Chemistry I for Chemistry Majors	X			
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
CHEM 192	Introductory Seminar in Chemistry		X		1
CO 150	College Composition (GT-CO2)		X	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	4
Arts and Humanities					3
	Total Credits				15-16

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II	X			3
CHEM 114	General Chemistry Lab II	X			1
CHEM 261	Fundamentals of Inorganic Chemistry		X		3
PH 141	Physics for Scientists and Engineers I (GT-SC1)		X	3A	5
Select one course from the following:			X		3
STAT 301	Introduction to Statistical Methods		X		
STAT 315	Statistics for Engineers and Scientists		X		
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 334	Quantitative Analysis Laboratory		X		1
CHEM 335	Introduction to Analytical Chemistry		X	4A	3
Select one course from the following:		X			3-4
CHEM 341 (Group A)	Modern Organic Chemistry I				
CHEM 345 (Group B)	Organic Chemistry I				
Select one course from the following:		X			4
MATH 161 (Group A)	Calculus for Physical Scientists II (GT-MA1)	X		1B	
MATH 271 (Group B)	Applied Mathematics for Chemists I	X			

Biological and Physical Sciences			X		4
	Total Credits				15-16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
PH 142	Physics for Scientists and Engineers II (GT-SC1)		X	3A	5
Select one from the following:		X			4-5
CHEM 343 & CHEM 344 (Group A)	Modern Organic Chemistry II	X			
CHEM 346 (Group B)	Organic Chemistry II	X			
Select one course from the following:		X			4
MATH 261 (Group A)	Calculus for Physical Scientists III	X			
MATH 272 (Group B)	Applied Mathematics for Chemists II	X			
	Total Credits				13-14
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 351 or 401	Principles of Biochemistry Comprehensive Biochemistry I				3-4
CHEM 440	Advanced Organic Chemistry Laboratory		X	4B	2
Select one group from the following					0-4
Group A (4 credits):					
CHEM 474	Physical Chemistry I	X			
CHEM 475	Physical Chemistry Laboratory I	X			
Group B (0-3 credits):					
BC 463 (If not taking BC 403 or BC 465 Semester 6)	Molecular Genetics				
Arts and Humanities				3B	3
Social and Behavioral Sciences				3C	3
	Total Credits				11-16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one group from the following:					4-8
Group A (4 credits):					
CHEM 476	Physical Chemistry II		X	4B	
CHEM 477	Physical Chemistry Laboratory II				
Group B (5-8 credits):					
CHEM 473	Foundations of Physical Chemistry		X	4B	
CHEM 475	Physical Chemistry Laboratory I				
BC 403 or 465 (If BC 463 not taken Semester 5)	Comprehensive Biochemistry II Molecular Regulation of Cell Function				
Advanced Writing			X	2	3
Historical Perspectives				3D	3
Elective					3
CHEM 261, CHEM 334, CHEM 335, PH 142 must be completed by the end of Semester 6.		X			
	Total Credits				13-17
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 431	Instrumental Analysis	X			4

Select one course from the following:			X		2
CHEM 493	Seminar		X	4C	
CHEM 499	Senior Thesis		X	4C	
Global and Cultural Awareness				3E	3
Electives					6
CHEM 440, CHEM 474 must be completed by the end of Semester 7.		X			
	Total Credits				15

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 461	Inorganic Chemistry	X			3
CHEM 462	Inorganic Chemistry Laboratory	X			2
Advanced Science Electives (See list on Concentration Requirements page)		X			6-7
Electives		X			5-6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				16-18
	Program Total Credits:				120

Major in Chemistry, Non-ACS Certified Concentration

Students may also opt to complete the non-ACS Certified Concentration. This concentration provides a more flexible yet comprehensive chemistry curriculum, and may be attractive to students pursuing professions for which chemistry is not the major focus.

Requirements Effective Fall 2018

Chemistry majors must achieve a minimum grade of C in all the listed courses required for the major in chemistry.

Freshman

		AUCC	**Credits**
Select one course from the following:			3-4
CHEM 111	General Chemistry I (GT-SC2)	3A	
CHEM 117	General Chemistry I for Chemistry Majors		
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CHEM 192	Introductory Seminar in Chemistry		1
CHEM 261	Fundamentals of Inorganic Chemistry		3
CO 150	College Composition (GT-CO2)	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
STAT 301	Introduction to Statistical Methods		3
Arts and Humanities		3B	3
	Total Credits		30-31

Sophomore

CHEM 334	Quantitative Analysis Laboratory		1
CHEM 335	Introduction to Analytical Chemistry	4A	3
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	5
Select one group from the following:			8
Group A:			
CHEM 341	Modern Organic Chemistry I		
CHEM 343	Modern Organic Chemistry II		
CHEM 344	Modern Organic Chemistry Laboratory		
Group B:			

CHEM 345	Organic Chemistry I		
CHEM 346	Organic Chemistry II		
Select one group from the following:			8
Group A:			
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	
MATH 261	Calculus for Physical Scientists III		
Group B (strongly recommended for all chemistry majors):			
MATH 271	Applied Mathematics for Chemists I		
MATH 272	Applied Mathematics for Chemists II		
Biological and Physical Sciences[1]		3A	4
	Total Credits		29

Junior

Select one course from the following:			2
CHEM 440	Advanced Organic Chemistry Laboratory		
CHEM 462	Inorganic Chemistry Laboratory		
Select one group from the following:			7-9
Group A:			
CHEM 474	Physical Chemistry I		
CHEM 475	Physical Chemistry Laboratory I		
CHEM 476	Physical Chemistry II	4B	
Group B:			
BC 351 or 401	Principles of Biochemistry Comprehensive Biochemistry I		
CHEM 473	Foundations of Physical Chemistry	4B	
CHEM 475	Physical Chemistry Laboratory I		
Advanced Science Electives[2]			3
Mathematics-Based Requirement[3]			3
Advanced Writing		2	3
Arts and Humanities		3B	3
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
Electives			3
	Total Credits		30-32

Senior

Select one course from the following:			2
CHEM 493	Seminar	4C	
CHEM 499[4]	Senior Thesis	4C	
Advanced Science Electives[2]			6-8
Global and Cultural Awareness		3E	3
Electives[5]			16-17
	Total Credits		27-30
	Program Total Credits:		120

Advanced Science Electives List

Code	Title	Credits
College of Natural Sciences		
AA 3XX or 4XX		
BC 3XX or BC 4XX		
BZ 3XX or 4XX		
CHEM 3XX or CHEM 4XX		
CS 3XX or CS 4XX		
CT 3XX or 4XX		
LIFE 3XX or LIFE 4XX		
MATH 3XX or MATH 4XX		
NSCI 3XX or 4XX		
PH 3XX or 4XX		
PSY 3XX or PSY 4XX		

STAT 3XX or STAT 4XX		
College of Veterinary Medicine and Biomedical Sciences		
BMS 300	Principles of Human Physiology	4
BMS 301	Human Gross Anatomy	5
BMS 302	Laboratory in Principles of Physiology	2
BMS 310	Anatomy for the Health Professions	4
BMS 325	Cellular Neurobiology	3
BMS 330	Microscopic Anatomy	4
BMS 345	Functional Neuroanatomy	4
BMS 360	Fundamentals of Physiology	4
BMS 405	Nerve and Muscle-Toxins, Trauma and Disease	3
BMS 420	Cardiopulmonary Physiology	3
BMS 425	Introduction to Systems Neurobiology	3
BMS 450	Pharmacology	3
ERHS 320	Environmental Health--Water Quality	3
ERHS 332	Principles of Epidemiology	3
ERHS 410	Environmental Health-Air and Waste Management	3
ERHS 446	Environmental Toxicology	3
ERHS 450	Introduction to Radiation Biology	3
MIP 300	General Microbiology	3
MIP 302	General Microbiology Laboratory	2
MIP 334	Food Microbiology	3
MIP 335	Food Microbiology Laboratory	2
MIP 342	Immunology	4
MIP 343	Immunology Laboratory	2
College of Engineering		
ATS 350	Introduction to Weather and Climate	2
ATS 351	Introduction to Weather and Climate Lab	1
BIOM 306/BTEC 306	Bioprocess Engineering	4
BIOM 421	Transport Phenomena in Biomedical Engineering	3
BIOM 422	Kinetics of Biomolecular and Cellular Systems	3
BIOM 441	Biomechanics and Biomaterials	3
CBE 310	Molecular Concepts and Applications	3
CBE 320	Chemical and Biological Reactor Design	3
CBE 330	Process Simulation	3
CBE 331	Momentum Transfer and Mechanical Separations	3
CBE 332	Heat and Mass Transfer Fundamentals	3
CBE 439/CIVE 439	Environmental Engineering Chemical Concepts	3
CBE 442	Separation Processes	4
CIVE 300	Fluid Mechanics	3
CIVE 322	Basic Hydrology	3
ECE 341	Electromagnetic Fields and Devices I	3
ECE 342	Electromagnetic Fields and Devices II	3
ECE 404	Experiments in Optical Electronics	2
ECE 441	Optical Electronics	3
ECE 442	Numerical Algorithms for VLSI Modeling	4
ECE 457	Fourier Optics	3
ECE 471A	Semiconductor Physics	1
ECE 471B	Semiconductor Junctions	1
MECH 337	Thermodynamics	4
MECH 342	Mechanics and Thermodynamics of Flow Processes	3
MECH 344	Heat and Mass Transfer	3
Warner College of Natural Resources		
ESS 311	Ecosystem Ecology	3
ESS 411	Earth Systems Ecology	3
FW 300	Biology and Diversity of Fishes	2
FW 301	Ichthyology Laboratory	1
FW 400	Conservation of Fish in Aquatic Ecosystems	3
FW 405	Fish Physiology	3
FW 455	Principles of Conservation Biology	3
FW 467	Wildlife Disease Ecology	3
NR 300	Biological Diversity	3
NR 353/BZ 353	Global Change Ecology, Impacts and Mitigation	3
NR 367	Concepts in Vertebrate Nutrition	3
NR 370	Coastal Environmental Ecology	3
College of Agriculture		
ANEQ 300B/ BSPM 300	Topics in Animal Sciences: Livestock Entomology	1
ANEQ 305	Functional Large Animal Physiology	3
ANEQ 310	Animal Reproduction	3
ANEQ 320	Principles of Animal Nutrition	4
BSPM 302	Applied and General Entomology	2
BSPM 303A	Entomology Laboratory: General	2
BSPM 350		2
BSPM 361	Elements of Plant Pathology	3
BSPM 450	Molecular Plant-Microbe Interaction	3
HORT 401	Medicinal and Value-Added Uses of Plants	3
HORT 476	Environmental Plant Stress Physiology	3
SOCR 322	Principles of Microclimatology	3
SOCR 330	Principles of Genetics	3
SOCR 331	Genetics Laboratory	1
SOCR 341	Microbiology for Sustainable Agriculture	1
SOCR 455	Soil Microbiology	3
SOCR 467	Soil and Environmental Chemistry	3
SOCR 470	Soil Physics	3
College of Health and Human Sciences		
FTEC 350	Fermentation Microbiology	2
FTEC 360	Brewing Processes	3
FTEC 400	Food Safety	3
FTEC 447	Food Chemistry	2
FTEC 572	Food Biotechnology	2
HES 303	Biomechanics and Neurophysiology	3
HES 307	Biomechanical Principles of Human Movement	4
HES 319	Neuromuscular Aspects of Human Movement	4
HES 403	Physiology of Exercise	4

HES 420	Electrocardiography and Exercise Management	3

1 Select from the list of courses in category 3A of the All-University Core Curriculum (AUCC) with BZ or LIFE subject codes. Must include a lab.

2 Select additional advanced science courses (upper-division, 300- to 400-level) to total at least 18 credits when combined with Group A or Group B in the Junior year.

3 Additional mathematics: 300-level MATH, CS, or STAT course.

4 CHEM 499 Senior Thesis by department approval. Students fulfilling the AUCC 4C requirement with CHEM 499 must write a thesis and present it to the department.

5 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

TO PREPARE FOR FIRST SEMESTER: The curriculum for the Chemistry major - Non-ACS Certified concentration assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester. CHEM 111 requires Algebra II as a prerequisite (this prerequisite is met by having Algebra II by test credit, transfer credit, or placement out of MATH 117 and MATH 118 on Math Placement Exam). Earned grades of C or better are required in all listed courses for the major in chemistry.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:		X			3-4
CHEM 111	General Chemistry I (GT-SC2)	X		3A	
CHEM 117	General Chemistry I for Chemistry Majors	X			
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
CHEM 192	Introductory Seminar in Chemistry		X		1
CO 150	College Composition (GT-CO2)			1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	4
Arts and Humanities				3B	3
	Total Credits				15-16

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II	X			3
CHEM 114	General Chemistry Lab II	X			1
CHEM 261	Fundamentals of Inorganic Chemistry		X		3
PH 141	Physics for Scientists and Engineers I (GT-SC1)		X	3A	5
STAT 301	Introduction to Statistical Methods		X		3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 334	Quantitative Analysis Laboratory	X			1
CHEM 335	Introduction to Analytical Chemistry	X		4A	3
Select one course from the following:		X			3-4
CHEM 341 (Group A)	Modern Organic Chemistry I	X			
CHEM 345 (Group B)	Organic Chemistry I	X			
Select one course from the following:		X			4
MATH 161 (Group A)	Calculus for Physical Scientists II (GT-MA1)	X		1B	
MATH 271 (Group B)	Applied Mathematics for Chemists I	X			
Biological and Physical Sciences				3A	4
	Total Credits				15-16

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
PH 142	Physics for Scientists and Engineers II (GT-SC1)	X		3A	5
Select one option from the following:					4-5

CHEM 343 & CHEM 344 (Group A)	Modern Organic Chemistry II	X			
CHEM 346 (Group B)	Organic Chemistry II	X			
Select one course from the following:					4
MATH 261 (Group A)	Calculus for Physical Scientists III	X			
MATH 272 (Group B)	Applied Mathematics for Chemists II	X			
	Total Credits				13-14

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 440 (If not taking CHEM 462 in Semester 6)	Advanced Organic Chemistry Laboratory				0-2
Select one group from the following:			X		3-4
Group A (4 credits):					
CHEM 474	Physical Chemistry I	X			
CHEM 475	Physical Chemistry Laboratory I	X			
Group B (3-4 credits):					
BC 351 or 401	Principles of Biochemistry Comprehensive Biochemistry I				
Arts and Humanities				3B	3
Social and Behavioral Sciences				3C	3
Mathematics-Based Requirement					3
	Total Credits				12-15

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 462 (If CHEM 440 not taken in Semester 5)	Inorganic Chemistry Laboratory				0-2
Select one group from the following (Choose same group as Semester 5):					3-5
Group A (3 credits):			X		
CHEM 476	Physical Chemistry II		X	4B	
Group B (5 credits):					
CHEM 473	Foundations of Physical Chemistry			4B	
CHEM 475	Physical Chemistry Laboratory I				
Advanced Science Electives (See list on Concentration Requirements tab)					3
Advanced Writing				2	3
Historical Perspectives				3D	3
Electives					3
CHEM 261 must be completed by the end of Semester 6.		X			
	Total Credits				15-19

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					2
CHEM 493	Seminar		X	4C	
CHEM 499	Senior Thesis			4C	
Advanced Science Electives (See list on Concentration Requirements tab)					3-5
Global and Cultural Awareness				3E	3
Electives					6
	Total Credits				14-16

Semester 8	Critical	Recommended	AUCC	Credits
Advanced Science Electives (See list on Concentration Requirements tab)	X			3
Electives	X			10-11
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X			
Total Credits				13-14
Program Total Credits:				120

Master of Science in Chemistry, Plan B

Effective Summer 2010

Code	Title	Credits
Graduate courses in chemistry and other disciplines [1]		12-15
CHEM 751	Methods of Chemistry Laboratory Instruction	1
CHEM 784	Supervised College Teaching	1
CHEM 793	Seminar	2
Electives		2-5
CHEM 698	Research [2]	9
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

Additional Requirements

- Incoming students must demonstrate undergraduate proficiency in analytical, inorganic, organic, and physical chemistry by having received (at their undergraduate institution) or by receiving (upon matriculation at CSU) a B- in the appropriate undergraduate course(s) or by passing an exam in the aforementioned subjects administered by the chemistry department, or by any combination of these ways to demonstrate undergraduate proficiency in the four subjects.
- Students must pass 2 cumulative exams, or the equivalent[3], which are given monthly 9 times each year, in no more than 12 attempts.
- Students must pass a faculty-refereed scientific presentation. Students may fulfill this requirement in one of three ways:
    - Students may give a public seminar based on the scientific literature;
    - Students may give a public seminar based on their thesis research;
    - Students may pass the Preliminary Oral Exam for the Ph.D. degree.

1 Select courses with advisor approval according to department guidelines.

2 Up to 9 credits of CHEM 698 may be satisfied by CHEM 799.

3 See instructions available from the chemistry department.

Minor in Chemistry

The Department of Chemistry offers a minor in Chemistry to interested students from other disciplines. The program serves to broaden the academic background of students seeking employment in fields related to chemistry.

Requirements Effective Summer 2017

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Lower Division		
CHEM 111	General Chemistry I (GT-SC2)	4
CHEM 112	General Chemistry Lab I (GT-SC1)	1
CHEM 113	General Chemistry II	3
CHEM 114	General Chemistry Lab II	1
Upper Division		
Student must take 15 upper-division chemistry credits, or CHEM 261 plus 12 upper-division chemistry credits, from at least two different areas of chemistry - analytical, inorganic, organic, and physical. BC 351 or BC 401 may count as upper-division chemistry credits. [1]		15
Program Total Credits:		24

1 At least two of these courses must include a laboratory. No more than three of these 15 credits may be fulfilled by CHEM 384, CHEM 487, CHEM 493, CHEM 495, or CHEM 498, none of which can fulfill the laboratory requirement.

Department of Computer Science

Office in Computer Science Building, Room 279
(970) 491-5792
compsci.colostate.edu (http://www.cs.colostate.edu)

Professor Craig Partridge, Chair

Undergraduate Majors

- Major in Computer Science
    - Computer Science Concentration
    - Human-Centered Computing Concentration

- Major in Applied Computing Technology
  - Computing Education Concentration
  - Computing Technology Concentration

Minors

- Minor in Computer Science

Graduate

Graduate Programs in Computer Science

Master of Science, Master of Computer Science, and Doctor of Philosophy degree programs in Computer Science. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Computer Science (http://www.cs.colostate.edu).

Master's Programs

- Master of Science in Computer Science, Plan A
- Master of Science in Computer Science, Plan B*
- Master of Computer Science, Plan C (M.C.S.)

Ph.D.

- Ph.D. in Computer Science*

* Please see department for program of study.

Courses

Subjects in this department include: Computer Science (CS) and Computing Technology (CT).

Computer Science (CS)

CS 110 Personal Computing Credits: 4 (3-3-0)
Course Description: Hardware/software concepts, Internet services, OS commands, electronic presentations, spreadsheets, databases, programming concepts.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CS 110 and BUS 150. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 150 Culture and Coding (GT-AH3) Credits: 3 (2-2-0)
Course Description: Survey of computer science, formal logic, and computational thinking. Explores the historical, gender, and cultural perspectives on the role of technology in society. Includes learning a basic programming language. Students will be expected to write small programs, and construct written arguments on ways in which technology influences our modern culture. Previous computer science experience not necessary.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Ways of Thinking (GT-AH3).

CS 152 Introduction to Programming (CS0)-Python Credits: 2 (1-0-1)
Course Description: Introductory Python programming for students with no prior programming experience. Topics include variables, types, operators, expressions, conditionals, loops, functions, lists, dictionaries, strings, file input/output, and modules.
Prerequisite: MATH 118.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 155 Introduction to Unix Credit: 1 (1-0-0)
Course Description: Unix shell commands, utilities (editors, sorting, file management), shell scripting.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CS 156 Introduction to C Programming I Credit: 1 (1-0-0)
Course Description: Basic elements of language structure, data types, expressions, program control flow and modularity.
Prerequisite: (CS 155, may be taken concurrently) and (MATH 118).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CS 157 Introduction to C Programming II Credit: 1 (1-0-0)
Course Description: More basic design types, function usage and strings. Arrays, user-defined types and structures, enumerated types, recursion, dynamic storage allocation.
Prerequisite: (CS 156, may be taken concurrently) and (MATH 118).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CS 158 Mathematical Algorithms in C Credit: 1 (0-2-0)
Also Offered As: MATH 158.
Course Description: Compilers, expressions, variable types, control statements, pointers, logical statements, plotting, secant method, trapezoidal rule, recursion.
Prerequisite: MATH 151 and CS 156 and MATH 160.
Registration Information: Credit not allowed for both CS 158 and MATH 158.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 163 CS1---No Prior Programming Experience Credits: 4 (3-2-0)
Course Description: Computer programming for students without previous programming experience. Topics include variables, assignment, expressions, operators, booleans, conditionals, characters and strings, control loops, arrays, objects and classes, file input/output, interfaces, recursion, lists, and sorting.
Prerequisite: CS 150 with a minimum grade of C or CS 152 with a minimum grade of C or MATH 124 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online. Credit allowed for only one of the following courses: CS 160, CS 163, or CS 164.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CS 164 CS1--Prior Programming Experience Credits: 4 (3-2-0)
Course Description: Computer programming for students with limited programming experience. Problem decomposition for good design; expressions, operators, booleans, conditionals, characters and strings, control loops, arrays, objects and classes, file input/output, interfaces, recursion, lists, and sorting.
Prerequisite: CS 150 with a minimum grade of C or CS 152 with a minimum grade of C or MATH 124 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online. Credit allowed for only one of the following courses: CS 160, CS 163, or CS 164.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 165 CS2--Data Structures Credits: 4 (3-2-0)
Course Description: Object oriented concepts, assertions, inheritance, polymorphism, algorithms and data structures using an object oriented language.
Prerequisite: CS 163 with a minimum grade of C or CS 164 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online. Credit not allowed for both CS 165 and CS 200.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 192 First-Year Seminar-Computer Science Credit: 1 (0-0-1)
Course Description: Computer science as a field of study and a major program at CSU. Addresses career exploration, research experience opportunities, post-graduation planning, and building a skill base of successful academic strategies.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Freshman and sophomore Computer Science and Applied Computing Technology majors only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 200 Algorithms and Data Structures Credits: 4 (3-2-0)
Course Description: Data structures; abstract data types; algorithm correctness; complexity analysis; sorting, searching, hashing.
Prerequisite: (CS 161 with a minimum grade of C) and (MATH 141 with a minimum grade of C or MATH 155 with a minimum grade of C or MATH 160 with a minimum grade of C).
Registration Information: Credit not allowed for both CS 165 and CS 200.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 220 Discrete Structures and their Applications Credits: 4 (3-0-1)
Course Description: Integer representations and properties, propositions, predicates, sets, functions, program proofs, induction, counting, complexity; Python implementations of these concepts.
Prerequisite: (CS 163 with a minimum grade of C or CS 164 with a minimum grade of C) and (MATH 155 with a minimum grade of C or MATH 159 with a minimum grade of C or MATH 160 with a minimum grade of C).
Registration Information: Sophomore standing. Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 253 Software Development with C++ Credits: 4 (3-0-1)
Course Description: Developing and modifying large software. Relating programming language to its machine implementation. C++ programming for experienced programmers.
Prerequisite: CS 165 with a minimum grade of C.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 270 Computer Organization Credits: 4 (3-2-0)
Course Description: Data representation, arithmetic, assembly and C language, digital logic and systems, Boolean algebra, circuits, CPU and memory models, state machines.
Prerequisite: CS 163 with a minimum grade of C or CS 164 with a minimum grade of C.
Registration Information: Sophomore standing. Computer Science and Applied Computing Technology majors only. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 295 Independent Study Credits: Var[1-4] (0-0-0)
Course Description: Investigation of special topics under direction of computer science faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 314 Software Engineering Credits: 3 (3-0-0)
Course Description: Principles, concepts, and techniques associated with team-based development of large, complex software systems. Topics include teamwork, configuration management, project management, requirements engineering, and systematic testing techniques. Use software tools in the context of a Scrum-based Agile development project.
Prerequisite: CS 253 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 320 Algorithms--Theory and Practice Credits: 3 (3-0-0)
Course Description: Analysis, design, implementation and applications of algorithms.
Prerequisite: (CS 220 with a minimum grade of C and CS 165 with a minimum grade of C) and (DSCI 369 with a minimum grade of C or MATH 229 with a minimum grade of C or MATH 369 with a minimum grade of C).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 356 Systems Security Credits: 3 (3-0-0)
Course Description: Computer and system security, authentication, access control, malicious software, and software security.
Prerequisite: CS 253 with a minimum grade of C or CS 370 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 370 Operating Systems Credits: 3 (3-0-0)
Course Description: Introduction to operating systems including memory organization, I/O control, multitasking, process control, coordination, and resource management.
Prerequisite: (CS 165 with a minimum grade of C) and (CS 270 with a minimum grade of C or ECE 251 with a minimum grade of C).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 410 Introduction to Computer Graphics Credits: 4 (3-2-0)
Course Description: Graphics hardware and software; drawing simple objects; coordinate transformations in 2D and 3D; modeling and viewing complex 2D and 3D objects.
Prerequisite: (CS 253 with a minimum grade of C) and (DSCI 369 with a minimum grade of C or MATH 229 with a minimum grade of C or MATH 369 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 414 Object-Oriented Design Credits: 4 (3-3-0)
Course Description: Object-oriented methods for large-scale software systems. Software design for reuse using patterns. WWW applications in languages, e.g., Java.
Prerequisite: CS 314 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 420 Introduction to Analysis of Algorithms Credits: 4 (3-0-1)
Course Description: Efficiency analysis, correctness proofs, design strategies, illustrations from domains such as graph theory, scheduling and optimization, geometry.
Prerequisite: CS 320 with a minimum grade of C.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 425 Introduction to Bioinformatics Algorithms Credits: 4 (3-2-0)
Course Description: Algorithms for analysis of large scale biological data.
Prerequisite: (CS 320 with a minimum grade of C) and (ECE 303 with a minimum grade of C or STAT 301 with a minimum grade of C or STAT 303 with a minimum grade of C or STAT 307 with a minimum grade of C or STAT 315 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 430 Database Systems Credits: 4 (3-2-0)
Course Description: Database analysis, design, administration, implementation, hierarchical, network relational models; data sublanguages; query facilities.
Prerequisite: CS 314 with a minimum grade of C or CS 370 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 435 Introduction to Big Data Credits: 4 (3-2-0)
Course Description: Fundamental issues in Big Data: data organization, storage, retrieval, analytics, and knowledge discovery at scale.
Prerequisite: CS 320 with a minimum grade of C or CS 370 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 440 Introduction to Artificial Intelligence Credits: 4 (3-2-0)
Course Description: Concepts, representations, and algorithms for applications of problem solving search, logical reasoning and machine learning.
Prerequisite: (CS 320 with a minimum grade of C) and (ECE 303 with a minimum grade of C or STAT 301 with a minimum grade of C or STAT 303 with a minimum grade of C or STAT 307 with a minimum grade of C or STAT 315 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 445 Introduction to Machine Learning Credits: 4 (3-2-0)
Course Description: Fundamental concepts and methods of computational data analysis, including pattern classification, prediction, visualization, and recent topics in deep learning.
Prerequisite: (CS 320 with a minimum grade of C) and (ECE 303 with a minimum grade of C or STAT 301 with a minimum grade of C or STAT 303 with a minimum grade of C or STAT 307 with a minimum grade of C or STAT 315 with a minimum grade of C).
Registration Information: Sophomore standing. Must register for lecture and laboratory. Sections may be offered: Online. Credit allowed for only one of the following: CS 445, CS 480A3, or DSCI 445.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 453 Introduction to Compiler Construction Credits: 4 (3-0-1)
Course Description: Functional components of a compiler: modules, interfaces, lexical and syntax analysis, error recovery, resource allocation, code generation.
Prerequisite: CS 314 with a minimum grade of C.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 454 Principles of Programming Languages Credits: 4 (3-3-0)
Course Description: Language design concepts; functional programming; interpreter support for environments, procedures, recursion, types, objects; language paradigms.
Prerequisite: CS 253 with a minimum grade of C and CS 320 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 455 Introduction to Distributed Systems Credits: 4 (3-2-0)
Course Description: Distributed systems including model of distributed computations; concurrency; thread pools and scalable servers; distributed mutual exclusion; cloud computing; distributed graph algorithms; data representation formats; atomic transactions; large-scale storage systems; distributed shared memory; and overlays.
Prerequisite: CS 370 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. CS majors and minors only. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 457 Computer Networks and the Internet Credits: 4 (3-3-0)
Course Description: Principles of communications, local area networks, communication protocols, TCP/IP, and the Internet.
Prerequisite: (CS 370 with a minimum grade of C and CS 253 with a minimum grade of C) and (STAT 301 with a minimum grade of C or STAT 303 with a minimum grade of C or ECE 303 with a minimum grade of C or STAT 307 with a minimum grade of C or ERHS 307 with a minimum grade of C or STAT 311 with a minimum grade of C or STAT 315 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 464 Principles of Human-Computer Interaction Credits: 4 (3-2-0)
Course Description: History and trends in human-computer interaction; user-centered design techniques; prototyping; experimental methods for the evaluation of technology.
Prerequisite: CS 253 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 470 Computer Architecture Credits: 4 (3-2-0)
Course Description: Instruction set; hardwired, microprogramming; memory; arithmetic; I/O and buses; performance evaluation; pipelining, RISC.
Prerequisite: CS 370.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 475 Parallel Programming Credits: 4 (3-3-0)
Course Description: Parallel programming techniques for shared-memory and message-passing systems; process synchronization, communication; example languages.
Prerequisite: CS 320 with a minimum grade of C or CS 370 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 486 Practicum Credits: Var[1-4] (0-0-0)
Course Description: Supervised work experience in approved computer science setting with periodic consultation of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for any combination of CS 486, CS 495.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for any combination of CS 486, CS 495.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 498 Research Credits: Var[1-4] (0-0-0)
Course Description: Supervised research in computer science.
Prerequisite: None.
Registration Information: Computer science majors only. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 510 Image Computation Credits: 4 (3-3-0)
Course Description: Image generation theory and implementation, image manipulation/interpretation. Ray tracing, geometric and photometric manipulation, image matching.
Prerequisite: CS 410.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 514 Software Product and Process Evaluation Credits: 4 (3-3-0)
Course Description: Software development process modeling and evaluation; software metrics, testing, verification, validation; experimental methods in software engineering.
Prerequisite: CS 414.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 515 Software Maintenance & Evolution Credits: 4 (3-2-0)
Course Description: Software maintenance fundamentals, software evolution principles, software properties and paradigms, software decay and aging, software change management, software quality, software refactoring, mining software repositories, defect prediction and effort estimation, and software documentation.
Prerequisite: CS 414.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Must register for lecture and laboratory. Sections may be offered: Online. Credit not allowed for both CS 515 and CS 581A3.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 517 Software Specification and Design Credits: 4 (3-3-0)
Course Description: Rigorous techniques for modeling, specifying, and analyzing software requirements and designs; reusable software development.
Prerequisite: CS 414.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 518 Distributed Software System Development Credits: 4 (3-2-0)
Course Description: Principles of developing distributed systems; middleware technologies and techniques for building complex distributed component-based systems.
Prerequisite: CS 414.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 520 Analysis of Algorithms Credits: 4 (3-3-0)
Course Description: Asymptotic complexity, algorithm complexity, and problem complexity; the Master Method; parallel algorithms; algorithm design.
Prerequisite: CS 420.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 522 Foundations of Cyber-Physical Systems Credits: 4 (3-2-0)
Course Description: Principles of design, specification, modeling, and analysis of cyber-physical systems and software. Topics include model-based design, formal methods for specification and verification, and control theory.
Prerequisite: CS 320 or CS 420.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Must register for lecture and laboratory. Credit not allowed for both CS 522 and CS 581A4.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 530 Fault-Tolerant Computing Credits: 4 (3-3-0)
Course Description: Achieving high reliability and fault tolerance. Fault modeling, testing, reliability evaluation, redundancy, fault tolerance. (NT-O)
Prerequisite: CS 370.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 533 Database Management Systems Credits: 4 (3-2-0)
Course Description: Theory and implementation of concurrency control, recovery, and query processing as it applies to centralized and distributed systems.
Prerequisite: CS 430.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 535 Big Data Credits: 4 (3-3-0)
Course Description: Topics in storage, retrieval, analysis, and knowledge discovery using Big Data. Lectures include real-world case studies.
Prerequisite: CS 455.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 540 Artificial Intelligence Credits: 4 (3-3-0)
Course Description: Knowledge representation and reasoning, search, planning, evolutionary computation, data mining, information retrieval, intelligent Web, agent systems.
Prerequisite: CS 440.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 545 Machine Learning Credits: 4 (3-3-0)
Course Description: Computational methods that allow computers to learn; neural networks, decision trees, genetic algorithms, bagging and boosting.
Prerequisite: CS 440.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 548 Bioinformatics Algorithms Credits: 4 (3-2-0)
Also Offered As: STAT 548.
Course Description: Computational methods for analysis of DNA/protein sequences and other biological data.
Prerequisite: STAT 301 or STAT 307 or STAT 315.
Registration Information: Students should already have knowledge of a contemporary programming language. Must register for lecture and laboratory. Credit not allowed for both CS 548 and STAT 548.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 553 Algorithmic Language Compilers Credits: 4 (3-3-0)
Course Description: Compiler construction; lexical scanner generators, parser generators, dataflow analysis, optimization.
Prerequisite: CS 453.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 555 Distributed Systems Credits: 4 (3-2-0)
Course Description: Principles, paradigms, protocols and algorithms underlying modern distributed systems.
Prerequisite: CS 455.
Registration Information: Must register for lecture and laboratory. Computer Science graduate students only. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 556 Computer Security Credits: 4 (3-2-0)
Course Description: Topics in computer security: concepts, threats, risks, access control models, trusted systems, cryptography, authentication.
Prerequisite: CS 356 or CS 455.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 557 Advanced Networking Credits: 4 (3-3-0)
Course Description: Core internet protocols, including transport, routing, and security protocols. Protocol design principles. Network measurements and assessment.
Prerequisite: CS 457.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 560 Foundations of Fine-Grain Parallelism Credits: 4 (3-2-0)
Also Offered As: ECE 560.
Course Description: Programming novel architectures; performance tuning; automatic parallelization; program transformation; polyhedral model; equational programming.
Prerequisite: CS 475.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CS 560 and ECE 560. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 561 Hardware/Software Design of Embedded Systems Credits: 4 (3-3-0)
Also Offered As: ECE 561.
Course Description: Embedded systems design including system level modeling, design space exploration, hardware-software partitioning, high level synthesis.
Prerequisite: CS 270 or CS 470 or ECE 251 or ECE 452.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CS 561 and ECE 561. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 567 3D User Interfaces Credits: 4 (3-2-0)
Course Description: Introduction to the theory of interaction design for 3D user interfaces (3DUI). Interaction (selection, manipulation, travel, and wayfinding), virtual environments, and application to 3DUI. Relevance of 3DUI principles to traditional displays, virtual reality, augmented reality, and mixed reality.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 570 Advanced Computer Architecture Credits: 4 (3-3-0)
Course Description: Pipelined CPU design. Superscalar architectures and instruction-level parallelism. Cache and memory hierarchy design. Storage systems.
Prerequisite: CS 470.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 575 Parallel Processing Credits: 4 (3-3-0)
Course Description: Parallel and distributed computing models, algorithms, mapping and performance evaluations, parallel computing tools and applications.
Prerequisite: CS 475.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 612 Topics in Computer Graphics Credits: 4 (3-2-0)
Course Description: Computer graphics research topics.
Prerequisite: CS 510.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 614A Advanced Topics in Software Engineering: Specification and Design Credits: 4 (3-3-0)
Course Description:
Prerequisite: CS 514 or CS 517 or CS 518.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 614B Advanced Topics in Software Engineering: Testing and Verification Credits: 4 (3-3-0)
Course Description:
Prerequisite: CS 514 or CS 517 or CS 518.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 614C Advanced Topics in Software Engineering: Software Environments and Tools Credits: 4 (3-3-0)
Course Description:
Prerequisite: CS 514 or CS 517 or CS 518.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 614D Advanced Topics in Software Engineering: Software Measurement, Analysis, & Evaluation Credits: 4 (3-3-0)
Course Description:
Prerequisite: CS 514 or CS 517 or CS 518.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 614E Advanced Topics in Software Engineering: Application Domains Credits: 4 (3-3-0)
Course Description:
Prerequisite: CS 514 or CS 517 or CS 518.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 620 Advanced Topics in Algorithms Credits: 4 (3-2-0)
Course Description: Designing and analyzing algorithms and data structures; illustrations from a variety of problem domains.
Prerequisite: CS 520.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CS 635 Advanced Fault-Tolerant Computing Credits: 4 (3-3-0)
Course Description: Advanced topics and recent developments in high reliability and fault-tolerant systems.
Prerequisite: CS 530.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 640 Advanced Artificial Intelligence I Credits: 2 (2-0-0)
Course Description: Research topics in artificial intelligence: genetic algorithms, neural networks, connectionist models; machine learning; planning, automated reasoning.
Prerequisite: CS 540.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 641 Advanced Artificial Intelligence II Credits: 2 (2-0-0)
Course Description: Advanced research topics in artificial intelligence.
Prerequisite: CS 640.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 645 Advanced Machine Learning: Neural Networks Credits: 4 (3-2-0)
Course Description: Study of machine learning research literature and implementations of algorithms for neural networks and reinforcement learning.
Prerequisite: CS 545 with a minimum grade of C.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 646 Machine Learning in Bioinformatics Credits: 4 (3-2-0)
Course Description: Recent research on the applications of machine learning in bioinformatics.
Prerequisite: CS 545 or STAT 560.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 653 Topics in Programming Language Implementation Credits: 4 (3-3-0)
Course Description: Data dependence analysis; code generation.
Prerequisite: CS 553.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 655 Advanced Topics in Distributed Systems Credits: 4 (3-2-0)
Course Description: Issues related to robustness, replication, consistency, scalability, isolation and privacy in large-scale distributed systems.
Prerequisite: CS 555.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 656A Advanced Topics in Computer Security: Formal Models of Computer Security Credits: 4 (3-2-0)
Course Description: Advanced research topics in computer security.
Prerequisite: CS 556.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 656B Advanced Topics in Computer Security: Models for Privacy and Application Security Credits: 4 (3-2-0)
Course Description: Advanced research topics in computer security.
Prerequisite: CS 556.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 656C Advanced Topics in Computer Security: Network Security Credits: 4 (3-2-0)
Course Description: Advanced research topics in computer security.
Prerequisite: CS 556.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 657 Advanced Topics in Computer Networking Credits: 4 (3-2-0)
Course Description: Advanced research topics in computer networks.
Prerequisite: CS 557.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 658 Internet Engineering Credits: 4 (3-3-0)
Also Offered As: ECE 658.
Course Description: Link technologies, multiple access, hardware and software for internetworks routing, switching flow control, multicast, performance, and applications.
Prerequisite: CS 457 or ECE 456.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online. Credit not allowed for both ECE 658 and CS 658.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CS 670B Topics in Architecture/Systems: Performance Evaluation and Modeling Credits: Var[1-4] (0-0-0)
Also Offered As: ECE 670B.
Course Description:
Prerequisite: CS 570 or ECE 554.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both CS 670B and ECE 670B.
Grade Mode: Traditional.
Special Course Fee: No.

CS 670C Topics in Architecture/Systems: Distributed Systems Credits: Var[1-4] (0-0-0)
Also Offered As: ECE 670C.
Course Description:
Prerequisite: CS 570 or ECE 554.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both CS 670C and ECE 670C.
Grade Mode: Traditional.
Special Course Fee: No.

CS 670D Topics in Architecture/Systems: Architecture of Advanced Systems Credits: Var[1-4] (0-0-0)
Also Offered As: ECE 670D.
Course Description:
Prerequisite: CS 570 or ECE 554.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both CS 670D and ECE 670D.
Grade Mode: Traditional.
Special Course Fee: No.

CS 675 Advanced Parallel Computing Credits: 4 (3-3-0)
Course Description: Parallel computing, computational models, parallel languages and algorithms, distributed simulation, Internet and mobile computing, parallel search.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 692 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 787 Internship Credit: 1 (0-3-0)
Course Description: Summer internship experience in computer science.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 793 Research Seminar in Computer Science Credits: 4 (0-0-4)
Course Description: Research methods in specific areas of computer science.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing in computer science.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Computing Technology (CT)

CT 310 Web Development Credits: 4 (3-3-0)
Course Description: Web development languages used to create fully functional dynamic web sites; server and client scripting, database access and security issues.
Prerequisite: CS 220 and CS 165.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CT 320 Network and System Administration Credits: 4 (3-3-0)
Course Description: Installation of network and operating system services, management and support; upgrades, security, backups.
Prerequisite: CS 156 or CS 270.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

Major in Computer Science

Computer Science is about exploring and creating innovative solutions to complex, real-world problems. The demand for computer science professionals is skyrocketing. As a Computer Science major, students will study step-by-step computational methods for solving problems by encoding, storing, tracking and transforming information. Students will learn the theory, architecture, and application of computers – how to process information and how to design software (sets of computer instructions) to perform specific functions. Students will also learn how to enable software and computers to learn and adapt on their own. Computer Science is much broader than just programming.

Computer scientists work in diverse fields and have crucial core skills:

- information analysis and processing
- practical and specialized software design
- computer theory, logic, and discrete mathematics
- computer architecture and networks
- operating systems and programming languages

Two concentrations are offered under the Major in Computer Science: Computer Science and Human-Centered Computing. During the first 2 years of study, students in both concentrations take the same 100- and 200-level Computer Science core courses in the following areas of study:

- Calculus
- Programming and mathematical foundations
- Computer security
- Data structures
- Computer organization
- Algorithmic theory
- Systems software
- Software engineering
- Statistics
- Linear algebra

Students may take courses from a wide range of senior-level offerings:

- Big data
- Artificial intelligence
- Bioinformatics
- Networks
- Human-computer interaction
- Cloud computing
- Graphics
- Database systems
- Machine learning
- Compilers
- Parallel programming
- Architecture

The Computer Science discipline changes quickly, and course offerings are continually updated to keep pace. Our department Industrial Advisory Board of industry representatives work with us to ensure skills are current and competitive in the marketplace.

Students may also participate in research and teaching. These opportunities give students additional valuable skills and experience. Engaging in undergraduate research and teaching can help students decide if they would like to pursue a graduate degree. A minor in Computer Science is also available.

Learning Outcomes

Upon completing this program, students will be able to:

- understand how to use the mathematical and scientific principles of computing to design and develop software and computing systems.
- work effectively in teams to develop computation solutions to complex problems.
- communicate your technical ideas effectively in writing and verbally.
- confidently pursue graduate studies or professional employment in the computer science field.

Potential Occupations

Our Computer Science students are in high demand, and the majority find related employment upon graduation. The proven performance of CSU graduates has resulted in annual recruiting visits by a wide variety of companies, government agencies, and research laboratories. Internships are readily available that enhance skills and marketability.

Career opportunities include, but are not limited to: systems programmer, software designer, computer researcher, software engineer, software tester, systems administrator, security systems designer, database programmer, consultant, technical product support personnel, and educator.

Major in Computer Science, Computer Science Concentration

The Computer Science concentration is a broad computer science program that prepares students for any introductory position in the field. This concentration also allows students to select a research area (http://www.cs.colostate.edu/cstop/csresearch.php) and focus on that topic in their 400-level coursework. Students can also take a breadth focus -- a little bit of everything -- for a broader perspective.

Requirements Effective Fall 2019

A minimum grade of C is required in CO 150 and in all mathematics, statistics, computer science, and Technical Electives courses which are required for graduation.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
CS 165	CS2--Data Structures		4
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
Select one course from the following:			4
CS 163	CS1---No Prior Programming Experience		
CS 164	CS1--Prior Programming Experience		
Select at least two courses from two departments totaling a minimum of 7 credits from the following (one course must be or include the sequenced laboratory):			7
BZ 110 & BZ 111	Principles of Animal Biology (GT-SC2)	3A	
BZ 120	Principles of Plant Biology (GT-SC1)	3A	
CHEM 107 & CHEM 108	Fundamentals of Chemistry (GT-SC2)	3A	
CHEM 111 & CHEM 112	General Chemistry I (GT-SC2)	3A	
GEOL 120 & GEOL 121	Exploring Earth - Physical Geology (GT-SC2)	3A	
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	

Electives			5
	Total Credits		31

Sophomore

CS 220	Discrete Structures and their Applications		4
CS 253	Software Development with C++		4
CS 270	Computer Organization		4
Select one course from the following:			2-4
DSCI 369	Linear Algebra for Data Science		
MATH 229	Matrices and Linear Equations		
MATH 369	Linear Algebra I		
Select one course from the following:			3
STAT 301	Introduction to Statistical Methods		
STAT 315	Statistics for Engineers and Scientists		
Arts and Humanities		3B	3
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
Electives			3
	Total Credits		29-31

Junior

CS 314	Software Engineering	4A	3
CS 320	Algorithms--Theory and Practice	4B	3
CS 356	Systems Security		3
CS 370	Operating Systems		3
Select a minimum of 5 credits additional science from the list of 3A courses in the freshman year and/or from the following for a total of at least 12 credits:			5
ATS 350	Introduction to Weather and Climate		
ATS 351	Introduction to Weather and Climate Lab		
BZ 220	Introduction to Evolution		
CHEM 113 & CHEM 114	General Chemistry II		
CIVE 260	Engineering Mechanics-Statics		
GEOL 154	Historical and Analytical Geology		
LIFE 103	Biology of Organisms-Animals and Plants		
LIFE 201A	Introductory Genetics: Applied/Population/Conservation/Ecological (GT-SC2)	3A	
LIFE 201B	Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2)	3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	
PSY 352	Learning and Memory		
SOCR 330	Principles of Genetics		
SOCR 331	Genetics Laboratory		
Advanced Writing		2	3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Electives			3
	Total Credits		29

Senior

Capstone Course List			
Select four courses from the following (one of the selected courses will fulfill AUCC 4C)			16
CS 410	Introduction to Computer Graphics	4C	

CS 414	Object-Oriented Design	4C	
CS 420	Introduction to Analysis of Algorithms	4C	
CS 425	Introduction to Bioinformatics Algorithms	4C	
CS 430	Database Systems	4C	
CS 435	Introduction to Big Data	4C	
CS 440	Introduction to Artificial Intelligence	4C	
CS 445	Introduction to Machine Learning	4C	
CS 453	Introduction to Compiler Construction	4C	
CS 454	Principles of Programming Languages	4C	
CS 455	Introduction to Distributed Systems	4C	
CS 457	Computer Networks and the Internet	4C	
CS 464	Principles of Human-Computer Interaction	4C	
CS 470	Computer Architecture	4C	
CS 475	Parallel Programming	4C	
Technical Electives (see list below):			2-9
Electives[1]			6-11
	Total Credits		29-31
	Program Total Credits:		120

Technical Electives (2-9 credits)

DSCI 369, MATH 369, and PSY 352 may count toward the Technical Electives in addition to either the linear algebra requirement in the Sophomore year or the additional science requirement in the Junior year.

Code	Title	Credits
BUS 405A	Contemporary Business Topics: Entrepreneurship	3
BUS 405C	Contemporary Business Topics: Business Information Management	3
BZ 350	Molecular and General Genetics	4
BZ 360	Bioinformatics and Genomics	3
CIS 350	Operating Systems and Networks	3
CIS 355	Business Database Systems	3
CIS 360	Systems Analysis and Design	3
CIS 410	Web Application Development	3
CIS 413	Advanced Networking and Security	3
CO 402	Principles of Digital Rhetoric and Design	3
DSCI 369	Linear Algebra for Data Science	4
E 320	Introduction to the Study of Language	3
E 326	Development of the English Language	3
E 327	Syntax and Semantics	3
E 328	Phonology, Morphology, and Lexis	3
E 329	Pragmatics and Discourse Analysis	3
ECE 311	Linear System Analysis I	3
ECE 312	Linear System Analysis II	3
ECE 331	Electronics Principles I	4
ECE 332	Electronics Principles II	4
ECE 411	Control Systems	4
ECE 421	Telecommunications I	3
ECE 451	Digital System Design	3
ECON 335/AREC 335	Introduction to Econometrics	3
ECON 435	Intermediate Econometrics	3
GR 323/NR 323	Remote Sensing and Image Interpretation	3
JTC 372	Web Design and Management	3
JTC 413	New Communication Technologies and Society	3
JTC 415	Communications Law	3
JTC 417	Information Graphics	3
MATH 301	Introduction to Combinatorial Theory	3
MATH 317	Advanced Calculus of One Variable	3
MATH 331	Introduction to Mathematical Modeling	3
MATH 332	Partial Differential Equations	3
MATH 340	Introduction to Ordinary Differential Equations	4
MATH 345	Differential Equations	4
MATH 348/BZ 348	Theory of Population and Evolutionary Ecology	4
MATH 360	Mathematics of Information Security	3
MATH 366	Introduction to Abstract Algebra	3
MATH 369	Linear Algebra I	3
MATH 405	Introduction to Number Theory	3
MATH 417	Advanced Calculus I	3
MATH 418	Advanced Calculus II	3
MATH 419	Introduction to Complex Variables	3
MATH 430/ECE 430	Fourier and Wavelet Analysis with Apps	3
MATH 435	Projects in Applied Mathematics	3
MATH 450	Introduction to Numerical Analysis I	3
MATH 451	Introduction to Numerical Analysis II	3
MATH 455	Mathematics in Biology and Medicine	3
MATH 460	Information and Coding Theory	3
MATH 466	Abstract Algebra I	3
MATH 467	Abstract Algebra II	3
MATH 469	Linear Algebra II	3
MATH 470	Euclidean and Non-Euclidean Geometry	3
MATH 472	Introduction to Topology	3
MATH 474	Introduction to Differential Geometry	3
MECH 307	Mechatronics and Measurement Systems	4

MGT 330	Creativity, Innovation, and Value Creation	3
MGT 340	Fundamentals of Entrepreneurship	3
MGT 420	New Venture Creation	3
MGT 440	New Venture Management	3
NR 322	Introduction to Geographic Information Systems	4
NR 422	GIS Applications in Natural Resource Management	4
NR 423	Applications of Global Positioning Systems	1
PH 314	Introduction to Modern Physics	4
PH 315	Modern Physics Laboratory	2
PH 341	Mechanics	4
PH 351	Electricity and Magnetism	4
PH 353	Optics and Waves	4
PH 361	Physical Thermodynamics	3
PH 451	Introductory Quantum Mechanics I	3
PHIL 305F	Philosophical Issues in the Professions: Information Science	3
PHIL 315	Philosophy of Language	3
PHIL 325	Philosophy of Natural Science	3
PHIL 327	Philosophy of Behavioral Sciences	3
PHIL 410	Formal Logic	3
PHIL 411	Formal Tools in Philosophy	3
PHIL 415	Logic and Scientific Method	3
PSY 352	Learning and Memory	3
PSY 354	Human-Computer Interaction	3
PSY 452	Cognitive Psychology	3
PSY 454	Biological Psychology	3
PSY 456	Sensation and Perception	3
PSY 458	Cognitive Neuroscience	3
SPCM 331	Nonverbal Communication	3
SPCM 431	Communication, Language, and Thought	3
STAT 305	Sampling Techniques	3
STAT 340	Multiple Regression Analysis	3
STAT 341	Statistical Data Analysis I	3
STAT 342	Statistical Data Analysis II	3
STAT 350	Design of Experiments	3
STAT 400	Statistical Computing	3
STAT 420	Probability and Mathematical Statistics I	3
STAT 421	Introduction to Stochastic Processes	3
STAT 430	Probability and Mathematical Statistics II	3
STAT 440	Bayesian Data Analysis	3
STAT 460	Applied Multivariate Analysis	3

[1] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

To prepare for first semester: The curriculum for the Computer Science major assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester. Those pre-calculus requirements are listed as benchmark courses in Freshman Semester 1 below. All students must maintain a C or better in CO 150 and in all CS, MATH, STAT and departmental Technical Elective courses which are required for graduation.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 160	Calculus for Physical Scientists I (GT-MA1)		X	1B	4
Select one course from the following:					4
CS 163	CS1---No Prior Programming Experience		X		
CS 164	CS1--Prior Programming Experience		X		
Department Approved Science (See list on Concentration Requirements Tab)				3A	3
Electives					5
MATH 124 and MATH 126 may be necessary for some students to fulfill pre-calculus requirements.		X			
	Total Credits				16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)	X		1A	3
CS 165	CS2--Data Structures		X		4
MATH 161	Calculus for Physical Scientists II (GT-MA1)		X	1B	4
Department Approved Science with Lab (See list on Concentration Requirements Tab)				3A	4
CO 150 must be completed by the end of Semester 2 with a grade of C or better.		X			
CS 163 or CS 164 and MATH 160 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 220	Discrete Structures and their Applications		X		4
CS 270	Computer Organization		X		4
Arts and Humanities				3B	3
Social and Behavioral Sciences				3C	3
	Total Credits				14
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 253	Software Development with C++		X		4
Select one course from the following:					2-4
DSCI 369	Linear Algebra for Data Science	X			
MATH 229	Matrices and Linear Equations	X			
MATH 369	Linear Algebra I	X			
Select one course from the following:					3
STAT 301	Introduction to Statistical Methods	X			
STAT 315	Statistics for Engineers and Scientists	X			
Historical Perspectives				3D	3
Electives					3
CS 165 and CS 220 and CS 270 must be completed by the end of Semester 4.		X			
MATH 161 and MATH 229 or MATH 369 or DSCI 369 must be completed by the end of Semester 4.		X			
	Total Credits				15-17

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 314	Software Engineering		X	4A	3
CS 320	Algorithms--Theory and Practice		X	4B	3
CS 370	Operating Systems		X		3
Advanced Writing				2	3
Arts and Humanities				3B	3
CS 253 must be completed by the end of Semester 5.		X			
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 356	Systems Security				3
Department Approved Science (See list on Concentration Requirements Tab)					5
Diversity and Global Awareness				3E	3
Electives					3
CS 314 and CS 320 and CS 370 must be completed by the end of Semester 6.		X			
	Total Credits				14

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Capstone Course List (See Capstone Course List on Concentration Requirements tab)		X		4C	4
Additional Capstone Course (See Capstone Course List on Concentration Requirements tab)			X		4
Technical Electives (See Technical Electives List on Concentration Requirements Tab)					2-3
Elective					3-4
CS 356 and at least one 400-level CS class must be completed by the end of Semester 7.		X			
	Total Credits				14
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Capstone Course (See Capstone Course List on Concentration Requirements Tab)		X			8

Technical Electives (See Technical Electives List on Concentration Requirements Tab)	X	0-6
Electives	X	3-7
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X	
Total Credits		15-17
Program Total Credits:		120

Major in Computer Science, Human-Centered Computing Concentration

The Major in Computer Science, Human-Centered Computing concentration focuses on how people interact with computers. Students will learn to apply techniques from computer science, artificial intelligence, and cognitive psychology to evaluate, design, and produce usable computer interfaces. This is an important specialization within software development teams in industry and other organizations.

Requirements Effective Fall 2018

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
Select one course from the following:			4
CS 163	CS1---No Prior Programming Experience		
CS 164	CS1--Prior Programming Experience		
CS 165	CS2--Data Structures		4
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
PSY 100	General Psychology (GT-SS3)	3C	3
Biological and Physical Sciences		3A	4
Diversity and Global Awareness		3E	3
Electives			5
	Total Credits		30

Sophomore

CS 220	Discrete Structures and their Applications		4
CS 253	Software Development with C++		4
CS 270	Computer Organization		4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
Select one course from the following:			2-3
MATH 229	Matrices and Linear Equations		
MATH 369	Linear Algebra I		
PSY 252	Mind, Brain, and Behavior		3
Select one course from the following:			3
STAT 301	Introduction to Statistical Methods		
STAT 315	Statistics for Engineers and Scientists		
Biological and Physical Sciences		3A	3
Electives			4
	Total Credits		31-32

Junior

CS 320	Algorithms--Theory and Practice		3
CS 464	Principles of Human-Computer Interaction	4A,4B,4C	4
CT 310	Web Development		4
PSY 250	Research Design and Analysis I		3
PSY 350	Research Design and Analysis II		3
Advanced Writing		2	3

Arts and Humanities		3B	3
Historical Perspectives		3D	3
Upper-Division Elective			3
	Total Credits		29
Senior			
CS 410	Introduction to Computer Graphics		4
CS 440	Introduction to Artificial Intelligence	4A,4C	4
PSY 452	Cognitive Psychology		3
Select one course from the following:			2
PSY 453	Cognitive Psychology Laboratory		
PSY 457	Sensation and Perception Laboratory		
PSY 456	Sensation and Perception		3
Arts and Humanities		3B	3
Upper-Division Electives			0-3
Electives[1]			8-10
	Total Credits		30-32
	Program Total Credits:		120

[1] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be Upper-Division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

To prepare for first semester: The curriculum for the Computer Science major assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester. Those pre-calculus requirements are listed as benchmark courses in Freshman Semester 1 below.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
Select one course from the following:					4
CS 163	CS1---No Prior Programming Experience		X		
CS 164	CS1--Prior Programming Experience		X		
Biological and Physical Sciences				3A	4
Electives					5
MATH 117, MATH 118, and MATH 124 must be completed by the end of Semester 1, if necessary.		X			
	Total Credits				16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 165	CS2--Data Structures		X		4
MATH 160	Calculus for Physical Scientists I (GT-MA1)		X	1B	4
PSY 100	General Psychology (GT-SS3)	X		3C	3
Diversity and Global Awareness				3E	3
CO 150 and CS 163 or CS 164 must be completed by the end of Semester 2.		X			
MATH 125 and MATH 126 must be completed by the end of Semester 2, if necessary.		X			
	Total Credits				14

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 220	Discrete Structures and their Applications		X		4
CS 270	Computer Organization		X		4
MATH 161	Calculus for Physical Scientists II (GT-MA1)		X	1B	4
Electives					4

CS 165 and MATH 160 must be completed by the end of Semester 3.		X			
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 253	Software Development with C++		X		4
Select one course from the following:					2-3
MATH 229	Matrices and Linear Equations	X			
MATH 369	Linear Algebra I	X			
PSY 252	Mind, Brain, and Behavior	X			3
Select one course from the following:					3
STAT 301	Introduction to Statistical Methods				
STAT 315	Statistics for Engineers and Scientists				
Biological and Physical Sciences				3A	3
CS 220, CS 270, and MATH 161 must be completed by the end of Semester 4.		X			
	Total Credits				15-16
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 320	Algorithms--Theory and Practice		X		3
PSY 250	Research Design and Analysis I				3
Advanced Writing				2	3
Historical Perspectives				3D	3
Upper-Division Elective					3
CS 253 must be completed by the end of Semester 5.		X			
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 464	Principles of Human-Computer Interaction		X	4A,4B,4C	4
CT 310	Web Development		X		4
PSY 350	Research Design and Analysis II				3
Arts and Humanities				3B	3
CS 320 must be completed by the end of Semester 6.		X			
	Total Credits				14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 410	Introduction to Computer Graphics	X			4
CS 440	Introduction to Artificial Intelligence	X		4A,4C	4
PSY 452	Cognitive Psychology				3
PSY 456	Sensation and Perception				3
	Total Credits				14
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					2
PSY 453	Cognitive Psychology Laboratory	X			
PSY 457	Sensation and Perception Laboratory	X			
Arts and Humanities		X		3B	3
Upper-Division Electives		X			0-3
Electives		X			8-10
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				16-18
	Program Total Credits:				120

Major in Applied Computing Technology

The Applied Computing Technology major is a program oriented towards the use of computing technology and programming in specialized ways rather than towards developing large-scale systems and enterprise-level computer software. Students will receive a strong background in computer programming and information technology aimed towards a specific application area.

Learning Outcomes

Students completing this program will be able to:

- Write computer software.
- Develop computer applications to be used in a variety of areas.
- Develop websites, including web-based software and databases for use by experts in a broad range of fields.
- Grasp and demonstrate the subject matter of a specific field in which computers are to be used.
- Work effectively in groups to develop solutions to complex, field-specific problems.
- Communicate through writing about their technical activities.

Concentrations

- Computing Education Concentration
- Computing Technology Concentration

Major in Applied Computing Technology, Computing Education Concentration

This teacher education program leads to a Bachelor of Science degree in Applied Computing Technology with a concentration in Computing Education (K-12 technology education) with state licensure in instructional technology (computers) and provides students with a background in education, computer programming, and computer systems enabling graduates to teach computing principles and serve as computing technology experts in public schools.

Students interested in pursuing a teaching license through CSU may refer to the Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu) program and the School of Education for general information.

Potential Occupations

Graduates of this program can go on to become teachers in K-12 schools and will be capable of teaching a broad range of computing technology: computer applications, web development, and programming, including AP computer science courses. They will also be capable of providing expert information technology support for schools for instructional and administrative purposes.

Requirements Effective Fall 2016

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
CS 110	Personal Computing		4
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
SPCM 200	Public Speaking		3
Select one course from the following:			4
CS 163	CS1--No Prior Programming Experience		
CS 164	CS1--Prior Programming Experience		
Biological and Physical Science		3A	7
Diversity and Global Awareness		3E	3
Elective			3
	Total Credits		31

Sophomore

CS 165	CS2--Data Structures		4
CS 220	Discrete Structures and their Applications		4
CS 270	Computer Organization		4
EDUC 275	Schooling in the United States (GT-SS3)	3C	3
Select one course from the following:			3
STAT 201	General Statistics		
STAT 204	Statistics for Business Students		
STAT 301	Introduction to Statistical Methods		
Arts and Humanities		3B	6
Historical Perspectives		3D	3

Elective			3
	Total Credits		30
Junior			
CIS 355[1]	Business Database Systems		3
CS 253	Software Development with C++		4
CT 310	Web Development		4
EDUC 331	Educational Technology and Assessment		2
EDUC 340	Literacy and the Learner		3
EDUC 350	Instruction I-Individualization/Management		3
EDUC 386	Practicum-Instruction I		1
JTC 413	New Communication Technologies and Society	4B	3
CS *** 300-level Computer Science Course			3
Advanced Writing		2	3
	Total Credits		29
Senior			
CT 320	Network and System Administration		4
EDCT 465	Methods and Materials in Technology Education		3
EDCT 485	Student Teaching	4A,4C	11
EDUC 450	Instruction II-Standards and Assessment		4
EDUC 486E	Practicum: Instruction II		1
EDUC 493A	Seminar: Professional Relations	4C	1
CS 4*** 400-level Computer Science Course[2]			4
Electives[3]			2-3
	Total Credits		30-31
	Program Total Credits:		120

1 Students who have completed CS 200 and CS 270 may need a registration override from the Computer Information Systems department to take this course.

2 The 400-level computer science course must be numbered less than 485.

3 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

To prepare for first semester: The curriculum for the Applied Computing Technology - Computing Education concentration assumes students enter college prepared to take calculus for Physical Scientists. This particular calculus course requires Logarithmic & Exponential Function and Trigonometry in addition to college algebra. Entering students will need to have completed College Algebra (MATH 117 & MATH 118) prior to the first semester to be on schedule to complete within four years.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
CS 110	Personal Computing				4
SPCM 200	Public Speaking				3
Biological and Physical Sciences				3A	4
Elective					3
MATH 124, MATH 125, MATH 126 must be completed by the end of Semester 1, if necessary.		X			
	Total Credits				17
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					4
CS 163	CS1---No Prior Programming Experience	X			
CS 164	CS1--Prior Programming Experience	X			

MATH 160	Calculus for Physical Scientists I (GT-MA1)		X	1B	4
Biological and Physical Sciences				3A	3
Diversity and Global Awareness				3E	3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				14

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 165	CS2--Data Structures	X			4
EDUC 275	Schooling in the United States (GT-SS3)			3C	3
Select one course from the following:					3
STAT 201	General Statistics				
STAT 204	Statistics for Business Students				
STAT 301	Introduction to Statistical Methods				
Arts and Humanities				3B	3
Elective					3
MATH 160 must be completed by the end Semester 3.		X			
	Total Credits				16

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 220	Discrete Structures and their Applications	X			4
CS 270	Computer Organization	X			4
Arts and Humanities				3B	3
Historical Perspectives				3D	3
EDUC 275 must be completed by the end of Semester 4.		X			
Admission to Teacher Licensure required by the end of Semester 4.		X			
	Total Credits				14

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
CIS 355	Business Database Systems				3
CS 253	Software Development with C++	X			4
EDUC 340	Literacy and the Learner	X			3
CS 3** 300-level Computer Science Course					3
Advanced Writing				2	3
	Total Credits				16

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
CT 310	Web Development	X			4
EDUC 331	Educational Technology and Assessment	X			2
EDUC 350	Instruction I-Individualization/Management	X			3
EDUC 386	Practicum-Instruction I	X			1
JTC 413	New Communication Technologies and Society			4B	3
CS 3** must be completed by the end of Semester 6.					
	Total Credits				13

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
CT 320	Network and System Administration	X			4
EDCT 465	Methods and Materials in Technology Education	X			3
EDUC 450	Instruction II-Standards and Assessment	X			4
EDUC 486E	Practicum: Instruction II	X			1
CS 4** 400-Level CS Course		X			4
Elective					2-3
	Total Credits				18-19

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
EDCT 485	Student Teaching	X		4A,4C	11

EDUC 493A	Seminar: Professional Relations	X	4C	1
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X		
	Total Credits			12
	Program Total Credits:			120

Major in Applied Computing Technology, Computing Technology Concentration

This concentration emphasizes the use of programming skills and computer applications and technology (e.g., web development, computer and network system administration) in a variety of computer application areas used in business and other organizations. This is essentially an Information Technology (IT) program, stressing the maintenance and use of computers and computer applications rather than developing large-scale software from scratch.

The Computing Technology concentration includes all computer science classes taken by Computer Science majors in the first and second year, and combines those with specialized computing technology courses, business courses, and a selection of advanced courses from the Departments of Computer Science (http://www.cs.colostate.edu/cstop) and Computer Information Systems (http://biz.colostate.edu/cis/Pages/default.aspx).

Potential Occupations

The Computing Technology concentration prepares students for careers in information technology in which knowledge of computer programming, applications, and computing systems are used in businesses or other organizational settings. Computing technology students can be employed as computer programmers, web developers, network and system administrators, computing consultants, and business analysts.

Requirements Effective Spring 2020

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
Select one course from the following:			4
CS 163	CS1--No Prior Programming Experience		
CS 164	CS1--Prior Programming Experience		
Arts and Humanities		3B	3
Biological and Physical Sciences		3A	7
Electives			3
	Total Credits		30

Sophomore

ACT 205	Fundamentals of Accounting		3
CS 165	CS2--Data Structures		4
CS 220	Discrete Structures and their Applications		4
CS 270	Computer Organization		4
Select one course from the following:			3
STAT 201	General Statistics		
STAT 204	Statistics for Business Students		
STAT 301	Introduction to Statistical Methods		
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Electives			3
	Total Credits		30

Junior

CS 253	Software Development with C++		4

CT 310	Web Development		4
FIN 305	Fundamentals of Finance		3
JTC 300	Professional and Technical Communication (GT-CO3)	2	3
MGT 305	Fundamentals of Management		3
MKT 305	Fundamentals of Marketing		3
Advanced Technology Electives (see list below)			3
Electives			7
	Total Credits		30

Senior

CS 314	Software Engineering	4A,4B	3
JTC 413	New Communication Technologies and Society	4A,4B,4C	3
Select one course not taken elsewhere in program from the following:			3-4
CS 370	Operating Systems		
CT 320	Network and System Administration		
Advanced Technology Electives (see list below)			9
Upper-Division Electives[1]			11-12
	Total Credits		30
	Program Total Credits:		120

Advanced Technology Electives

Code	Title	Credits
CIS 320	Project Management for Information Systems	3
CIS 350	Operating Systems and Networks	3
CIS 355	Business Database Systems	3
CIS 360	Systems Analysis and Design	3
CIS 410	Web Application Development	3
CIS 413	Advanced Networking and Security	3
CIS 455	Advanced Database Management	3
CS 356	Systems Security	3
CS 370	Operating Systems	3
CS 414	Object-Oriented Design	4
CS 430	Database Systems	4
CS 455	Introduction to Distributed Systems	4
CS 457	Computer Networks and the Internet	4
CS 464	Principles of Human-Computer Interaction	4
JTC 372	Web Design and Management	3
MATH 360	Mathematics of Information Security	3

[1] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

To prepare for first semester: The curriculum for the Computer Science major assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester. Those pre-calculus requirements are listed as benchmark courses in Freshman semester 1 below.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
CO 150	College Composition (GT-CO2)			1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
Arts and Humanities				3B	3
Biological and Physical Sciences				3A	4
Elective					3
MATH 124 must be completed by the end of Semester 1, if needed.		X			
MATH 126 is recommended to be completed by the end of Semester 1, if needed.			X		
	Total Credits				16

Semester 2		Critical	Recommended	AUCC	Credits
ECON 204	Principles of Macroeconomics (GT-SS1)			3C	3
Select one course from the following:					4
CS 163	CS1---No Prior Programming Experience	X			

CS 164	CS1--Prior Programming Experience	X			
MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	4
Biological and Physical Sciences				3A	3
CO 150 and MATH 126 must be completed by the end of Semester 2.		X			
	Total Credits				14
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 205	Fundamentals of Accounting				3
CS 165	CS2--Data Structures	X			4
Select one course from the following:					3
STAT 201	General Statistics				
STAT 204	Statistics for Business Students				
STAT 301	Introduction to Statistical Methods				
Arts and Humanities				3B	3
Elective					3
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 220	Discrete Structures and their Applications	X			4
CS 270	Computer Organization	X			4
Diversity and Global Awareness				3E	3
Historical Perspectives				3D	3
ACT 205 and ECON 204 must be completed by the end of Semester 4.		X			
	Total Credits				14
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 253	Software Development with C++	X			4
FIN 305	Fundamentals of Finance				3
JTC 300	Professional and Technical Communication (GT-CO3)			2	3
Electives					4
	Total Credits				14
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
CT 310	Web Development		X		4
MGT 305	Fundamentals of Management				3
MKT 305	Fundamentals of Marketing				3
Advanced Technology Elective (See Department List on Concentration Requirements tab)					3
Elective					3
	Total Credits				16
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
JTC 413	New Communication Technologies and Society			4A,4B,4C	3
Select one course from the following (not taken elsewhere):					3-4
CS 370	Operating Systems				
CT 320	Network and System Administration				
Advanced Technology Elective (See Department List on Concentration Requirements tab)					3
Upper-Division Electives					5-6
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 314	Software Engineering	X		4A,4B	3
Advanced Technology Electives (See Department List on Concentration Requirements tab)		X			6

Upper-Division Electives	X	6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X	
Total Credits		15
Program Total Credits:		120

Minor in Computer Science

Computer science and programming skills are in high demand in every field. Most jobs now require them.

A minor in Computer Science will give students a foundation in software development, programming, and computer and information theory. Students will begin with a gradual introduction to programming and data structures. Then students can take courses in an area of emphasis that complements their current degree.

This customized minor can significantly boost student's career opportunities and success.

Computer Science has competitive entrance requirements. Please contact a department advisor for more information.

Requirements Effective Fall 2019

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

A minimum grade of C is required in all courses required for the minor.

Code	Title	Credits
Lower Division		
CS 163	CS1---No Prior Programming Experience	4
or CS 164	CS1--Prior Programming Experience	
CS 165	CS2--Data Structures	4
Select one course from the following:		4
CS 220	Discrete Structures and their Applications	
CS 253	Software Development with C++	
CS 270	Computer Organization	
Upper Division		
CS***	Courses numbered 300- or above [1]	12
Program Total Credits:		24

[1] Excluding CS 480-499.

Master of Science in Computer Science, Plan A

The Master of Science in Computer Science, Plan A is a research-based degree which includes coursework, research and a thesis. The degree is appropriate for students who intend to go on to work in computer science research and development for industry or government, or those seeking more advanced research training in a computer science Ph.D. program.

Requirements Effective Fall 2010

At least 35 credits of graduate course work, including up to 8 credits of CS 699.

Master of Computer Science, Plan C (M.C.S.)

The Master of Computer Science degree is a professional (non-research) degree consisting of coursework only. This degree is intended for students desiring an advanced credential in computer science to enhance their technical abilities and knowledge of state-of-the-art computer science principles to apply as software engineers in organizational settings (industry, government, etc.).

Requirements Effective Fall 2010

A total of 35 semester hours in lecture and laboratory courses are required for graduation. At least 20 of these credits must be in computer sciences courses at the 500-level or above (graduate level courses). No independent study credits of any kind will be accepted toward meeting the 35 hour requirement.

Department of Mathematics

Office in Weber Building, Room 101
(970) 491-1303
math.colostate.edu (http://www.math.colostate.edu)

Professor Kenneth McLaughlin, Chair

Undergraduate Majors

- Major in Mathematics
  - Actuarial Science Concentration
  - Applied Mathematics Concentration
  - Computational Mathematics Concentration
  - General Mathematics Concentration
  - Mathematics Education Concentration

Minors

- Minor in Mathematics
- Minor in Mathematical Biology

Graduate

Graduate Programs in Mathematics

The department offers the Master of Science and Doctor of Philosophy degrees with programs in pure and applied mathematics. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Mathematics (http://www.math.colostate.edu).

Master's Programs

- Master of Science in Mathematics, Plan A*
- Master of Science in Mathematics, Plan B*

Ph.D.

- Ph.D. in Mathematics*

* Please see department for program of study.

Courses

Mathematics (MATH)

MATH 101 Math in the Social Sciences (GT-MA1) Credits: 3 (2-2-0)
Course Description: Voting theory, power indices, fair division, apportionment, circuits and trees, list processing, descriptive statistics, probability.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B, Mathematics (GT-MA1).

MATH 105 Patterns of Phenomena Credits: 3 (2-0-1)
Course Description: Applications of mathematical ideas and mode of thought in the arts and humanities, focusing on classification, recognition.
Prerequisite: None.
Registration Information: Mathematics Placement Examination or Mathematics Challenge Exam required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B.

MATH 117 College Algebra in Context I (GT-MA1) Credit: 1 (1-0-0)
Course Description: Functions as mathematical models. Linear, quadratic, and polynomial functions considered symbolically, graphically, numerically, and contextually.
Prerequisite: None.
Registration Information: Mathematics Placement Examination or Mathematics Challenge Exam required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B, Mathematics (GT-MA1).

MATH 118 College Algebra in Context II (GT-MA1) Credit: 1 (1-0-0)
Course Description: Reciprocals of linear functions, rational functions, and power functions considered symbolically, graphically, numerically, and contextually.
Prerequisite: MATH 117, may be taken concurrently.
Registration Information: MATH 117 or Mathematics Placement Examination or Mathematics Challenge Examination required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B, Mathematics (GT-MA1).

MATH 124 Logarithmic and Exponential Functions (GT-MA1) Credit: 1 (1-0-0)
Course Description: Definition and graphs of exponential and logarithmic functions, properties of logarithmic functions, exponential and logarithmic equations, applications.
Prerequisite: MATH 118, may be taken concurrently.
Registration Information: Required: MATH 118 or Mathematics Placement Examination or Mathematics Challenge Examination. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B, Mathematics (GT-MA1).

MATH 125 Numerical Trigonometry (GT-MA1) Credit: 1 (1-0-0)
Course Description: Definition and graphs of trigonometric functions, laws of sines and cosines, solutions of right and oblique triangles, applications.
Prerequisite: MATH 118, may be taken concurrently.
Registration Information: MATH 118 or Mathematics Placement Examination or Mathematics Challenge Examination required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B, Mathematics (GT-MA1).

MATH 126 Analytic Trigonometry (GT-MA1) Credit: 1 (1-0-0)
Course Description: Inverse trigonometric functions, trigonometric identities, solving trigonometric equations.
Prerequisite: MATH 125, may be taken concurrently.
Registration Information: MATH 125 or Mathematics Placement Examination or Mathematics Challenge Examination required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B, Mathematics (GT-MA1).

MATH 141 Calculus in Management Sciences (GT-MA1) Credits: 3 (3-0-0)
Course Description: Analytic geometry, limits, equilibrium of supply and demand, differentiation, integration, applications of the derivative, integral.
Prerequisite: MATH 118.
Registration Information: Sections may be offered: Online. Credit allowed for only one of the following courses: MATH 141, MATH 155, MATH 159, or MATH 160.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B, Mathematics (GT-MA1).

MATH 151 Mathematical Algorithms in Matlab I Credit: 1 (0-2-0)
Course Description: Statements, expressions and variable assignments, scripts, control statements and logical statements. Newton's method, Simpson's rule, recursion.
Prerequisite: MATH 141 or MATH 155 or MATH 160.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 152 Mathematical Algorithms in Maple Credit: 1 (0-2-0)
Course Description: Iteration and recursion, control and logical statements, expressions, functions, data types, binary numbers, symbolic manipulation of terms.
Prerequisite: MATH 141 or MATH 155 or MATH 160.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 155 Calculus for Biological Scientists I (GT-MA1) Credits: 4 (4-0-0)
Course Description: Limits, continuity, differentiation, and integration of elementary functions with applications in the biosciences.
Prerequisite: (MATH 124) and (MATH 125).
Registration Information: Credit allowed for only one of the following courses: MATH 141, MATH 155, MATH 159, or MATH 160. Programmable graphing calculator required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B, Mathematics (GT-MA1).

MATH 157 One Year Calculus IA (GT-MA1) Credits: 3 (3-0-0)
Course Description: Algebra and trigonometry, study skills for calculus. Limits, continuity, differentiation of elementary functions with applications.
Prerequisite: (MATH 124, may be taken concurrently) and (MATH 126).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B, Mathematics (GT-MA1).

MATH 158 Mathematical Algorithms in C Credit: 1 (0-2-0)
Also Offered As: CS 158.
Course Description: Compilers, expressions, variable types, control statements, pointers, logical statements, plotting, secant method, trapezoidal rule, recursion.
Prerequisite: MATH 151 and CS 156 and MATH 160.
Registration Information: Credit not allowed for both MATH 158 and CS 158.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 159 One Year Calculus IB (GT-MA1) Credits: 3 (3-0-0)
Course Description: Study skills for calculus. Differentiation and integration of elementary functions with applications. Conic section.
Prerequisite: MATH 157.
Registration Information: Credit allowed for only one of the following: MATH 141, MATH 155, MATH 159, or MATH 160.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B, Mathematics (GT-MA1).

MATH 160 Calculus for Physical Scientists I (GT-MA1) Credits: 4 (3-2-0)
Course Description: Limits, continuity, differentiation, and integration of elementary functions with applications; conic sections.
Prerequisite: (MATH 124 with a minimum grade of B) and (MATH 126 with a minimum grade of B).
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online. Credit allowed for only one of the following courses: MATH 141, MATH 155, MATH 159 or MATH 160.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B, Mathematics (GT-MA1).

MATH 161 Calculus for Physical Scientists II (GT-MA1) Credits: 4 (3-2-0)
Course Description: Transcendental functions, integration techniques, polar coordinates, sequences and series, with mathematical software.
Prerequisite: (MATH 124) and (MATH 159 or MATH 160).
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B, Mathematics (GT-MA1).

MATH 192 First Year Seminar in Mathematical Sciences Credit: 1 (0-0-1)
Course Description: Introduction to the richness and variety of problems addressed by mathematical language and techniques; resources and available careers.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 229 Matrices and Linear Equations Credits: 2 (2-0-0)
Course Description: Linear systems, matrix arithmetic, homogeneous coordinates, complex numbers, eigenvalues, eigenvectors, applications to discrete dynamical systems.
Prerequisite: MATH 141 or MATH 155 or MATH 160.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 230 Discrete Mathematics for Educators Credits: 3 (2-2-0)
Course Description: Voting theory, fair division, graph theory, linear programming, probability, teaching in small groups, proof techniques, mathematical technology.
Prerequisite: MATH 161 and EDUC 275, may be taken concurrently.
Registration Information: Credit not allowed for both MATH 230 and MATH 330.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 235 Introduction to Mathematical Reasoning Credits: 2 (2-0-0)
Course Description: Mathematical statements and proof techniques, induction, set theory, inequalities, number systems, functions.
Prerequisite: MATH 161 or MATH 271.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 255 Calculus for Biological Scientists II Credits: 4 (4-0-0)
Course Description: Derivatives and integrals of functions of several variables, differential and difference equations, matrices, applications in the biosciences.
Prerequisite: (MATH 126, may be taken concurrently) and (MATH 155).
Registration Information: Credit not allowed for both MATH 255 and MATH 261.Programmable graphing calculator required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B.

MATH 261 Calculus for Physical Scientists III Credits: 4 (4-0-0)
Course Description: Vector functions, partial differentiation, cylindrical and spherical coordinates, multiple integrals, line integrals, Green's theorem.
Prerequisite: MATH 161.
Registration Information: Sections may be offered: Online. Credit not allowed for both MATH 255 and MATH 261.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 271 Applied Mathematics for Chemists I Credits: 4 (4-0-0)
Course Description: Series and limits, Taylor series, complex variables, first- and second- order ordinary differential equations, matrices, linear transformations, determinants, and eigenvalues.
Prerequisite: MATH 155 or MATH 159 or MATH 160.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 272 Applied Mathematics for Chemists II Credits: 4 (4-0-0)
Course Description: Vector fields, partial differentiation, cylindrical and spherical coordinates, multiple integrals, line integrals, the Wave and the Schrödinger equations, separation of variables method. Inner Product Spaces. Fourier Series.
Prerequisite: MATH 271.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 301 Introduction to Combinatorial Theory Credits: 3 (3-0-0)
Course Description: Matrices, orthogonal Latin squares, designs, difference sets, sets, binomial coefficients, inclusion and exclusion, recurrence, Ramsey's theorem, SDRs.
Prerequisite: MATH 161.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 317 Advanced Calculus of One Variable Credits: 3 (3-0-0)
Course Description: Convergence of sequences, series: limits, continuity, differentiation, integration of one-variable functions.
Prerequisite: (MATH 161) and (MATH 230 or MATH 235).
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 331 Introduction to Mathematical Modeling Credits: 3 (3-0-0)
Course Description: Problem formulation. Modeling, theoretical and empirical. Variable selection. Derivation and simulation of solutions. Model testing including prediction.
Prerequisite: (MATH 161, may be taken concurrently) and (MATH 229, may be taken concurrently or MATH 369, may be taken concurrently).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 332 Partial Differential Equations Credits: 3 (3-0-0)
Course Description: Partial differential equations, separation of variables, Fourier series and transforms, Laplace, heat and wave equations.
Prerequisite: MATH 340 or MATH 345.
Registration Information: Credit not allowed for both MATH 332 and MATH 530.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 340 Introduction to Ordinary Differential Equations Credits: 4 (3-2-0)
Course Description: First and second order equations, series, Laplace transforms, linear algebra, eigenvalues, first order systems of equations, numerical techniques.
Prerequisite: MATH 255 or MATH 261.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both MATH 340 and MATH 345.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 345 Differential Equations Credits: 4 (3-2-0)
Course Description: First and second order equations, LaPlace transforms, first order systems of equations, numerical methods, applied linear algebra, linearization.
Prerequisite: (MATH 229 or MATH 369) and (MATH 255 or MATH 261).
Registration Information: Must register for lecture and laboratory. Credit not allowed for both MATH 345 and MATH 340.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 348 Theory of Population and Evolutionary Ecology Credits: 4 (3-3-0)
Also Offered As: BZ 348.
Course Description: Principles and methods for building, analyzing, and interpreting mathematical models of ecological and evolutionary problems in biology.
Prerequisite: MATH 155 or MATH 160.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: BZ 348, BZ 548, MATH 348.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 360 Mathematics of Information Security Credits: 3 (3-0-0)
Course Description: Codes, ciphers, Chinese remainder theorem, primality testing, public key ciphers, RSA, finite fields, discrete algorithms, AES encryption.
Prerequisite: (MATH 229 or MATH 369) and (MATH 161).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 366 Introduction to Abstract Algebra Credits: 3 (3-0-0)
Course Description: Sets, integers, polynomials, real and complex numbers, groups, integral domains, and fields; development of skills for proving theorems.
Prerequisite: MATH 161 or MATH 271.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 369 Linear Algebra I Credits: 3 (3-0-0)
Course Description: Linear systems, matrices, subspaces of Euclidean spaces, linear transformations on Euclidean spaces, eigenvalues, eigenvectors.
Prerequisite: MATH 161 or MATH 255 or MATH 271.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 384 Supervised College Teaching Credit: 1 (1-0-0)
Course Description: Skills for effective tutoring of precalculus mathematics; design and implementation of the Individualized Mathematics Program.
Prerequisite: None.
Registration Information: Written consent of instructor. May not be used to satisfy Mathematics degree requirements. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 405 Introduction to Number Theory Credits: 3 (3-0-0)
Course Description: Diophantine equations; distribution of primes; multiplicative functions; finite fields; quadratic reciprocity; quadratic number fields.
Prerequisite: MATH 360 or MATH 366.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 417 Advanced Calculus I Credits: 3 (3-0-0)
Course Description: Topology of Euclidean spaces, limits, derivatives and integrals on Euclidean spaces. Implicit functions and the implicit function theorem.
Prerequisite: MATH 369 and MATH 317.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 418 Advanced Calculus II Credits: 3 (3-0-0)
Course Description: Line and surface integrals, series, sequences and series of functions.
Prerequisite: MATH 417.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 419 Introduction to Complex Variables Credits: 3 (3-0-0)
Course Description: Analyticity, Cauchy integral theorem and formula, Taylor and Laurent series, residue calculus, conformal mapping and harmonic functions.
Prerequisite: MATH 261.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 425 History of Mathematics Credits: 3 (3-0-0)
Course Description: Historical development of geometry, arithmetic, algebra, and calculus from ancient times to 20th century.
Prerequisite: (EDUC 331) and (MATH 317 and MATH 366 or MATH 317 and MATH 369 or MATH 366 and MATH 369).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 430 Fourier and Wavelet Analysis with Apps Credits: 3 (3-0-0)
Also Offered As: ECE 430.
Course Description: Fourier analysis and transforms, FFTs; sampling theorems, computational algorithms; wavelets; applications to communication, imaging, and compression.
Prerequisite: MATH 340 or MATH 345.
Registration Information: Credit not allowed for both MATH 430 and ECE 430.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 435 Projects in Applied Mathematics Credits: 3 (1-4-0)
Course Description: Open-ended projects with emphasis on problem identification and formulation, team approach, and reporting results.
Prerequisite: (CS 156 or CS 163 or CS 164 or CS 253 or MATH 151) and (MATH 229 or MATH 369) and (MATH 340 or MATH 345).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 450 Introduction to Numerical Analysis I Credits: 3 (3-0-0)
Course Description: Solutions of systems of linear and nonlinear equations, interpolation, approximation.
Prerequisite: (CS 156 or CS 163 or CS 164 or CS 253 or MATH 151) and (MATH 255 or MATH 261).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 451 Introduction to Numerical Analysis II Credits: 3 (3-0-0)
Course Description: Numerical computation of eigenvalues, numerical solution of ordinary and partial differential equations.
Prerequisite: (CS 156 or CS 163 or CS 164 or CS 253 or MATH 151) and (MATH 340 or MATH 345).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 455 Mathematics in Biology and Medicine Credits: 3 (3-0-0)
Course Description: Models in population biology, cell division, host-parasoid systems, bacterial growth and predator-prey systems.
Prerequisite: BZ 348 or MATH 255 or MATH 340 or MATH 345 or MATH 348.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 460 Information and Coding Theory Credits: 3 (3-0-0)
Course Description: Entropy, mutual information, channel capacity, channel coding theorem, syndrome decoding, BCH codes, recent developments.
Prerequisite: MATH 360 and MATH 369 or MATH 366.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 466 Abstract Algebra I Credits: 3 (3-0-0)
Course Description: Comprehensive introduction to groups, rings, and fields.
Prerequisite: MATH 235 or MATH 360 or MATH 366.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 467 Abstract Algebra II Credits: 3 (3-0-0)
Course Description: Advanced topics in abstract algebra: Euclidean domains, abstract vector spaces, extension fields, Galois theory.
Prerequisite: MATH 466 and MATH 369, may be taken concurrently.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 469 Linear Algebra II Credits: 3 (3-0-0)
Course Description: Abstract vector spaces, general theory of linear transformations, theory of determinants, canonical forms.
Prerequisite: MATH 369.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 470 Euclidean and Non-Euclidean Geometry Credits: 3 (3-0-0)
Course Description: Topics from real Euclidean, affine metric and non-Euclidean geometries emphasizing methods and connections with other areas of mathematics.
Prerequisite: (MATH 229 or MATH 369) and (MATH 261).
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 472 Introduction to Topology Credits: 3 (3-0-0)
Course Description: Topologies on sets, continuous functions, homeomorphisms. Sequences and convergence, metric spaces, connectedness, path-connectedness. Separation properties. Compactness, Countability axioms.
Prerequisite: MATH 317.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 474 Introduction to Differential Geometry Credits: 3 (3-0-0)
Course Description: Local and global geometry of curves and surfaces in Euclidean space, curvature, covariant differentiation, geodesics and the Gauss-Bonnet theorem.
Prerequisite: MATH 261 and MATH 369.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 476 Topics in Mathematics Credits: 3 (3-0-0)
Course Description: Study experiences which deal with established content areas in mathematics.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 487 Internship Credits: Var[1-16] (0-0-0)
Course Description: A work-learn experience integrating classroom theory with practical experience.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring. Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 498 Undergraduate Research in Mathematics Credits: Var[1-3] (0-0-0)
Course Description: Research skills and techniques taught to suit student's level and interests. Includes both oral and written communication of results.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 501 Combinatorics I Credits: 3 (3-0-0)
Course Description: Puzzles, numbers and counting, subsets, recurrence relations, generating functions, inversion, counting with symmetry, networks, matchings.
Prerequisite: (MATH 301) and (MATH 360 or MATH 366).
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 502 Combinatorics II Credits: 3 (3-0-0)
Course Description: Graph algorithms, external set theory; partitions, Hadamard matrices, q-binomials, finite geometries, strongly regular graphs, triple systems, designs.
Prerequisite: MATH 501.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 505 Teaching Problem Solving in Mathematics K-12 Credits: 3 (0-0-3)
Course Description: Problem-solving strategies, cooperative learning, and manipulatives for K-12 classroom.
Prerequisite: None.
Registration Information: Offered as telecourse only. Teacher licensure required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 507 Advanced Reasoning in Mathematics Credits: 3 (3-0-0)
Course Description: General proof techniques, proof in abstract algebra, proof in analysis, and proof in combinatorics.
Prerequisite: None.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 510 Linear Programming and Network Flows Credits: 3 (3-0-0)
Course Description: Optimization methods; linear programming, simplex algorithm, duality, sensitivity analysis, minimal cost network flows, transportation problem.
Prerequisite: MATH 261 or MATH 315.
Registration Information: Credit not allowed for both MATH 510 and ENGR 510.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 517 Introduction to Real Analysis Credits: 3 (3-0-0)
Course Description: Euclidean and metric spaces, compactness, continuity, sequences, series, multivariable differentiation, inverse and implicit function theorems.
Prerequisite: MATH 417 and MATH 369.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 519 Complex Variables I Credits: 3 (3-0-0)
Course Description: Analytic functions, complex integration theory, singularities, elementary functions, and mapping.
Prerequisite: MATH 317.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 520 Nonlinear Programming Credits: 3 (3-0-0)
Course Description: Theoretical, computational, practical aspects of nonlinear programming (NLP); unconstrained, constrained NLP; quadratic programming; large-scale NLP.
Prerequisite: MATH 510.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 525 Optimal Control Credits: 3 (3-0-0)
Course Description: Theory and application of optimal control and optimal estimation theory; continuous and discrete time systems; Pontryagin maximum principle.
Prerequisite: MATH 340 or MATH 345.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 530 Mathematics for Scientists and Engineers Credits: 4 (4-0-0)
Course Description: Proof-oriented linear algebra, ordinary and partial differential equations.
Prerequisite: MATH 340 or MATH 345.
Registration Information: Primarily for students in the Mathematics Graduate Interdisciplinary Studies Program. Credit not allowed for both MATH 530 and MATH 332.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 532 Mathematical Modeling of Large Data Sets Credits: 3 (3-0-0)
Course Description: Mathematical theory and algorithms for modeling large data sets. Application to real world problems. Emphasis on geometric ideas.
Prerequisite: MATH 369 or MATH 530.
Registration Information: Preparedness to do programming in a standard language required.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 535 Foundations of Applied Mathematics Credits: 3 (3-0-0)
Course Description: Calculus of variations, peturbation methods, models of continuum, dimensional analysis, stochastic models, integral equations, diffusion.
Prerequisite: MATH 340 or MATH 345.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 540 Dynamical Systems Credits: 3 (3-0-0)
Course Description: Linear and nonlinear systems, orbits, phase space, flows of vector fields, stability, bifurcation theory, chaos, strange attractors and applications.
Prerequisite: MATH 369 and MATH 417.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 545 Partial Differential Equations I Credits: 3 (3-0-0)
Course Description: Second order linear PDEs, elliptic and parabolic equations, equations of math physics, separation of variables, Fourier series.
Prerequisite: MATH 340 or MATH 345 or MATH 530.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 546 Partial Differential Equations II Credits: 3 (3-0-0)
Course Description: Distribution theory, Green's functions, Sobolev spaces, elliptic and parabolic equations.
Prerequisite: MATH 545.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 550 Numerical Methods in Science and Engineering Credits: 3 (3-0-0)
Also Offered As: ENGR 550.
Course Description: Finite elements, finite differences, spectral methods, method of lines, conservation laws; stability and convergence analysis for PDEs.
Prerequisite: MATH 340 or MATH 345 or MATH 530.
Registration Information: Credit not allowed for both MATH 550 and ENGR 550.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 560 Linear Algebra Credits: 3 (3-0-0)
Course Description: Finite dimensional vector spaces, inner products, dual spaces, transformations, projections, adjoints, norms, eigenvalues, eigenvectors.
Prerequisite: MATH 369.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 561 Numerical Analysis I Credits: 4 (4-0-0)
Course Description: Numerical linear algebra, solving nonlinear systems, least squares, and minimization.
Prerequisite: (MATH 151 or CS 156 or CS 160 or CS 253) and (MATH 560).
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 566 Introduction to Abstract Algebra I Credits: 3 (3-0-0)
Course Description: Analysis of algebraic structures including groups, rings, fields, and vector spaces.
Prerequisite: MATH 366.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 567 Introduction to Abstract Algebra II Credits: 3 (3-0-0)
Course Description: Field theory, Galois theory, and advanced linear algebra.
Prerequisite: MATH 566.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 569A Linear Algebra for Data Science: Matrices and Vectors Spaces Credit: 1 (1-0-0)
Course Description: A basic introduction to matrices and linear algebra with preparation to pursue further studies in the applications of matrices with an emphasis on the foundations of data science.
Prerequisite: MATH 124 or MATH 126.
Restriction: Must be a: Graduate.
Registration Information: Graduate students in Mathematics may not take this course for credit. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 570 Topology I Credits: 3 (3-0-0)
Course Description: Point-set topology including basic set theory, continuity, product and quotient spaces, metrization, compactness, and connectedness.
Prerequisite: MATH 417 or MATH 472.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 571 Topology II Credits: 3 (3-0-0)
Course Description: Fundamental group, free groups and presentations, and manifolds.
Prerequisite: MATH 566 and MATH 570.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 584 Supervised College Teaching Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 592 Seminar in Mathematics Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 601 Advanced Combinatorics I Credits: 3 (3-0-0)
Course Description: Special numbers, mobius inversions, transversals, partial orders, different sets, codes, t-designs.
Prerequisite: MATH 502 and MATH 566.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 602 Advanced Combinatorics II Credits: 3 (3-0-0)
Course Description: Hypergeometric functions, graph algorithms, hadamard matrices, strongly regular graphs, association schemes.
Prerequisite: MATH 601.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 605A Number Theory: Algebraic Number Theory Credits: 3 (3-0-0)
Course Description:
Prerequisite: MATH 519, may be taken concurrently and MATH 566 and MATH 567, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 605B Number Theory: Arithmetic Geometry Credits: 3 (3-0-0)
Course Description:
Prerequisite: MATH 519, may be taken concurrently and MATH 566 and MATH 567, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 605C Number Theory: Elliptic Curves Credits: 3 (3-0-0)
Course Description:
Prerequisite: MATH 519, may be taken concurrently and MATH 566 and MATH 567, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 617 Integration and Measure Theory Credits: 4 (4-0-0)
Course Description: Riemann-Cauchy integration theory, sigma-algebras, Lebesgue theory of measure and integration, Fubini's Theorem, Radon-Nikodym theorem, Lp spaces.
Prerequisite: MATH 517.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 618 Advanced Real Analysis Credits: 3 (3-0-0)
Course Description: Normed linear spaces, Banach and Hilbert spaces, elements of functional analysis.
Prerequisite: MATH 560 and MATH 617.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 619 Complex Variables II Credits: 3 (3-0-0)
Course Description: Infinite products, entire functions, analytic continuation, Riemann surfaces, other topics.
Prerequisite: MATH 519.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 620 Variational Methods and Optimization I Credits: 3 (3-0-0)
Course Description: Unconstrained and constrained infinite dimensional optimization, calculus of variations, applications.
Prerequisite: MATH 570 or MATH 517.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 621 Variational Methods and Optimization II Credits: 3 (3-0-0)
Course Description: Unconstrained and constrained infinite dimensional optimization, variational inequalities, Lagrange multipliers, control, applications.
Prerequisite: MATH 620.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 633 Industrial and Applied Mathematics Credits: 3 (2-2-0)
Course Description: Team solution of problems arising in industrial and applied mathematics. Problem formulation, solution proposal, implementation and analysis.
Prerequisite: MATH 530 or MATH 560 or MATH 561.
Restriction: Must be a: Graduate, Professional.
Registration Information: Preparedness to do programming in a standard language required. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 640 Ordinary Differential Equations I Credits: 3 (3-0-0)
Course Description: Existence and uniqueness, continuation, continuous dependence, linear systems, and stability.
Prerequisite: (MATH 340 or MATH 345 or MATH 530) and (MATH 369 and MATH 517).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 641 Ordinary Differential Equations II Credits: 3 (3-0-0)
Course Description: Topics selected from nonlinear boundary value problems, periodic phenomena, differential operators, and others.
Prerequisite: MATH 640.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 645 Advanced Partial Differential Equations I Credits: 3 (3-0-0)
Course Description: Abstract methods for linear partial differential equations.
Prerequisite: MATH 546.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 646 Advanced Partial Differential Equations II Credits: 3 (3-0-0)
Course Description: Problems in nonlinear partial differential equations.
Prerequisite: MATH 645.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 651 Numerical Analysis II Credits: 4 (4-0-0)
Course Description: Interpolation, approximation, quadrature, initial and boundary value problems.
Prerequisite: (CS 156 or CS 160 or CS 253 or MATH 151) and (MATH 340 or MATH 345 or MATH 369 or MATH 530).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 652 Advanced Numerical Methods for PDEs Credits: 3 (3-0-0)
Course Description: Theory of numerical methods for solution of PDEs: convergence and stability properties; error estimation; approximation theory.
Prerequisite: MATH 545 or MATH 560 or MATH 617.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 666 Advanced Algebra I Credits: 3 (3-0-0)
Course Description: Theory of rings and algebras with applications.
Prerequisite: MATH 567.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 667 Advanced Algebra II Credits: 3 (3-0-0)
Course Description: Advanced topics from algebra: representation theory, Wedderburn theory, bilinear forms, multilinear and homological algebra.
Prerequisite: MATH 666.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 670 Introduction to Differential Manifolds Credits: 3 (3-0-0)
Course Description: Finite-dimensional differential manifolds, submanifolds, vector fields and flows, Lie groups and algebras.
Prerequisite: MATH 560.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 672 Projective Geometry I Credits: 3 (3-0-0)
Course Description: Algebraic sets in projective space, the Nullstellensatz, rational maps and functions, coordinate rings, Hilbert functions, dimension, degree.
Prerequisite: MATH 567.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 673 Projective Geometry II Credits: 3 (3-0-0)
Course Description: Topics selected from curves and surfaces, sheaf theory, algebraic geometry, singularity theory, vector bundles.
Prerequisite: MATH 672.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 676 Topics in Mathematics Credits: 3 (3-0-0)
Course Description: Advanced study experiences which deal with established content areas in mathematics.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: May be taken up to 5 times for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 687 Internship Credits: Var[1-9] (0-0-0)
Course Description: A work-learn experience integrating classroom theory with practical experience.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 693 Seminar in Mathematics Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 717 Functional Analysis I Credits: 3 (3-0-0)
Course Description: Topological vector spaces; Banach and Hilbert spaces.
Prerequisite: MATH 618.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 718 Functional Analysis II Credits: 3 (3-0-0)
Course Description: Spectral theory, operator theory, semigroups of transformations, and distribution theory.
Prerequisite: MATH 717.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 750 Numerical Methods and Models I Credits: 3 (3-0-0)
Course Description: Derivation of model equations, introduction to solution techniques and computing.
Prerequisite: MATH 561.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 751 Numerical Methods and Models II Credits: 3 (3-0-0)
Course Description: Convergence, stability, error estimates and computing.
Prerequisite: MATH 561.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 793 Seminar in Mathematics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Mathematics

Mathematics is the science of numbers, shapes, probabilities, and measurements. It is a universal language in which information is stated in the simplest possible form. Mathematics has a dual nature—it is an independent discipline valued for its precision and elegance, and it is an essential source of ideas and techniques for other scientific endeavors.

The undergraduate program is structured to provide a broad liberal arts education in mathematics, a strong set of core courses, and flexibility to choose from a broad range of courses. The liberal arts component requires students to acquire a broad background in communication skills, humanities, social sciences, and natural sciences. The major core focuses on developing students' understanding and appreciation of the mathematical sciences, problem solving skills, and their ability to combine knowledge and skills in productive ways. Core mathematics subjects include calculus and advanced calculus, linear algebra, methods of proof, abstract algebra, computer programming, and statistics.

Four concentrations are available in the program: Actuarial Science, Applied Mathematics, General Mathematics, and Mathematics Education.

Learning Outcomes

Graduates will:

- Obtain a solid background in theoretical mathematics and will be able to participate in mathematical work in a variety of fields or continue on to graduate school.
- Be able to apply a range of mathematical and statistical tools to a diverse set of problems as presented to them in either employment or the pursuit of further education.

- Be capable of describing their mathematical assumptions and results to colleagues.

Potential Occupations

The Mathematics major prepares students for a wide variety of occupations in business, industry, government, and education. Actuarial science graduates who have passed the first two professional actuary exams can expect to find positions with excellent entry-level salaries. Applied mathematics graduates continue to find employment opportunities in government and private industry. Many pursue advanced degrees in mathematics, computational science, or engineering. About one-third of general mathematics graduates continue on to graduate school in mathematics or other disciplines, with the rest finding employment in a large variety of capacities. Education students spend a semester teaching a classroom and have excellent job placement. Participation in internships, volunteer activities, or cooperative education opportunities is highly recommended to enhance practical training and development. Graduates who continue to pursue advanced degrees can attain more responsible positions with the possibility of rising to top professional levels.

Career opportunities include, but are not limited to: applied mathematician, actuary, engineer, statistician, financial analyst/advisor, computer programmer, computer systems analyst, mortgage officer, market analyst, risk analyst, tax auditor, accountant, math educator.

Concentrations

- Actuarial Science Concentration
- Applied Mathematics Concentration
- Computational Mathematics Concentration (No new students are being accepted into this concentration.)
- General Mathematics Concentration
- Mathematics Education Concentration

Major in Mathematics, Actuarial Science Concentration

The Actuarial Science concentration trains students how to use mathematics, statistics, business, and economics to analyze and plan for future situations involving financial uncertainties and risks. This concentration is designed to qualify students to take the first two examinations administered by the Society of Actuaries (https://www.soa.org/member) and provides the foundation for the remaining examinations.

Requirements
Effective Fall 2018

A minimum grade of C is required in all mathematics, statistics, and computer science courses that are required for graduation.

Freshman			
		AUCC	**Credits**
CO 150	College Composition (GT-CO2)	1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
MATH 192	First Year Seminar in Mathematical Sciences		1
Arts and Humanities		3B	3
Biological and Physical Sciences[1]		3A	5
Global and Cultural Awareness		3E	3
Elective			1
	Total Credits		30
Sophomore			
ACT 210[2]	Introduction to Financial Accounting		3
FIN 310	Financial Markets and Institutions		3
MATH 235	Introduction to Mathematical Reasoning		2
MATH 261	Calculus for Physical Scientists III		4
MATH 369	Linear Algebra I	4A	3
STAT 315	Statistics for Engineers and Scientists		3
Select one group from the following:			
Group A:			
CS 163 or 164	CS1---No Prior Programming Experience CS1--Prior Programming Experience		4
Group B:			
CS 155	Introduction to Unix		
CS 156	Introduction to C Programming I		

In addition, to complete Group B, select at least two of the following:			
CS 157	Introduction to C Programming II		
CS 158/MATH 158	Mathematical Algorithms in C		
MATH 151	Mathematical Algorithms in Matlab I		
MATH 152	Mathematical Algorithms in Maple		
Biological and Physical Sciences[1]		3A	5
Historical Perspectives		3D	3
	Total Credits		30
Junior			
FIN 300	Principles of Finance		3
ECON 335/AREC 335	Introduction to Econometrics		3
JTC 300	Professional and Technical Communication (GT-CO3)	2	3
MATH 317	Advanced Calculus of One Variable	4B	3
Select one course from the following:			4
MATH 340	Introduction to Ordinary Differential Equations		
MATH 345	Differential Equations		
STAT 420	Probability and Mathematical Statistics I		3
STAT 421	Introduction to Stochastic Processes		3
STAT 430	Probability and Mathematical Statistics II		3
Arts and Humanities		3B	3
Elective			2
	Total Credits		30
Senior			
BUS 205	Legal and Ethical Issues in Business		3
FIN 342	Risk Management and Insurance		3
FIN 370	Financial Management-Theory and Application		3
Select one course from the following:			3
MATH 417	Advanced Calculus I	4C	
MATH 435	Projects in Applied Mathematics	4C	
MATH 495[3]	Independent Study		1
Electives[4]			17
	Total Credits		30
	Program Total Credits:		120

1. Students in this concentration must take a total of 10 credits in category 3A, and at least one course must have a laboratory component.
2. Students in this concentration may need to obtain a prerequisite override from the appropriate department to enroll in this class.
3. Preparation for Exam I.
4. Select enough elective credits to bring program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

TO PREPARE FOR FIRST SEMESTER: The curriculum for the Major in Mathematics, Actuarial Sciences Concentration assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester: MATH 117, MATH 118, MATH 124, MATH 125, MATH 126.
A minimum grade of C is required in all mathematics, statistics, and computer science courses that are required for graduation.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	4
MATH 192	First Year Seminar in Mathematical Sciences				1

Arts and Humanities				3B	3
Pre-Calculus Requirements must be completed by the end of Semester 1, if needed (MATH 117, MATH 118, MATH 124, MATH 125, MATH 126).		X			
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
ECON 204	Principles of Macroeconomics (GT-SS1)		X	3C	3
MATH 161	Calculus for Physical Scientists II (GT-MA1)		X	1B	4
Biological and Physical Sciences				3A	5
Global and Cultural Awareness				3E	3
Elective					1
	Total Credits				16
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ACT 210	Introduction to Financial Accounting		X		3
MATH 261	Calculus for Physical Scientists III		X		4
Biological and Physical Sciences				3A	5
Historical Perspectives				3D	3
ECON 204, MATH 161 must be completed by the end of Semester 3.		X			
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one group from the following:					4
Group A:					
CS 163 or 164	CS1---No Prior Programming Experience CS1--Prior Programming Experience				
Group B:					
CS 155	Introduction to Unix				
CS 156	Introduction to C Programming I				
In addition, to complete Group B, select at least two of the following:					
CS 157	Introduction to C Programming II				
CS 158/ MATH 158	Mathematical Algorithms in C				
MATH 151	Mathematical Algorithms in Matlab I				
MATH 152	Mathematical Algorithms in Maple				
FIN 310	Financial Markets and Institutions				3
MATH 235	Introduction to Mathematical Reasoning				2
MATH 369	Linear Algebra I	X		4A	3
STAT 315	Statistics for Engineers and Scientists				3
ACT 210, MATH 261 must be completed by the end of Semester 4.		X			
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
FIN 300	Principles of Finance		X		3
JTC 300	Professional and Technical Communication (GT-CO3)		X	2	3
Select one course from the following:					4
MATH 340	Introduction to Ordinary Differential Equations				
MATH 345	Differential Equations				
STAT 420	Probability and Mathematical Statistics I		X		3
Elective					2
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
ECON 335/ AREC 335	Introduction to Econometrics				3
MATH 317	Advanced Calculus of One Variable	X		4B	3

STAT 421	Introduction to Stochastic Processes				3
STAT 430	Probability and Mathematical Statistics II		X		3
Arts and Humanities				3B	3
MATH 317 and FIN 300 must be completed by the end of Semester 6.		X			
	Total Credits				15

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
FIN 342	Risk Management and Insurance	X			3
FIN 370	Financial Management-Theory and Application		X		3
Select one course from the following:					3
Must take either MATH 417 (Fall) or MATH 435 (Spring) as a capstone.					
MATH 417	Advanced Calculus I			4C	
Elective					
Electives					6
STAT 420 must be completed by the end of Semester 7.		X			
	Total Credits				15

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BUS 205	Legal and Ethical Issues in Business	X			3
Select one course from the following:		X			3
Must take either MATH 417 (Fall) or MATH 435 (Spring) as a capstone.					
MATH 435	Projects in Applied Mathematics			4C	
Elective					
MATH 495	Independent Study	X			1
Electives		X			8
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Mathematics, Applied Mathematics Concentration

The Applied Mathematics concentration prepares students for careers as applied mathematicians working in business, government, and industry. It is recommended that students supplement the core mathematical program with courses in their chosen application area; for example, engineering, public health, finance, electronics, or geology. Course requirements emphasize mathematical foundations as well as the application of mathematics in other disciplines. In particular, students receive training in numerical analysis, mathematical modeling, statistics, and computing, as well as a solid preparation for further study.

Requirements Effective Fall 2018

A minimum grade of C is required in all mathematics, statistics, and computer science courses that are required for graduation.

Freshman

		AUCC	**Credits**
CO 150	College Composition (GT-CO2)	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
MATH 192	First Year Seminar in Mathematical Sciences		1
Arts and Humanities		3B	6
Global and Cultural Awareness		3E	3
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
Elective			3
	Total Credits		30

Sophomore

MATH 235	Introduction to Mathematical Reasoning		2
MATH 261	Calculus for Physical Scientists III		4
MATH 369	Linear Algebra I	4A	3
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	5
STAT 315	Statistics for Engineers and Scientists		3
Select one course from the following:			4
MATH 340	Introduction to Ordinary Differential Equations		
MATH 345	Differential Equations		
Select one group from the following:			4
Group A:			
CS 163 or 164	CS1—No Prior Programming Experience CS1–Prior Programming Experience		
Group B:			
CS 155	Introduction to Unix		
CS 156	Introduction to C Programming I		
In addition, to complete Group B, select at least two of the following:			
CS 157	Introduction to C Programming II		
CS 158/MATH 158	Mathematical Algorithms in C		
MATH 151	Mathematical Algorithms in Matlab I		
MATH 152	Mathematical Algorithms in Maple		
	Total Credits		30

Junior

MATH 317	Advanced Calculus of One Variable	4B	3
MATH 450	Introduction to Numerical Analysis I		3
MATH 451	Introduction to Numerical Analysis II		3
Select two courses from the following:			6
MATH 301	Introduction to Combinatorial Theory		
MATH 331	Introduction to Mathematical Modeling		
MATH 332	Partial Differential Equations		
MATH 360	Mathematics of Information Security		
Biological and Physical Sciences[1]		3A	3
Mathematics Sciences[2]			3
Related Area[3]			6
Elective			3
	Total Credits		30

Senior

JTC 300	Professional and Technical Communication (GT-CO3)	2	3
MATH 435	Projects in Applied Mathematics	4C	3
Select one course from the following:			3
MATH 417	Advanced Calculus I		
MATH 419	Introduction to Complex Variables		
MATH 430/ECE 430	Fourier and Wavelet Analysis with Apps		
MATH 460	Information and Coding Theory		
Mathematical Sciences[2]			6
Related Area[3]			6

Electives[4]		9
	Total Credits	30
	Program Total Credits:	120

1. Select from the list of courses (in a department other than Physics) in category 3A in the AUCC.
2. Select from upper-division MATH, CS, STAT courses, except those ending in –80 to –99.
3. A coherent set of courses outside the Mathematics Department in which mathematics is applied, approved by the concentration coordinator.
4. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
TO PREPARE FOR FIRST SEMESTER: The curriculum for the Major in Mathematics, Applied Mathematics Concentration assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester: MATH 117, MATH 118, MATH 124, MATH 125, MATH 126. A minimum grade of C is required in all Mathematics, Statistics, and Computer Science courses that are required by the major.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)		X	1B	4
MATH 192	First Year Seminar in Mathematical Sciences				1
Arts and Humanities				3B	3
Historical Perspectives				3D	3
Pre-Calculus Requirements must be completed by the end of Semester 1, if needed (MATH 117, MATH 118, MATH 124, MATH 125, MATH 126).		X			
	Total Credits				14

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 161	Calculus for Physical Scientists II (GT-MA1)		X	1B	4
Arts and Humanities				3B	3
Global and Cultural Awareness				3E	3
Social and Behavioral Sciences				3C	3
Elective					3
CO 150, MATH 160 must be completed by the end of Semester 2.		X			
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 261	Calculus for Physical Scientists III		X		4
PH 141	Physics for Scientists and Engineers I (GT-SC1)		X	3A	5
STAT 315	Statistics for Engineers and Scientists				3
Select one group from the following:					4
Group A:					
CS 163 or 164	CS1---No Prior Programming Experience CS1--Prior Programming Experience				
Group B:					
CS 155	Introduction to Unix				
CS 156	Introduction to C Programming I				
In addition, to complete Group B, select at least two of the following:					
CS 157	Introduction to C Programming II				
CS 158/ MATH 158	Mathematical Algorithms in C				
MATH 151	Mathematical Algorithms in Matlab I				
MATH 152	Mathematical Algorithms in Maple				
MATH 161 must be completed by the end of Semester 3.		X			
	Total Credits				16

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 235	Introduction to Mathematical Reasoning				2
MATH 369	Linear Algebra I			4A	3
PH 142	Physics for Scientists and Engineers II (GT-SC1)			3A	5
Select one course from the following:					4
MATH 340	Introduction to Ordinary Differential Equations				
MATH 345	Differential Equations				
MATH 261, PH 141 must be completed by the end of Semester 4.		X			
	Total Credits				14

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 450	Introduction to Numerical Analysis I		X		3
Select two courses from the following:					6
MATH 301	Introduction to Combinatorial Theory				
MATH 331	Introduction to Mathematical Modeling				
MATH 332	Partial Differential Equations				
MATH 360	Mathematics of Information Security				
Related Area (See Concentration Coordinator)					3
Elective					3
MATH 369 must be completed by the end of Semester 5.		X			
	Total Credits				15

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 317	Advanced Calculus of One Variable		X	4B	3
MATH 451	Introduction to Numerical Analysis II		X		3
Biological and Physical Sciences				3A	3
Mathematical Science Elective					3
Related Area (See Concentration Coordinator)					3
MATH 340 or MATH 345 must be completed by the end of Semester 6.		X			
	Total Credits				15

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Mathematical Science Elective					6
Related Area (See Concentration Coordinator)					3
Electives					6
MATH 450 must be completed by the end of Semester 7.		X			
	Total Credits				15

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
JTC 300	Professional and Technical Communication (GT-CO3)	X		2	3
MATH 435	Projects in Applied Mathematics	X		4C	3
Select one course from the following:		X			3
MATH 417	Advanced Calculus I				
MATH 419	Introduction to Complex Variables				
MATH 430/ ECE 430	Fourier and Wavelet Analysis with Apps				
Related Area (See Concentration Coordinator)		X			3
Elective		X			3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Mathematics, Computational Mathematics Concentration

No new students are being accepted into this concentration.

Requirements Effective Spring 2018

A minimum grade of C is required in all mathematics, statistics, and computer science courses that are required for graduation.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
MATH 192	First Year Seminar in Mathematical Sciences		1
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
Arts and Humanities		3B	6
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
Elective			1
	Total Credits		30

Sophomore

CS 163 or 164	CS1---No Prior Programming Experience CS1--Prior Programming Experience		4
CS 165	CS2--Data Structures		4
MATH 235	Introduction to Mathematical Reasoning		2
MATH 261	Calculus for Physical Scientists III		4
MATH 331	Introduction to Mathematical Modeling		3
MATH 369	Linear Algebra I	4A	3
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	5
STAT 315	Statistics for Engineers and Scientists		3
Global Cultural Awareness		3E	3
	Total Credits		31

Junior

CS 200	Algorithms and Data Structures		4
MATH 317	Advanced Calculus of One Variable	4B	3
MATH 332	Partial Differential Equations		3
MATH 340 or 345	Introduction to Ordinary Differential Equations Differential Equations		4
MATH 450	Introduction to Numerical Analysis I		3
MATH 451	Introduction to Numerical Analysis II		3
Biological and Physical Sciences[1]		3A	3
Electives			7
	Total Credits		30

Senior

JTC 300	Professional and Technical Communication (GT-CO3)	2	3
Select one course from the following:			3
ECE 430/MATH 430	Fourier and Wavelet Analysis with Apps		
MATH 417	Advanced Calculus I		
MATH 419	Introduction to Complex Variables		
MATH 435	Projects in Applied Mathematics	4C	3
Select one course from the following:			3

STAT 341	Statistical Data Analysis I	
STAT 400	Statistical Computing	
STAT 420	Probability and Mathematical Statistics I	
Electives[2]		17
	Total Credits	29
	Program Total Credits:	120

1 Select from the list of courses (in a department other than Physics) in category 3A in the AUCC.

2 Select enough elective credits to bring program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

TO PREPARE FOR FIRST SEMESTER: The curriculum for the Major in Mathematics, Computational Mathematics Concentration assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester: MATH 117, MATH 118, MATH 124, MATH 125, MATH 126. A minimum grade of C is required in all mathematics, statistics, and computer science courses that are required by the major.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)		X	1B	4
MATH 192	First Year Seminar in Mathematical Sciences				1
Arts and Humanities				3B	3
Historical Perspectives				3D	3
Pre-Calculus Requirements must be completed by the end of Semester 1, if needed (MATH 117, MATH 118, MATH 124, MATH 125, MATH 126).		X			
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 161	Calculus for Physical Scientists II (GT-MA1)	X		1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)		X	3A	5
Arts and Humanities				3B	3
Social and Behavioral Sciences				3C	3
Elective					1
MATH 160 must be completed by the end of Semester 2.		X			
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 163 or 164	CS1---No Prior Programming Experience CS1--Prior Programming Experience				4
MATH 261	Calculus for Physical Scientists III		X		4
MATH 331	Introduction to Mathematical Modeling				3
STAT 315	Statistics for Engineers and Scientists				3
Global Cultural Awareness				3E	3
	Total Credits				17
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 165	CS2--Data Structures				4
MATH 235	Introduction to Mathematical Reasoning		X		2
MATH 369	Linear Algebra I			4A	3
PH 142	Physics for Scientists and Engineers II (GT-SC1)			3A	5
CS 165, MATH 261, PH 141 must be completed by the end of Semester 4.		X			
	Total Credits				14

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 200	Algorithms and Data Structures				4

MATH 340 or 345	Introduction to Ordinary Differential Equations Differential Equations				4
MATH 450	Introduction to Numerical Analysis I		X		3
Biological and Physical Sciences				3A	3
	Total Credits				14
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 317	Advanced Calculus of One Variable		X	4B	3
MATH 332	Partial Differential Equations				3
MATH 451	Introduction to Numerical Analysis II		X		3
Electives					7
	Total Credits				16
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
JTC 300	Professional and Technical Communication (GT-CO3)			2	3
Select one course from the following:					3
ECE 430/ MATH 430	Fourier and Wavelet Analysis with Apps				
MATH 417	Advanced Calculus I		X		
MATH 419	Introduction to Complex Variables		X		
Select one course from the following:					3
STAT 341	Statistical Data Analysis I				
STAT 400	Statistical Computing				
STAT 420	Probability and Mathematical Statistics I				
Electives					6
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 435	Projects in Applied Mathematics	X		4C	3
Electives		X			11
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				14
	Program Total Credits:				120

Major in Mathematics, General Mathematics Concentration

The General Mathematics concentration is a liberal arts-based program designed to provide a solid foundation in mathematics with the flexibility to explore and develop expertise in other academic fields. Because of its flexibility, this concentration is well suited for students who want to combine mathematics with fields such as business, law, computer science, or statistics.

Requirements Effective Spring 2018

A minimum grade of C is required in all mathematics, statistics, and computer science courses that are required for graduation.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
MATH 192	First Year Seminar in Mathematical Sciences		1
Arts and Humanities		3B	6
Global and Cultural Awareness		3E	3
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3

Elective			3
	Total Credits		30

Sophomore

Select one group from the following:			4
Group A:			
CS 163 or 164	CS1---No Prior Programming Experience CS1--Prior Programming Experience		
Group B:			
CS 155	Introduction to Unix		
CS 156	Introduction to C Programming I		
In addition, to complete Group B, select at least two of the following:			
CS 157	Introduction to C Programming II		
CS 158/MATH 158	Mathematical Algorithms in C		
MATH 151	Mathematical Algorithms in Matlab I		
MATH 152	Mathematical Algorithms in Maple		
MATH 235	Introduction to Mathematical Reasoning		2
MATH 261	Calculus for Physical Scientists III		4
MATH 369	Linear Algebra I		3
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	5
STAT 303 or 315	Introduction to Communications Principles Statistics for Engineers and Scientists		3
Advanced Writing		2	3
	Total Credits		29

Junior

Select one from the following:[1,2]			3
MATH 317	Advanced Calculus of One Variable	4B	
MATH 417	Advanced Calculus I	4B,4C	
MATH 340 or 345	Introduction to Ordinary Differential Equations Differential Equations		4
Select one from the following:[2]			3
MATH 360[1]	Mathematics of Information Security	4A	
MATH 366[1]	Introduction to Abstract Algebra	4A	
MATH 466[2]	Abstract Algebra I	4A,4C	
Biological and Physical Sciences[3]		3A	3
Mathematical Sciences Electives[4]			6
Electives			11
	Total Credits		30

Senior

Select one from the following:[1]			3
MATH 417	Advanced Calculus I		
MATH 418	Advanced Calculus II		
MATH 466	Abstract Algebra I	4A,4C	
MATH 467	Abstract Algebra II		
Mathematical Sciences Electives[4]			12
Electives[5]			16
	Total Credits		31
	Program Total Credits:		120

1 At least 12 credits of ALL upper division MATH courses must be at the 400-level or above.

2 These courses are in addition to the 18 credits of Mathematical Sciences Electives required in footnote 1, and may not be used to fulfill the Mathematical Sciences Electives requirement.

3 Select a non-physics course from category 3A in the AUCC.

4 Select 18 credits from upper division (300-400 level) MATH, CS, or STAT courses, except those courses ending in -80 to -99. At least 9 of the 18 credits must be from upper division MATH courses.

5 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

TO PREPARE FOR FIRST SEMESTER: The curriculum for the Major in Mathematics, General Mathematics Concentration assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester: MATH 117, MATH 118, MATH 124, MATH 125, MATH 126. A minimum grade of C is required in all mathematics, statistics, and computer science courses that are required by the major.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)		X	1B	4
MATH 192	First Year Seminar in Mathematical Sciences				1
Arts and Humanities				3B	3
Historical Perspectives				3D	3
Pre-Calculus Requirements must be completed by the end of Semester 1, if needed (MATH 117, MATH 118, MATH 124, MATH 125, MATH 126).		X			
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 161	Calculus for Physical Scientists II (GT-MA1)		X	1B	4
Arts and Humanities				3B	3
Global and Cultural Awareness				3E	3
Social and Behavioral Sciences				3C	3
Elective					3
CO 150 and MATH 160 must be completed by the end of Semester 2.		X			
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 261	Calculus for Physical Scientists III		X		4
MATH 369	Linear Algebra I		X		3
PH 141	Physics for Scientists and Engineers I (GT-SC1)			3A	5
Advanced Writing				2	3
MATH 161 must be completed by the end of Semester 3.		X			
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
PH 142	Physics for Scientists and Engineers II (GT-SC1)			3A	5
MATH 235	Introduction to Mathematical Reasoning				2
Select one course from the following:					3
STAT 303	Introduction to Communications Principles				
STAT 315	Statistics for Engineers and Scientists				
Select one group from the following:					4
Group A:					
CS 163 or 164	CS1---No Prior Programming Experience CS1--Prior Programming Experience				
Group B:					
CS 155	Introduction to Unix				
CS 156	Introduction to C Programming I				

In addition, to complete Group B, select at least two of the following:

CS 157	Introduction to C Programming II				
CS 158/ MATH 158	Mathematical Algorithms in C				
MATH 151	Mathematical Algorithms in Matlab I				
MATH 152	Mathematical Algorithms in Maple				
MATH 261 and MATH 369 must be completed by the end of Semester 4.		X			
	Total Credits				14
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:			X		3
MATH 317	Advanced Calculus of One Variable			4B	
MATH 417	Advanced Calculus I			4B,4C	
Select one course from the following:			X	4A	3
MATH 360	Mathematics of Information Security			4A	
MATH 366	Introduction to Abstract Algebra			4A	
MATH 466	Abstract Algebra I			4A,4C	
Electives					9
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					4
MATH 340	Introduction to Ordinary Differential Equations				
MATH 345	Differential Equations				
Biological and Physical Sciences				3A	3
Mathematical Sciences Electives (See Concentration Requirements Tab)					6
Elective					2
MATH 317 and MATH 360 or MATH 366 or MATH 466 must be completed by the end of Semester 6.		X			
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
MATH 417	Advanced Calculus I				
MATH 418	Advanced Calculus II				
MATH 466	Abstract Algebra I			4A,4C	
MATH 467	Abstract Algebra II				
Mathematical Sciences Electives (See Concentration Requirements Tab)					6
Electives					6
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Mathematical Sciences Electives (See Concentration Requirements Tab)		X			6
Electives		X			10
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				16
	Program Total Credits:				120

Major in Mathematics, Mathematics Education Concentration

The Mathematics Education concentration is designed to prepare students to teach mathematics through the high school level, including Advanced Placement and International Baccalaureate courses. The program provides the subject matter, education classes, and classroom experience required for secondary education licensure in Colorado.

Students interested in pursuing a teaching license through CSU may refer to the Center for Educator Preparation (http://www.cep.chhs.colostate.edu)and the School of Education for general information.

Requirements
Effective Spring 2018

A minimum grade of C is required in all mathematics, statistics, and computer science courses that are required for graduation.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
Select one group from the following:			4
Group A:			
CS 163 or 164	CS1---No Prior Programming Experience CS1--Prior Programming Experience		
Group B			
CS 155	Introduction to Unix		
CS 156	Introduction to C Programming I		
In addition, to complete Group B, select at least two of the following:			
CS 157	Introduction to C Programming II		
CS 158/MATH 158	Mathematical Algorithms in C		
MATH 151	Mathematical Algorithms in Matlab I		
MATH 152	Mathematical Algorithms in Maple		
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
MATH 192	First Year Seminar in Mathematical Sciences		1
Arts and Humanities		3B	6
Global and Cultural Awareness		3E	3
Historical Perspectives		3D	3
Electives			2
	Total Credits		30

Sophomore

EDUC 275	Schooling in the United States (GT-SS3)	3C	3
EDUC 340	Literacy and the Learner		3
MATH 230	Discrete Mathematics for Educators		3
MATH 261	Calculus for Physical Scientists III		4
MATH 369	Linear Algebra I		3
PH 141[1]	Physics for Scientists and Engineers I (GT-SC1)	3A	5
Advanced Writing		2	3
Biological and Physical Sciences[1]		3A	4
Electives			3
	Total Credits		31

Junior

EDUC 331	Educational Technology and Assessment		2
EDUC 350	Instruction I-Individualization/Management		3
EDUC 386	Practicum-Instruction I		1
EDUC 464	Methods and Materials in Teaching Mathematics		4
MATH 317	Advanced Calculus of One Variable	4B	3
MATH 366	Introduction to Abstract Algebra	4A	3
MATH 470	Euclidean and Non-Euclidean Geometry		3
STAT 315	Statistics for Engineers and Scientists		3
Additional Biological and Physical Sciences[1]		3A	4

Mathematical Sciences Elective[2]			3
Elective			3
	Total Credits		32
Senior			
EDUC 450	Instruction II-Standards and Assessment		4
EDUC 485B	Student Teaching: Secondary		11
EDUC 486E	Practicum: Instruction II		1
EDUC 493A	Seminar: Professional Relations		1
MATH 425	History of Mathematics	4C	3
Electives[3]			7
	Total Credits		27
	Program Total Credits:		120

1 Students in this major must take a minimum of 13 credits from at least two subject codes selected from category 3A, Biological and Physical Sciences, in the All-University Core Curriculum (AUCC). At least one course must include a laboratory.

2 Select from STAT 420, STAT 430, or upper-division mathematics courses except those ending in -80 to -99.

3 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

TO PREPARE FOR FIRST SEMESTER: The curriculum for the Major in Mathematics, Mathematics Education Concentration assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester: MATH 117, MATH 118, MATH 124, MATH 125, MATH 126 . A minimum grade of C is required in all mathematics, statistics, and computer science courses that are required by the major.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)			1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)		X	1B	4
MATH 192	First Year Seminar in Mathematical Sciences				1
Arts and Humanities				3B	3
Historical Perspectives				3D	3
Elective					1
Pre-Calculus Requirements must be completed by the end of Semester 1, if needed (MATH 117, MATH 118, MATH 124, MATH 125, MATH 126).		X			
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 161	Calculus for Physical Scientists II (GT-MA1)		X	1B	4
Select one group from the following:					4
Group A:					
CS 163 or 164	CS1---No Prior Programming Experience CS1--Prior Programming Experience				
Group B:					
CS 155	Introduction to Unix				
CS 156	Introduction to C Programming I				
In addition, to complete Group B, select at least two of the following:					
CS 157	Introduction to C Programming II				
CS 158/ MATH 158	Mathematical Algorithms in C				
MATH 151	Mathematical Algorithms in Matlab I				
MATH 152	Mathematical Algorithms in Maple				
Arts and Humanities				3B	3
Global and Cultural Awareness				3E	3

Elective					1
CO 150 and MATH 160 must be completed by the end of Semester 2.		X			
	Total Credits				15
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 275	Schooling in the United States (GT-SS3)		X	3C	3
MATH 230	Discrete Mathematics for Educators		X		3
PH 141	Physics for Scientists and Engineers I (GT-SC1)			3A	5
Elective					3
MATH 161 must be completed by the end of Semester 3.		X			
	Total Credits				14
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 340	Literacy and the Learner		X		3
MATH 261	Calculus for Physical Scientists III		X		4
MATH 369	Linear Algebra I	X			3
Advanced Writing				2	3
Biological and Physical Sciences				3A	4
MATH 230 must be completed by the end of Semester 4.		X			
	Total Credits				17
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 331	Educational Technology and Assessment	X			2
MATH 366	Introduction to Abstract Algebra		X	4A	3
STAT 315	Statistics for Engineers and Scientists				3
Mathematical Science Elective (See Concentration Requirements Tab)					3
Additional Biological and Physical Science Electives (See Concentration Requirements Tab)				3A	4
Elective					3
EDUC 275, EDUC 340, MATH 261 and Admission to Teacher Licensure Program must be completed by the end of Semester 5.		X			
	Total Credits				18
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 350	Instruction I-Individualization/Management	X			3
EDUC 386	Practicum-Instruction I	X			1
EDUC 464	Methods and Materials in Teaching Mathematics	X			4
MATH 317	Advanced Calculus of One Variable		X	4B	3
MATH 470	Euclidean and Non-Euclidean Geometry	X			3
MATH 230 must be completed by the end of Semester 6.		X			
	Total Credits				14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 450	Instruction II-Standards and Assessment	X			4
EDUC 486E	Practicum: Instruction II	X			1
MATH 425	History of Mathematics	X		4C	3
Electives					7
MATH 317 and MATH 366 must be completed by the end of Semester 7.		X			
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
EDUC 485B	Student Teaching: Secondary	X			11
EDUC 493A	Seminar: Professional Relations	X			1

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X	
	Total Credits	12
	Program Total Credits:	120

Minor in Mathematics

The Department of Mathematics offers a minor in Mathematics for those students who wish to acquire a more extensive knowledge of mathematical sciences in support of their personal interests or major area of study.

Requirements Effective Fall 2016

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

A minimum grade of C is required in each MATH, STAT, and CS course required for the minor in mathematics.

Code	Title	Credits
Select one group from the following:		8
Group A:		
MATH 155	Calculus for Biological Scientists I (GT-MA1)	
MATH 255	Calculus for Biological Scientists II	
Group B:		
MATH 160	Calculus for Physical Scientists I (GT-MA1)	
MATH 161	Calculus for Physical Scientists II (GT-MA1)	
Group C:		
MATH 160	Calculus for Physical Scientists I (GT-MA1)	
MATH 271	Applied Mathematics for Chemists I	
Choose 6-7 credits from the following: [1]		6-7
MATH, STAT, or CS Upper-Division (300- to 400- level) courses		
MATH 229	Matrices and Linear Equations	
MATH 261	Calculus for Physical Scientists III	
MATH 272	Applied Mathematics for Chemists II	
Upper-Division Mathematics Electives (300- 400- level MATH courses) [2]		9
Program Total Credits:		23

1. At least 3 credits must be from the upper-division (300- to 400-level) courses.
2. Courses ending in –80 to –99 cannot be used to satisfy upper-division (300- to 400-level) requirements.

Minor in Mathematical Biology

The minor in Mathematical Biology is designed for students of the life sciences who wish to acquire a broader base of quantitative expertise in support of their major area of study.

Requirements Effective Fall 2011

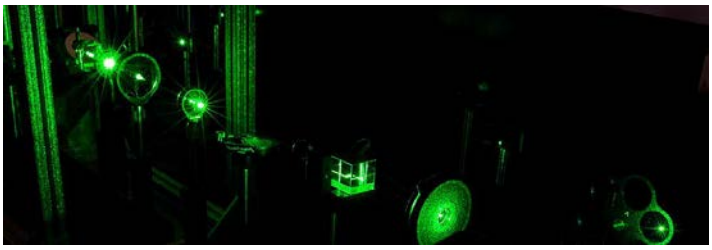
Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

A minimum grade of C is required in all mathematics, statistics, and computer science courses including all MATH, STAT, or CS joint-listed courses required for the minor in mathematical biology.

Code	Title	Credits
Select one group from the following:		8
Group A:		
MATH 155	Calculus for Biological Scientists I (GT-MA1)	
MATH 255	Calculus for Biological Scientists II	
Group B:		
MATH 160	Calculus for Physical Scientists I (GT-MA1)	
MATH 161	Calculus for Physical Scientists II (GT-MA1)	
MATH 369	Linear Algebra I	3
STAT 307	Introduction to Biostatistics	3
or STAT 315	Statistics for Engineers and Scientists	
MATH 348/BZ 348	Theory of Population and Evolutionary Ecology	4
MATH 455	Mathematics in Biology and Medicine	3
Program Total Credits:		21

Department of Physics



Office in Engineering Building, Room 124
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Professor Jacob Roberts, Chair

Undergraduate Majors

- Major in Physics
  - Applied Physics Concentration
  - Physics Concentration

Minor

- Minor in Physics

Graduate

Graduate Programs in Physics

Graduate programs in Physics and Applied Physics lead to Master of Science and Doctor of Philosophy degrees. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Physics (http://www.physics.colostate.edu).

Master's Programs

- Master of Science in Physics, Plan A*
- Master of Science in Physics, Plan B*

Ph.D.

- Ph.D. in Physics*

* Please see department for program of study.

Courses

Subjects in this department include: Astronomy (AA) and Physics (PH).

Astronomy (AA)

AA 100 Introduction to Astronomy (GT-SC2) Credits: 3 (3-0-0)
Course Description: Description of the various objects found in the heavens as well as the principles and techniques employed in investigations of these objects.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

AA 101 Astronomy Laboratory (GT-SC1) Credit: 1 (0-2-0)
Course Description: Conduct observations, experiments, and simulations to develop an intuitive understanding of astronomical phenomena.
Prerequisite: AA 100, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

AA 495 Independent Study in Astrophysics Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Physics (PH)

PH 110 Physics of Everyday Phenomena (GT-SC2) Credits: 3 (3-0-0)
Course Description: Fundamental concepts of physics and elementary quantitative reasoning applied to phenomena in everyday life and beyond.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

PH 111 Physics of Everyday Phenomena Laboratory (GT-SC1) Credit: 1 (0-2-0)
Course Description: Experiments dealing with basic physics concepts including explorations of everyday phenomena.
Prerequisite: PH 110, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

PH 121 General Physics I (GT-SC1) Credits: 5 (3-2-1)
Course Description: Concepts of force, torque, energy, momentum, work used to cover fluids, waves, sound, temperature, heat; biological, physical examples (noncalculus).
Prerequisite: MATH 125, may be taken concurrently or MATH 155, may be taken concurrently or MATH 157, may be taken concurrently or MATH 160, may be taken concurrently.
Registration Information: Must register for lecture, lab, and recitation. Credit not allowed for both PH 121 and PH 141.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

PH 122 General Physics II (GT-SC1) Credits: 5 (3-2-1)
Course Description: Electricity including electrostatics and simple circuits; magnetism; optics; nuclear physics, radiation; biological, physical examples (noncalculus).
Prerequisite: PH 121 or PH 141.
Registration Information: Must register for lecture, lab, and recitation. Credit not allowed for both PH 122 and PH 142.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

PH 141 Physics for Scientists and Engineers I (GT-SC1) Credits: 5 (3-2-1)
Course Description: Forces, energy, momentum, angular momentum, oscillations, waves, heat, thermodynamics (calculus based).
Prerequisite: MATH 126, may be taken concurrently and MATH 155, may be taken concurrently or MATH 155, may be taken concurrently or MATH 159, may be taken concurrently or MATH 160, may be taken concurrently.
Registration Information: Must register for lecture, lab, and recitation. Credit not allowed for both PH 141 and PH 121.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

PH 142 Physics for Scientists and Engineers II (GT-SC1) Credits: 5 (3-2-1)
Course Description: Electricity and magnetism, circuits, light, optics (calculus based).
Prerequisite: (PH 141) and (MATH 161, may be taken concurrently or MATH 255, may be taken concurrently or MATH 271, may be taken concurrently).
Registration Information: Must register for lecture, lab, and recitation. Credit not allowed for both PH 142 and PH 122.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

PH 245 Introduction to Electronics Credits: 3 (2-3-0)
Course Description: AC circuits, physical bases and applications of electronic devices.
Prerequisite: MATH 161 and PH 142.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 293 Selected Topics in Physics Credit: 1 (1-0-0)
Course Description: Selected topics in physics with emphasis on depth of understanding.
Prerequisite: PH 142.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PH 298 Introductory Research Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 314 Introduction to Modern Physics Credits: 4 (4-0-0)
Course Description: Relativity; quantum mechanics; atomic structure; applications to solid-state, nuclear, and elementary particle physics.
Prerequisite: (MATH 261, may be taken concurrently) and (PH 142).
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 315 Modern Physics Laboratory Credits: 2 (0-4-0)
Course Description: Experiments in modern physics.
Prerequisite: PH 314, may be taken concurrently.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 327 Analytical Techniques for Physics Credits: 3 (3-0-0)
Course Description: Applications to physics of curvilinear coordinate systems, line/surface integrals, linear algebra, ordinary/partial differential eqs., probability.
Prerequisite: (MATH 261) and (MATH 340 or MATH 345) and (PH 142 and PH 314).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PH 341 Mechanics Credits: 4 (4-0-0)
Course Description: Particle dynamics, translation and rotation of rigid bodies, moving coordinate systems, Lagrangian mechanics, matrix and tensor methods.
Prerequisite: (MATH 340 or MATH 345) and (PH 141).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 351 Electricity and Magnetism Credits: 4 (4-0-0)
Course Description: Electrostatics, magnetostatics, currents, time-dependent electric and magnetic fields, radiation.
Prerequisite: (MATH 340 or MATH 345) and (PH 142).
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 353 Optics and Waves Credits: 4 (3-3-0)
Course Description: Geometrical optics; wave optics; interference, diffraction, and polarization; quantum optics.
Prerequisite: MATH 261 and PH 142.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 361 Physical Thermodynamics Credits: 3 (3-0-0)
Course Description: Laws of thermodynamics; thermodynamic potentials; applications such as fluids, phase transitions, electrical and magnetic systems, binary mixtures.
Prerequisite: MATH 261 and PH 142.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description: Participation as a physics tutor.
Prerequisite: PH 121 or PH 141.
Registration Information: Written consent of department chair required. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 425 Advanced Physics Laboratory Credits: 2 (0-4-0)
Course Description: Advanced experiments in electricity and magnetism, statistical physics and quantum mechanics.
Prerequisite: PH 315 and PH 451.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 451 Introductory Quantum Mechanics I Credits: 3 (3-0-0)
Course Description: Schrodinger's theory of wave mechanics, potential wells, harmonic oscillators, wave packets, operators, angular momentum.
Prerequisite: (MATH 340 or MATH 345) and (PH 314).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 452 Introductory Quantum Mechanics II Credits: 3 (3-0-0)
Course Description: Approximation techniques, perturbation theory, identical particles and spin, structure and spectra of atoms and molecules, hydrogen atom.
Prerequisite: PH 451.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 462 Statistical Physics Credits: 3 (3-0-0)
Course Description: Maxwell-Boltzmann, Fermi-Dirac, and Bose-Einstein distribution functions; kinetic theory; applications to solids, metals, semiconductors, and gases.
Prerequisite: MATH 340 and PH 314 and PH 361.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 492 Seminar Credit: 1 (0-0-1)
Course Description: Preparation and presentation of seminars on selected modern topics.
Prerequisite: PH 315.
Registration Information: Written consent of instructor required.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 495 Independent Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 498 Research Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 517 Chaos, Fractals, and Nonlinear Dynamics Credits: 3 (3-0-0)
Course Description: Strange attractors, fractal dimensions, Lyapunov exponents, multifractal spectrum, period doubling, universality, intermittency, time-delay embedding.
Prerequisite: (MATH 261 and PH 341) and (MATH 340 or MATH 345).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PH 521 Introduction to Lasers Credits: 3 (3-0-0)
Course Description: Stimulated emission; laser resonators; theory of laser oscillation; specific laser systems; applications.
Prerequisite: (MATH 340 and PH 353) and (CHEM 476 or PH 451).
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 522 Introductory Laser Laboratory Credit: 1 (0-2-0)
Course Description: Experiments providing hands-on experiences with lasers.
Prerequisite: PH 521, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PH 531 Introductory Condensed Matter Physics Credits: 3 (3-0-0)
Course Description: Crystal structures and bonding, electronic levels and vibrations, dielectric, optical and magnetic properties, quasiparticles, superconductivity.
Prerequisite: PH 451 and PH 361.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PH 561 Elementary Particle Physics Credits: 3 (3-0-0)
Course Description: Particle interactions and detection techniques. Quark model, scattering models and standard model of electroweak interactions, physics of colliders.
Prerequisite: PH 451.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PH 571 Mathematical Methods for Physics I Credits: 3 (3-0-0)
Course Description: Vector analysis, eigenvalues and eigenvectors, infinite series, method of Frobenius, complex variables, contour integration.
Prerequisite: MATH 340.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 572 Mathematical Methods for Physics II Credits: 3 (3-0-0)
Course Description: Partial differential equations, Sturm-Liouville theory, special functions, Green's functions, Fourier series, Fourier and Laplace transforms.
Prerequisite: PH 571.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 621 Classical Mechanics Credits: 3 (3-0-0)
Course Description: Central forces, scattering, noninertial reference frames, Coriolis force, Lagrange's and Hamilton's equations, small oscillations, continuum mechanics.
Prerequisite: (PH 341) and (PH 571, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 631 Modern Topics in Condensed Matter Physics Credits: 3 (3-0-0)
Course Description: Selected topics in modern condensed matter physics. Examples include topological phases of matter, superconductivity, heavy fermions, density functional theory, surfaces and interfaces.
Prerequisite: PH 531.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

PH 641 Electromagnetism I Credits: 3 (3-0-0)
Course Description: Electrostatics in a vacuum and a medium, general solution of Laplace's equation, Green's functions, magnetostatics in a vacuum and a medium.
Prerequisite: (PH 351) and (PH 571).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 642 Electromagnetism II Credits: 3 (3-0-0)
Course Description: Maxwell's equations, electromagnetic waves, radiation by accelerated charges, special relativity, Lagrangian formulation of electromagnetism.
Prerequisite: PH 641.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 651 Quantum Mechanics I Credits: 3 (3-0-0)
Course Description: WKB theory, Heisenberg picture, 3D wells, hydrogen atom, time-independent perturbation theory, angular momentum and spin, Clebsch-Gordan coefficients.
Prerequisite: (PH 452) and (PH 571, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 652 Quantum Mechanics II Credits: 3 (3-0-0)
Course Description: Wigner-Eckhart theorem, symmetries, density matrix, identical particles, interaction picture, time-dependent perturbation theory, scattering.
Prerequisite: PH 651.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 671 Statistical Mechanics Credits: 3 (3-0-0)
Course Description: Canonical and grand-canonical ensembles; Maxwell-Boltzmann, Bose-Einstein, and Fermi-Dirac statistics; density operator; Bose-Einstein condensation.
Prerequisite: (PH 452 and PH 462) and (PH 571, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PH 692 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 693 Current Topics in Physics Research Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 722 Quantum Electronics Credits: 3 (3-0-0)
Course Description: One- and two-photon spectroscopy; broadening mechanisms; nonlinear optics; coherent phenomena; experimental methods.
Prerequisite: PH 521.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PH 731 Condensed Matter Theory Credits: 3 (3-0-0)
Course Description: Second quantization; electrons; phonons; electron-phonon interaction; superconductivity; magnetism; spin waves; density-functional methods; symmetry.
Prerequisite: (PH 462) and (PH 531) and (PH 652).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PH 762 Elementary Particle Theory Credits: 3 (3-0-0)
Course Description: Symmetries, electrodynamics, renormalization, and the running coupling constant. Hadron structure, QCD, gauge symmetry and electroweak interaction.
Prerequisite: PH 561 and PH 652.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

PH 770 Quantum Theory Credits: 3 (3-0-0)
Course Description: Formal scattering theory; relativistic quantum mechanics, quantum theory of radiation, symmetries and statistics, many-body theory.
Prerequisite: PH 652.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 784 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description: Supervised teaching of general physics laboratory and recitation sections.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 793A Seminar: Condensed Matter Physics Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 793B Seminar: Laser Spectroscopy/Quantum Electronics Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 793C Seminar: Statistical Mechanics Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 793D Seminar: Mathematical Physics Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 793E Seminar: High Energy Physics Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 795 Independent Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Physics

Physics is the study of motion, matter, and energy. It is the most fundamental of sciences, and provides the essential underpinning of chemistry, biology, astronomy, and geology. Physicists probe the structure of atomic nuclei, study exotic states of matter that occur at ultra-low temperatures, and develop theories that predict the origin and destiny of the universe. Physics has practical applications to a wide variety of tasks such as fabricating very large scale integrated circuits, producing high efficiency solar cells, and developing nanomachines, high-power lasers, and scanners for imaging activity within the human brain. Fundamental research in physics has led to many important inventions, including the transistor, the computer, the internet, the flat panel display, and the cell phone.

The Physics major begins with an emphasis on fundamentals in the basic sciences and mathematics to provide students with a broad foundation. Subsequent course work is designed to develop analytical and experimental abilities that allow students to solve problems involving the technical applications of physics. The curriculum includes courses on classical mechanics, modern physics, quantum mechanics, electricity and magnetism, and thermal physics. A strong liberal arts program rounds out the major and provides educational breadth. Participation in undergraduate research is strongly encouraged since it enhances practical training and expands employment opportunities, as well as being expected of anyone applying to research-based graduate programs.

Two concentrations are offered: Physics and Applied Physics. The former is the standard concentration, and is recommended for students planning to apply to graduate programs in Physics or related disciplines. The latter requires the student to select a specific "field': there are a variety to choose from, and each has its own menu of associated electives. The Applied Physics concentration is ideal for students who are double-majoring in other technical disciplines, or who anticipate further education towards a career in health professions (including, notably, Medical Physics).

Learning Outcomes

Graduates will:

- Obtain a solid background in experimental physics and basic theoretical physics. This will include a conceptual understanding of mechanics, electromagnetism, many-body physics, and quantum mechanics as applied to important model systems and real systems.
- Have the contemporary skills and knowledge necessary for entry-level positions in a variety of occupations or for admission to graduate or professional schools.
- Be able to carry out experiments on diverse physics phenomena using electrical and optical techniques; analyze data using statistical methods appropriately; identify systematic errors; and relate the results to core physics content at the advanced undergraduate level.
- Be able to communicate the results of experiments and theoretical analyses in writing and orally.

Potential Occupations

Physics majors who go into the workforce directly after graduation use their training in a variety of settings. The primary employers for our graduates have been large aerospace/defense and electronics companies, as well as software firms and smaller high-tech companies. In addition to the more obvious jobs in those settings, such as computer programming, quality control, and electronics design, our students have also been hired in training and sales capacities. High school teaching is a possibility: there are several pathways for students with undergraduate Physics degrees to obtain teaching credentials. Physics graduates possess excellent mathematical and analytical skills that are useful in business and finance as well.

Our majors have gone on to research-based graduate programs in disciplines including Physics, Applied Physics, Applied Mathematics, Atmospheric Science, and Quantitative Biology. Those earning graduate degrees can work in college teaching and at industrial, government, and academic research labs and reach the highest professional levels.

Health Physics and Medical Physics are two less-known career paths that offer great opportunities for students interested in the direct application of physics to human well-being. The former is concerned with protecting people from dangers associated with ionizing radiation, while the latter involves working with x-ray machines and radioisotopes in clinical settings. Both require Master's degrees in the discipline, and a Physics major is the preferred undergraduate preparation.

Concentrations

- Applied Physics Concentration
- Physics Concentration

Major in Physics, Applied Physics Concentration

The Applied Physics concentration combines fundamental course work in physics with a selection of courses in a related field. Seven fields are available:

- The **Electronics, Semiconductors, and Optics** field and the **Materials and Fluids** field are designed for students interested in rapidly changing technology or in areas that overlap the boundaries of traditional engineering disciplines.
- The **Computers** field provides a foundation for the application of modern computer technology to problems in physics, the development of new types of computers, and jobs in computer programming.
- The **Chemistry** field combines thorough knowledge of both chemistry and physics, which is useful in such interdisciplinary areas as materials science, surface science, and physical chemisty/chemical physics.
- The **Medical Physics** field and the **Biophysics** field prepare students for further study in medical physics (the application of physics technologies to medical practice), health physics (radiation safety and protection), or biophysics, and are also appropriate for students planning careers in traditional health professions.
- The **Geophysics** field prepares students for further study in geophysics and careers involving application of physical methods in geology.

With this concentration, it is also possible for students to design a custom field (in consultation with departmental advisors) to meet their specific needs.

Requirements Effective Fall 2018

Each course used to meet requirements of the concentration need a minimum grade of C-, including courses to satisfy AUCC Categories 1, 2, and 3A.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
Select one group from the following:			3 - 4
Group A:			
CS 155	Introduction to Unix		
CS 156	Introduction to C Programming I		
CS 157	Introduction to C Programming II		

Group B:			
CS 163 or 164	CS1--No Prior Programming Experience CS1--Prior Programming Experience		
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	5
Arts and Humanities		3B	6
	Total Credits		30-31

Sophomore

CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
MATH 261	Calculus for Physical Scientists III		4
Select one from the following:			4
MATH 340	Introduction to Ordinary Differential Equations		
MATH 345	Differential Equations		
PH 245[1]	Introduction to Electronics		3
PH 293	Selected Topics in Physics		1
PH 314	Introduction to Modern Physics		4
PH 315	Modern Physics Laboratory		2
Social and Behavioral Sciences		3C	3
Historical Perspectives		3D	3
	Total Credits		29

Junior

Select one from the following:[2]			3
CHEM 301	Advanced Scientific Writing--Chemistry (GT-CO3)	2	
CO 300	Writing Arguments (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
LB 300	Specialized Professional Writing	2	
PH 341	Mechanics		4
PH 351[1]	Electricity and Magnetism		4
PH 353	Optics and Waves		4
PH 361	Physical Thermodynamics		3
Select either			9
PH 327	Analytical Techniques for Physics		
Electives			
Or			
Technical Electives List 1 (select a minimum of 3 credits)			
Technical Electives List 2 (select a minimum of 3 credits)			
Electives			
Diversity and Global Awareness		3E	3
	Total Credits		30

Senior

PH 425	Advanced Physics Laboratory	4C	2
PH 451	Introductory Quantum Mechanics I	4A,4B	3
PH 492	Seminar	4C	1
Select one Field from the lists below (Select a minimum of 12 credits from a minimum of four courses)[3]			12

Electives[4]		12-13
	Total Credits	30-31
	Program Total Credits:	120

Technical Electives List 1 (select a minimum of 3 credits not taken elsewhere in the program)

Code	Title	Credits
BC 411	Physical Biochemistry	4
CBE 331	Momentum Transfer and Mechanical Separations	3
CBE 332	Heat and Mass Transfer Fundamentals	3
CHEM 113	General Chemistry II	3
CHEM 114	General Chemistry Lab II	1
CHEM 245	Fundamentals of Organic Chemistry	4
CHEM 341	Modern Organic Chemistry I	3
CHEM 343	Modern Organic Chemistry II	3
CHEM 345	Organic Chemistry I	4
CHEM 346	Organic Chemistry II	4
CHEM 461	Inorganic Chemistry	3
CHEM 474	Physical Chemistry I	3
CHEM 476	Physical Chemistry II	3
CIVE 300	Fluid Mechanics	3
CIVE 301	Fluid Mechanics Laboratory	1
CS 253	Software Development with C++	4
CS 410	Introduction to Computer Graphics	4
CS 440	Introduction to Artificial Intelligence	4
CS 475	Parallel Programming	4
ECE 312	Linear System Analysis II	3
ECE 331	Electronics Principles I	4
ECE 332	Electronics Principles II	4
ECE 404	Experiments in Optical Electronics	2
ECE 441	Optical Electronics	3
ECE 444	Antennas and Radiation	3
ECE 471A	Semiconductor Physics	1
ECE 471B	Semiconductor Junctions	1
ECE 507	Plasma Physics and Applications	3
ECE 546	Laser Fundamentals and Devices	3
ERHS 450	Introduction to Radiation Biology	3
ERHS 530	Radiological Physics and Dosimetry I	3
ERHS 531	Nuclear Instruments and Measurements	2
GEOL 578	Global Seismology	4
MATH 317	Advanced Calculus of One Variable	3
MATH 332	Partial Differential Equations	3
MATH 366	Introduction to Abstract Algebra	3
MATH 369	Linear Algebra I	3
MATH 405	Introduction to Number Theory	3
MATH 419	Introduction to Complex Variables	3
MATH 450	Introduction to Numerical Analysis I	3
MATH 451	Introduction to Numerical Analysis II	3
MATH 466	Abstract Algebra I	3
MATH 467	Abstract Algebra II	3
MATH 470	Euclidean and Non-Euclidean Geometry	3
MATH 472	Introduction to Topology	3
MATH 474	Introduction to Differential Geometry	3
MECH 331	Introduction to Engineering Materials	4
MECH 344	Heat and Mass Transfer	3
MECH 460	Aeronautics	3
MECH 468	Space Propulsion and Power Engineering	3
PH 517	Chaos, Fractals, and Nonlinear Dynamics	3
PH 521	Introduction to Lasers	3
PH 522	Introductory Laser Laboratory	1
PH 531	Introductory Condensed Matter Physics	3
PH 561	Elementary Particle Physics	3
PH 571	Mathematical Methods for Physics I	3
PH 572	Mathematical Methods for Physics II	3
STAT 315	Statistics for Engineers and Scientists	3
STAT 340	Multiple Regression Analysis	3
STAT 420	Probability and Mathematical Statistics I	3
STAT 421	Introduction to Stochastic Processes	3
STAT 430	Probability and Mathematical Statistics II	3
STAT 460	Applied Multivariate Analysis	3

Technical Electives List 2 (select a minimum of 3 credits not taken elsewhere in the program)

Code	Title	Credits
CHEM 113	General Chemistry II	3
CHEM 114	General Chemistry Lab II	1
CIVE 300	Fluid Mechanics	3
CIVE 301	Fluid Mechanics Laboratory	1
ECE 507	Plasma Physics and Applications	3
MATH 317	Advanced Calculus of One Variable	3
MATH 332	Partial Differential Equations	3
MATH 366	Introduction to Abstract Algebra	3
MATH 369	Linear Algebra I	3
MATH 405	Introduction to Number Theory	3
MATH 419	Introduction to Complex Variables	3
MATH 450	Introduction to Numerical Analysis I	3
MATH 451	Introduction to Numerical Analysis II	3
MATH 466	Abstract Algebra I	3
MATH 467	Abstract Algebra II	3
MATH 470	Euclidean and Non-Euclidean Geometry	3
MATH 472	Introduction to Topology	3
MATH 474	Introduction to Differential Geometry	3
MECH 331	Introduction to Engineering Materials	4
MECH 344	Heat and Mass Transfer	3
MECH 468	Space Propulsion and Power Engineering	3
PH 498	Research	1-6
PH 517	Chaos, Fractals, and Nonlinear Dynamics	3
PH 521	Introduction to Lasers	3
PH 522	Introductory Laser Laboratory	1
PH 531	Introductory Condensed Matter Physics	3

PH 561	Elementary Particle Physics	3
PH 571	Mathematical Methods for Physics I	3
PH 572	Mathematical Methods for Physics II	3
STAT 315	Statistics for Engineers and Scientists	3
STAT 340	Multiple Regression Analysis	3
STAT 420	Probability and Mathematical Statistics I	3
STAT 421	Introduction to Stochastic Processes	3
STAT 430	Probability and Mathematical Statistics II	3
STAT 460	Applied Multivariate Analysis	3

Biophysics Field

Code	Title	Credits
BC 351	Principles of Biochemistry	4
BC 411	Physical Biochemistry	4
BC 463	Molecular Genetics	3
BC 464	Molecular Genetics Recitation	1
BC 465	Molecular Regulation of Cell Function	3
BC 467	Biochemistry of Disease	3
BIOM 421	Transport Phenomena in Biomedical Engineering	3
BIOM 422	Kinetics of Biomolecular and Cellular Systems	3
BIOM 441	Biomechanics and Biomaterials	3
BIOM 470	Biomedical Engineering	3
BIOM 526	Biological Physics	3
BZ 310	Cell Biology	4
CHEM 433	Clinical Chemistry	3
ERHS 450	Introduction to Radiation Biology	3
ERHS 530	Radiological Physics and Dosimetry I	3
ERHS 531	Nuclear Instruments and Measurements	2
ERHS 550	Principles of Radiation Biology	5
MIP 300	General Microbiology	3
MIP 450	Microbial Genetics	3

Chemistry Field [3]

Code	Title	Credits
BC 351	Principles of Biochemistry	4
BC 401	Comprehensive Biochemistry I	3
BC 403	Comprehensive Biochemistry II	3
BC 404	Comprehensive Biochemistry Laboratory	2
BC 411	Physical Biochemistry	4
CHEM 245	Fundamentals of Organic Chemistry	4
CHEM 246	Fundamentals of Organic Chemistry Laboratory	1
CHEM 261	Fundamentals of Inorganic Chemistry	3
CHEM 335	Introduction to Analytical Chemistry	3
CHEM 341	Modern Organic Chemistry I	3
CHEM 343	Modern Organic Chemistry II	3
CHEM 344	Modern Organic Chemistry Laboratory	2
CHEM 345	Organic Chemistry I	4
CHEM 346	Organic Chemistry II	4
CHEM 440	Advanced Organic Chemistry Laboratory	2
CHEM 461	Inorganic Chemistry	3
CHEM 462	Inorganic Chemistry Laboratory	2
CHEM 474	Physical Chemistry I	3
CHEM 475	Physical Chemistry Laboratory I	1
CHEM 476	Physical Chemistry II	3
CHEM 477	Physical Chemistry Laboratory II	1

Computers Field [3]

Code	Title	Credits
CS 220	Discrete Structures and their Applications	4
CS 253	Software Development with C++	4
CS 270	Computer Organization	4
CS 314	Software Engineering	3
CS 320	Algorithms--Theory and Practice	3
CS 356	Systems Security	3
CS 370	Operating Systems	3
CS 410	Introduction to Computer Graphics	4
CS 414	Object-Oriented Design	4
CS 420	Introduction to Analysis of Algorithms	4
CS 430	Database Systems	4
CS 435	Introduction to Big Data	4
CS 440	Introduction to Artificial Intelligence	4
CS 453	Introduction to Compiler Construction	4
CS 454	Principles of Programming Languages	4
CS 455	Introduction to Distributed Systems	4
CS 457	Computer Networks and the Internet	4
CS 470	Computer Architecture	4
CS 475	Parallel Programming	4
ECE 251	Introduction to Microprocessors	4
ECE 450	Digital System Design Laboratory	1
ECE 451	Digital System Design	3
ECE 452	Computer Organization and Architecture	3
ECE 456	Computer Networks	4
MATH 360	Mathematics of Information Security	3
MATH 460	Information and Coding Theory	3

Custom Field [3]

Specific courses forming a coherent program are selected by the student in consultation with their academic advisor and subject to approval of the Key Advisor. Only 3 credits from each AA and CS course counts towards the 12 credit requirement.

Electronics, Semiconductors, and Optics Field

Code	Title	Credits
ECE 311	Linear System Analysis I	3
ECE 312	Linear System Analysis II	3
ECE 331	Electronics Principles I	4
ECE 332	Electronics Principles II	4
ECE 404	Experiments in Optical Electronics	2
ECE 411	Control Systems	4
ECE 412	Digital Control and Digital Filters	3
ECE 421	Telecommunications I	3
ECE 430	Fourier and Wavelet Analysis with Apps	3
ECE 441	Optical Electronics	3

ECE 444	Antennas and Radiation	3
ECE 457	Fourier Optics	3
ECE 471A	Semiconductor Physics	1
ECE 471B	Semiconductor Junctions	1
ECE 546	Laser Fundamentals and Devices	3

Geophysics Field [3]

Code	Title	Credits
CIVE 413	Environmental River Mechanics	3
GEOL 232	Mineralogy	3
GEOL 250	The Solid Earth	3
GEOL 332	Optical Mineralogy	2
GEOL 344	Stratigraphy and Sedimentology	4
GEOL 372	Structural Geology	4
GEOL 442	Applied Geophysics	4
GEOL 446	Environmental Geology	3
GEOL 454	Geomorphology	4
GEOL 530	Advanced Petrology	3
GEOL 570	Plate Tectonics	3

Materials and Fluids Field

Code	Title	Credits
CBE 331	Momentum Transfer and Mechanical Separations	3
CBE 332	Heat and Mass Transfer Fundamentals	3
CIVE 300	Fluid Mechanics	3
CIVE 301	Fluid Mechanics Laboratory	1
CIVE 401	Hydraulic Engineering	3
CIVE 413	Environmental River Mechanics	3
MECH 331	Introduction to Engineering Materials	4
MECH 338	Thermal/Fluid Sciences Laboratory	1
MECH 342	Mechanics and Thermodynamics of Flow Processes	3
MECH 344	Heat and Mass Transfer	3
MECH 460	Aeronautics	3
PH 531	Introductory Condensed Matter Physics	3

Medical Physics Field

Code	Title	Credits
BC 467	Biochemistry of Disease	3
BIOM 421	Transport Phenomena in Biomedical Engineering	3
BIOM 422	Kinetics of Biomolecular and Cellular Systems	3
BIOM 470	Biomedical Engineering	3
BMS 300	Principles of Human Physiology	4
BMS 325	Cellular Neurobiology	3
BMS 345	Functional Neuroanatomy	4
CHEM 433	Clinical Chemistry	3
ERHS 332	Principles of Epidemiology	3
ERHS 450	Introduction to Radiation Biology	3
ERHS 530	Radiological Physics and Dosimetry I	3
ERHS 531	Nuclear Instruments and Measurements	2
ERHS 556	Monte Carlo Methods in Health Physics	3
ERHS 561	Radiation Public Health	2
ERHS 563	Environmental Contaminant Modeling I	2
ERHS 570	Radioecology	2
MIP 300	General Microbiology	3
MIP 342	Immunology	4
MIP 351	Medical Bacteriology	3
MIP 420	Medical and Molecular Virology	4

1 For students who change majors from Electrical Engineering or are double-majoring in Electrical Engineering, please see advisor for possible substitutions.

2 CHEM 301 or CO 301B are recommended. Other courses in AUCC Category 2 may be accepted if they are taken prior to declaring the Physics major or are taken to meet requirements of another major.

3 A minimum of 6 credits must be 300-, 400-, or 500-level.

4 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- , 400-level, or 500-level).

Major Completion Map

Distinctive Requirements for Degree Program:

Required PH courses above the 100-Level (with the exception of PH 293 and, if there is sufficient demand, PH 314) are offered only Fall or Spring, not both. A grade of C- or better is required in all courses used to meet requirements of the major, except for unrestricted electives and courses taken to satisfy All-University Core Curriculum (AUCC) categories 3B, 3C, 3D, and 3E. Many courses in a Selected Field list have prerequisites outside the Department of Physics. Any student considering the Applied Physics concentration should meet with an advisor as soon as possible. Note that PH 327 may be replaced by three credits from each of the two Technical Electives Lists.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)		X	1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)		X	3A	5
Arts and Humanities				3B	3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one group from the following:					3-4
Group A:					

CS 155	Introduction to Unix				
CS 156	Introduction to C Programming I				
CS 157	Introduction to C Programming II				
Group B:					
CS 163 or 164	CS1---No Prior Programming Experience CS1--Prior Programming Experience				
MATH 161	Calculus for Physical Scientists II (GT-MA1)		X	1B	4
PH 142	Physics for Scientists and Engineers II (GT-SC1)		X	3A	5
Arts and Humanities				3B	3
CO 150, MATH 160, and PH 141 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 111	General Chemistry I (GT-SC2)			3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)			3A	1
MATH 261	Calculus for Physical Scientists III		X		4
PH 245	Introduction to Electronics				3
PH 293	Selected Topics in Physics				1
Historical Perspectives				3D	3
MATH 161 and PH 142 must be completed by the end of Semester 3.		X			
	Total Credits				16

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					4
MATH 340	Introduction to Ordinary Differential Equations		X		
MATH 345	Differential Equations				
PH 314	Introduction to Modern Physics		X		4
PH 315	Modern Physics Laboratory		X		2
Social and Behavioral Sciences				3C	3
MATH 261 must be completed by the end of Semester 4.		X			
	Total Credits				13

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
PH 341	Mechanics		X		4
PH 353	Optics and Waves		X		4
Select one group from the following:					6
Group A:					
PH 327	Analytical Techniques for Physics				
Elective					
Group B:					
Technical Electives List 1 (Select a minimum of 3 credits from List on Concentration Requirements Tab)					
Technical Electives List 2 (Select a minimum of 3 credits from List on Concentration Requirements Tab)					
MATH 340 and PH 245 must be completed by the end of Semester 5.		X			
	Total Credits				14

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
PH 351	Electricity and Magnetism		X		4
PH 361	Physical Thermodynamics	X			3
Select one course from the following:					3
CHEM 301	Advanced Scientific Writing–Chemistry (GT-CO3)			2	
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	

LB 300	Specialized Professional Writing			2	
Diversity and Global Awareness				3E	3
Elective					3
PH 293, PH 314, and PH 315 must be completed by the end of Semester 6.		X			
	Total Credits				16

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
PH 451	Introductory Quantum Mechanics I	X		4A,4B	3
Selected Field (See Lists on Concentration Requirements Tab)					6
Electives					6
PH 341 and PH 353 must be completed by the end of Semester 7.		X			
	Total Credits				15

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
PH 425	Advanced Physics Laboratory	X		4C	2
PH 492	Seminar	X		4C	1
Selected Field (See Lists on Concentration Requirements Tab)		X			6
Electives		X			7
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				16
	Program Total Credits:				120

Major in Physics, Physics Concentration

The Physics concentration provides a broad background in physics that serves as a base for later specialization, either in graduate school or on the job. It is designed for those seeking greater insight into physics and an introduction to more advanced topics and methods. Students who obtain a degree in Physics with the Physics concentration are prepared for a career in industry or government, or for advanced study at the graduate level.

Requirements Effective Fall 2018

Each course used to meet requirements of the concentration need a minimum grade of C-, including courses to satisfy AUCC Categories 1, 2, and 3A.

Freshman

		AUCC	**Credits**
CO 150	College Composition (GT-CO2)	1A	3
Select one group from the following:			3 - 4
Group A:			
CS 155	Introduction to Unix		
CS 156	Introduction to C Programming I		
CS 157	Introduction to C Programming II		
Group B:			
CS 163 or 164	CS1---No Prior Programming Experience CS1--Prior Programming Experience		
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	5
Arts and Humanities		3B	6
	Total Credits		30-31

Sophomore

CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1

MATH 261	Calculus for Physical Scientists III		4
Select one from the following:			4
MATH 340	Introduction to Ordinary Differential Equations		
MATH 345	Differential Equations		
PH 245[1]	Introduction to Electronics		3
PH 293	Selected Topics in Physics		1
PH 314	Introduction to Modern Physics		4
PH 315	Modern Physics Laboratory		2
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
	Total Credits		29
Junior			
Select one from the following:[2]			3
CHEM 301	Advanced Scientific Writing--Chemistry (GT-CO3)	2	
CO 300	Writing Arguments (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
LB 300	Specialized Professional Writing	2	
PH 341	Mechanics		4
PH 351[1]	Electricity and Magnetism		4
PH 353	Optics and Waves		4
PH 361	Physical Thermodynamics		3
Select one group from the following:			9
Group A:			
PH 327	Analytical Techniques for Physics		
Electives			
Group B:			
Mathematics and Statistics List (select a minimum of 6 credits)			
Electives			
Global and Cultural Awareness		3E	3
	Total Credits		30
Senior			
PH 425	Advanced Physics Laboratory	4C	2
PH 451	Introductory Quantum Mechanics I	4A,4B	3
PH 452	Introductory Quantum Mechanics II		3
PH 462	Statistical Physics		3
PH 492	Seminar	4C	1
Technical Course List (select at least two courses from the list below)			6
Electives[3]			12-13
	Total Credits		30-31
	Program Total Credits:		120

Mathematics and Statistics List (select a minimum of 6 credits not taken elsewhere in the program)

Code	Title	Credits
MATH 317	Advanced Calculus of One Variable	3
MATH 332	Partial Differential Equations	3
MATH 366	Introduction to Abstract Algebra	3
MATH 369	Linear Algebra I	3
MATH 419	Introduction to Complex Variables	3
MATH 430	Fourier and Wavelet Analysis with Apps	3
MATH 466	Abstract Algebra I	3
MATH 467	Abstract Algebra II	3
MATH 469	Linear Algebra II	3
MATH 472	Introduction to Topology	3
MATH 474	Introduction to Differential Geometry	3
PH 571	Mathematical Methods for Physics I	3
PH 572	Mathematical Methods for Physics II	3
STAT 315	Statistics for Engineers and Scientists	3
STAT 340	Multiple Regression Analysis	3

STAT 420	Probability and Mathematical Statistics I	3
STAT 421	Introduction to Stochastic Processes	3
STAT 430	Probability and Mathematical Statistics II	3
STAT 460	Applied Multivariate Analysis	3

Technical Course List (select a minimum of 6 credits from a minimum of 2 courses not taken elsewhere in the program)

Code	Title	Credits
BC 411	Physical Biochemistry	4
CBE 331	Momentum Transfer and Mechanical Separations	3
CBE 332	Heat and Mass Transfer Fundamentals	3
CHEM 113	General Chemistry II	3
CHEM 114	General Chemistry Lab II	1
CHEM 245	Fundamentals of Organic Chemistry	4
CHEM 341	Modern Organic Chemistry I	3
CHEM 343	Modern Organic Chemistry II	3
CHEM 345	Organic Chemistry I	4
CHEM 346	Organic Chemistry II	4
CHEM 461	Inorganic Chemistry	3
CHEM 474	Physical Chemistry I	3
CHEM 476	Physical Chemistry II	3
CIVE 300	Fluid Mechanics	3
CIVE 301	Fluid Mechanics Laboratory	1
CS 253	Software Development with C++ [4]	4
CS 410	Introduction to Computer Graphics [4]	4
CS 440	Introduction to Artificial Intelligence [4]	4
CS 475	Parallel Programming [4]	4
ECE 312	Linear System Analysis II	3
ECE 331	Electronics Principles I	4
ECE 332	Electronics Principles II	4
ECE 404	Experiments in Optical Electronics	2
ECE 441	Optical Electronics	3
ECE 444	Antennas and Radiation	3
ECE 471A	Semiconductor Physics	1
ECE 471B	Semiconductor Junctions	1
ECE 507	Plasma Physics and Applications	3
ECE 546	Laser Fundamentals and Devices	3
ERHS 450	Introduction to Radiation Biology	3
ERHS 530	Radiological Physics and Dosimetry I	3
ERHS 531	Nuclear Instruments and Measurements	2
GEOL 578	Global Seismology	4
MATH 317	Advanced Calculus of One Variable	3
MATH 332	Partial Differential Equations	3
MATH 366	Introduction to Abstract Algebra	3
MATH 369	Linear Algebra I	3
MATH 405	Introduction to Number Theory	3
MATH 419	Introduction to Complex Variables	3
MATH 430	Fourier and Wavelet Analysis with Apps	3
MATH 450	Introduction to Numerical Analysis I	3
MATH 451	Introduction to Numerical Analysis II	3
MATH 466	Abstract Algebra I	3
MATH 467	Abstract Algebra II	3
MATH 469	Linear Algebra II	3
MATH 472	Introduction to Topology	3
MATH 474	Introduction to Differential Geometry	3
MECH 331	Introduction to Engineering Materials	4
MECH 344	Heat and Mass Transfer	3
MECH 460	Aeronautics	3
MECH 468	Space Propulsion and Power Engineering	3
PH 498	Research	1-6
PH 517	Chaos, Fractals, and Nonlinear Dynamics	3
PH 521	Introduction to Lasers	3
PH 522	Introductory Laser Laboratory	1
PH 531	Introductory Condensed Matter Physics	3
PH 561	Elementary Particle Physics	3
PH 571	Mathematical Methods for Physics I	3
PH 572	Mathematical Methods for Physics II	3
STAT 315	Statistics for Engineers and Scientists	3
STAT 340	Multiple Regression Analysis	3
STAT 420	Probability and Mathematical Statistics I	3
STAT 421	Introduction to Stochastic Processes	3
STAT 430	Probability and Mathematical Statistics II	3
STAT 460	Applied Multivariate Analysis	3

1 For students who change majors from Electrical Engineering or are double-majoring in Electrical Engineering, please see advisor for possible substitutions.

2 CHEM 301 and CO 301B are recommended. Other courses in All-University Core Curriculum (AUCC) Category 2 may be accepted as substitutes if they are taken prior to declaring the Physics major or are taken to meet requirements of another major.

3 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300-, 400-level).

4 Only 3 credits from this course are applied towards the Technical Electives requirement.

Major Completion Map

Distinctive Requirements for Degree Program:

Required PH courses above the 100-Level (with the exception of PH 293 and, if there is sufficient demand, PH 314) are offered only Fall or Spring, not both. A grade of C- or better is required in all courses used to meet requirements of the major, except for unrestricted electives and courses taken to satisfy All-University Core Curriculum (AUCC) categories 3B, 3C, 3D, and 3E. Note that PH 327 may be replaced by six credits from the Mathematics and Statistics Electives List.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)		X	1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)		X	3A	5
Arts and Humanities				3B	3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one group from the following:					3-4
Group A:					
CS 155	Introduction to Unix				
CS 156	Introduction to C Programming I				
CS 157	Introduction to C Programming II				
Group B:					
CS 163 or 164	CS1---No Prior Programming Experience CS1--Prior Programming Experience				
MATH 161	Calculus for Physical Scientists II (GT-MA1)		X	1B	4
PH 142	Physics for Scientists and Engineers II (GT-SC1)		X	3A	5
Arts and Humanities				3B	3
CO 150, MATH 160, and PH 141 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 111	General Chemistry I (GT-SC2)			3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)			3A	1
MATH 261	Calculus for Physical Scientists III		X		4
PH 245	Introduction to Electronics				3
PH 293	Selected Topics in Physics				1
Historical Perspectives				3D	3
MATH 161 and PH 142 must be completed by the end of Semester 3.		X			
	Total Credits				16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					4
MATH 340	Introduction to Ordinary Differential Equations		X		
MATH 345	Differential Equations				
PH 314	Introduction to Modern Physics		X		4
PH 315	Modern Physics Laboratory		X		2
Social and Behavioral Sciences				3C	3
MATH 261 must be completed by the end of Semester 4.		X			
	Total Credits				13

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
PH 341	Mechanics		X		4
PH 353	Optics and Waves		X		4
Select one group from the following:					6
Group A:					
PH 327	Analytical Techniques for Physics				
Elective					
Group B:					
Mathematics and Statistics List (Select a minimum of 6 credits from List on Concentration Requirements Tab)					

MATH 340 and PH 245 must be completed by the end of Semester 5.		X			
	Total Credits				14
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
PH 351	Electricity and Magnetism		X		4
PH 361	Physical Thermodynamics	X			3
Select one course from the following:					3
CHEM 301	Advanced Scientific Writing–Chemistry (GT-CO3)			2	
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
LB 300	Specialized Professional Writing			2	
Global and Cultural Awareness				3E	3
Elective					3
PH 293, PH 314, and PH 315 must be completed by the end of Semester 6.		X			
	Total Credits				16
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
PH 451	Introductory Quantum Mechanics I	X		4A,4B	3
PH 462	Statistical Physics	X			3
Technical Course List (See Technical Course List on Concentration Requirements Tab)					3
Electives					7
PH 341 and PH 353 must be completed by the end of Semester 7.		X			
	Total Credits				16
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
PH 425	Advanced Physics Laboratory	X		4C	2
PH 452	Introductory Quantum Mechanics II	X			3
PH 492	Seminar	X		4C	1
Technical Course List (See Technical Course List on Concentration Requirements Tab)		X			3
Electives		X			6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Minor in Physics

Most technical fields require some background in physics. A minor in Physics can provide students with an increased understanding of the foundations of their chosen major. For students majoring in Computer Science and Mathematics, a minor in Physics can offer experience in applying the skills acquired in their major to concrete physical problems.

Requirements Effective Fall 2018

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

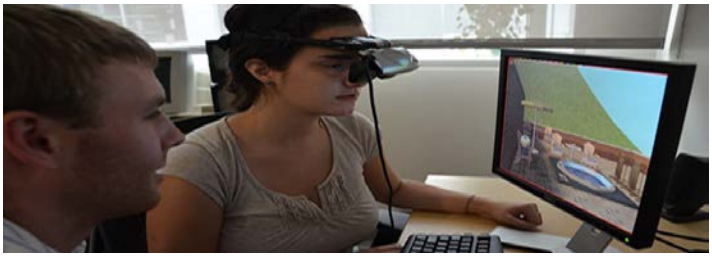
A minimum grade of C- is required in all courses applying toward the minor in physics.

Code	Title	Credits
Lower Division		
PH 141	Physics for Scientists and Engineers I (GT-SC1)	5
PH 142	Physics for Scientists and Engineers II (GT-SC1)	5
Upper Division		
PH 314	Introduction to Modern Physics	4
Select a minimum of 8 credits from the list below.		8
PH 315	Modern Physics Laboratory	
PH 341	Mechanics	
PH 351	Electricity and Magnetism	
PH 353	Optics and Waves	
PH 361	Physical Thermodynamics	
PH 425	Advanced Physics Laboratory	
PH 451	Introductory Quantum Mechanics I	
PH 452	Introductory Quantum Mechanics II	

PH 462	Statistical Physics	
Program Total Credits:		22

Substitutions require approval of the Key Advisor.

Department of Psychology



Office in Behavioral Sciences Building, Room 201
(970) 491-3799
colostate.edu/Depts/Psychology (http://www.colostate.edu/Depts/Psychology)

Professor Don Rojas, Chair

Undergraduate Majors

- Major in Psychology
  - Addictions Counseling Concentration
  - Clinical/Counseling Psychology Concentration
  - General Psychology Concentration
  - Industrial/Organizational Concentration
  - Mind, Brain, and Behavior Concentration

Graduate

Graduate Programs in Psychology

The department offers graduate programs leading to Master of Science and Doctor of Philosophy degrees. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Psychology. (http://www.colostate.edu/Depts/Psychology)

Certificates

- Organizational Development
- Performance Management

Master's Programs

- Master of Addiction Counseling, Plan C (M.A.C.)
- Master of Applied Industrial/Organizational Psychology, Plan C (M.A.I.O.P.)
- Master of Science in Psychology, Plan A*
- Master of Science in Psychology, Plan B*

Ph.D.

- Ph.D. in Psychology*

* Please see department for program of study.

Courses

Psychology (PSY)

PSY 100 General Psychology (GT-SS3) Credits: 3 (3-0-0)
Course Description: Principles of psychology emphasizing empirical approaches; theories and research on learning, individual differences, perception, social behavior.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).

PSY 121 Health and the Mind Credit: 1 (1-0-0)
Course Description: Maintenance of positive mental health.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 152 Science of Learning Credits: 3 (3-0-0)
Course Description: The science of learning and remembering with an emphasis on strategies and methods that students can use to enhance their learning and studying.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C.

PSY 192 Psychology First-Year Seminar Credit: 1 (0-0-1)
Course Description: Introduction to and discussion of topics in the major branches of psychology.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 210 Psychology of the Individual in Context Credits: 3 (3-0-0)
Course Description: Psychological explanations of cultural, social, and individual differences in behavior.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 250 Research Design and Analysis I Credits: 3 (3-0-0)
Course Description: Design, analysis, and reporting of psychological research.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 252 Mind, Brain, and Behavior Credits: 3 (3-0-0)
Course Description: Psychological, physiological, and evolutionary explanations of perception, cognition, and behavior.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 260 Child Psychology Credits: 3 (3-0-0)
Course Description: Description and explanation of development of human behavior emphasizing theory and research concerned with infant and child.
Prerequisite: PSY 100.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 292A Seminar: Industrial/Organizational Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 292B Seminar: Mind, Brain & Behavior Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 292C Seminar: Controversial Issues in Psychology Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 292D Seminar: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 295 Independent Study Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a special topic in psychology under direction of faculty.
Prerequisite: None.
Registration Information: Enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 296 Group Study Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of a special topic in psychology under direction of faculty.
Prerequisite: None.
Registration Information: Enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 300 Positive Psychology Credits: 3 (3-0-0)
Course Description: Current research and theory pertaining to the study of strengths, flourishing, happiness, meaning, and well-being.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 305 Psychology of Religion Credits: 3 (3-0-0)
Course Description: Survey of research on religion from a psychological perspective.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PSY 310 Basic Counseling Skills Credits: 3 (3-0-0)
Course Description: Psychologically-based interpersonal communication skills; rapport building, gathering information and bringing about change in others.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 311A Basic Counseling Skills Laboratory: CACI Credits: 2 (0-4-0)
Course Description: Application of psychologically-based interpersonal communication skills in drug addiction treatment, for students seeking CACI certification.
Prerequisite: PSY 310, may be taken concurrently.
Registration Information: Credit not allowed for both PSY 311A and PSY 311B.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 311B Basic Counseling Skills Laboratory: Non-CACI Credits: 2 (0-4-0)
Course Description: Application of psychologically-based interpersonal communication skills, for students who are not seeking CACI certification.
Prerequisite: (PSY 100) and (PSY 310, may be taken concurrently).
Registration Information: Credit not allowed for both PSY 311B and PSY 311A.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 315 Social Psychology Credits: 3 (3-0-0)
Course Description: Social psychological theory and research findings emphasizing research methodology; applications to contemporary social problems.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 316 Environmental Psychology Credits: 3 (3-0-0)
Course Description: Social psychological theory and research on effects of behavior on the environment; environmental influences on behavior.
Prerequisite: PSY 100.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 317 Social Psychology Laboratory Credits: 2 (0-4-0)
Course Description: Review of research techniques in social psychology. Computer simulations with applications to contemporary social problems.
Prerequisite: PSY 250 and PSY 315, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 320 Abnormal Psychology Credits: 3 (3-0-0)
Course Description: Definition and description of behavior pathology; theory and research on factors in etiology and treatment of behavior disorders.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 325 Psychology of Personality Credits: 3 (3-0-0)
Course Description: Theory and research related to personality as a psychological concept; analytic, phenomenological, and behavioristic views.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 327 Psychology of Women Credits: 3 (2-0-1)
Course Description: Contemporary theory and research focusing on emotional, cognitive, biosocial, and interpersonal contributions to female identity and sex role.
Prerequisite: PSY 100.
Registration Information: Must register for lecture and recitation.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 328 Psychology of Human Sexuality Credits: 3 (3-0-0)
Course Description: Biopsychosocial review of human sexuality including cross cultural analysis, sexual development, social perspectives and values, sexual dysfunction, sexual healing interventions, and intersectional-sexological analysis of the human sexual experience.
Prerequisite: HDFS 101 or PSY 100 or SOWK 105.
Registration Information: Junior standing. Sections may be offered: Online. Credit not allowed for both PSY 228 and PSY 328.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 330 Clinical and Counseling Psychology Credits: 3 (3-0-0)
Course Description: Conceptualization of clients, assessment, intervention techniques for behavior change, research methods, ethical issues.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 335 Forensic Psychology Credits: 3 (3-0-0)
Course Description: The psychology of crime and criminal behavior, including theory on deviance, the criminal mind, and the root causes of violence in society.
Prerequisite: PSY 100.
Registration Information: Junior or senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 340 Organizational Psychology Credits: 3 (3-0-0)
Course Description: Theories and research on interpersonal relations, work group processes, decision making, power, and change strategies within organizations.
Prerequisite: PSY 250.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 341 Organizational Psychology Laboratory Credit: 1 (0-2-0)
Course Description: Application of organizational psychology through simulations and field involvements.
Prerequisite: PSY 340, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 350 Research Design and Analysis II Credits: 3 (3-0-0)
Course Description: Design, analysis, and reporting of psychological research.
Prerequisite: PSY 250.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 352 Learning and Memory Credits: 3 (3-0-0)
Course Description: Research, theory, and applications regarding conditioning, learning, and retention in animals and humans.
Prerequisite: PSY 252.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 354 Human-Computer Interaction Credits: 3 (3-0-0)
Course Description: Theoretical and applied areas of psychology and computer science in the area of human-computer interaction.
Prerequisite: PSY 100.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 360 Psychology of Drug Addiction Treatment Credits: 3 (3-0-0)
Course Description: Psychological theory and method for treating substance use addictions.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 362 Professional Issues in Addiction Treatment Credits: 3 (3-0-0)
Course Description: Diversity, ethno-cultural, and ethical issues in drug addiction treatment.
Prerequisite: PSY 360, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 364 Infectious Diseases and Substance Use Credits: 3 (0-0-3)
Course Description: Infectious disease transmission/progression related to substance use, risk assessment and treatment of substance users in alcohol and drug treatment.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 370 Psychological Measurement and Testing Credits: 3 (3-0-0)
Course Description: Measurement theory including scale properties, reliability, and validity; construction and evaluation of psychological tests.
Prerequisite: PSY 250.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 371 Psychological Measurement and Testing Lab Credit: 1 (0-2-0)
Course Description: Exercises and problems in test administration, norming, reliability, validity, and scale construction.
Prerequisite: PSY 370, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 384 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Supervised teaching, training, and discussion leadership in undergraduate courses.
Prerequisite: PSY 100.
Registration Information: Written consent of department chair. Enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 392 Honors Seminar: Current Topics in Psychology Credits: 2 (0-0-2)
Course Description: Research areas in psychology; reading and discussing current journal articles.
Prerequisite: PSY 100 and PSY 250.
Registration Information: Enrollment in University Honors Program required.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PSY 401 History and Systems of Psychology Credits: 3 (3-0-0)
Course Description: Philosophical and scientific underpinnings of psychology; major historical developments in psychology; schools of psychological thought.
Prerequisite: PSY 250.
Registration Information: Junior or senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 410 Psychobiology of Addictions Credits: 3 (3-0-0)
Course Description: Biological basis of the psychology of addictions.
Prerequisite: PSY 250 and PSY 252.
Restriction: .
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 437 Psychology of Gender Credits: 3 (3-0-0)
Course Description: Psychology of gender in cultural context.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 440 Industrial Psychology Credits: 3 (3-0-0)
Course Description: The application of psychological theories and principles to understand how people behave in the workplace and to improve workers' productivity and well-being.
Prerequisite: PSY 250.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 441 Industrial Psychology Laboratory Credit: 1 (0-2-0)
Course Description: Hands-on experience with concepts such as job analysis, performance appraisals, interviews, and training, designed to supplement information provided in PSY 440.
Prerequisite: PSY 440, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 450 Applied Research Methods in Psychology II Credits: 4 (3-2-0)
Course Description: Interpretation and reporting of psychological research findings.
Prerequisite: PSY 350.
Registration Information: Must register for lecture and laboratory. Enrollment in University Honors Program required.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 452 Cognitive Psychology Credits: 3 (3-0-0)
Course Description: Human thinking processes as related to perception, attention, memory, knowledge representation, reasoning, decision making, and problem solving.
Prerequisite: PSY 252.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 453 Cognitive Psychology Laboratory Credits: 2 (0-4-0)
Course Description: Exercises in laboratory research in perceptual processes, attention, memory, language, problem solving, and decision making.
Prerequisite: PSY 452, may be taken concurrently and PSY 250.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 454 Biological Psychology Credits: 3 (3-0-0)
Course Description: Research and theory on the biological basis of behavior.
Prerequisite: PSY 252.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 455 Biological Psychology Laboratory Credits: 2 (0-4-0)
Course Description: Laboratory exercises in biological psychology.
Prerequisite: PSY 454, may be taken concurrently and PSY 250.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 456 Sensation and Perception Credits: 3 (3-0-0)
Course Description: Review of research on physiological substrates of sensation; methods of scaling sensory experience; role of perception in behavioral adaptation.
Prerequisite: PSY 252.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 457 Sensation and Perception Laboratory Credits: 2 (0-4-0)
Course Description: Review of research on physiological substrates of sensation; methods of scaling sensory experience; role of perception in behavioral adaption.
Prerequisite: PSY 456, may be taken concurrently and PSY 250.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 458 Cognitive Neuroscience Credits: 3 (3-0-0)
Course Description: Review of the human brain and its mediation of cognitive processes.
Prerequisite: PSY 252.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 459 Cognitive Neuroscience Laboratory Credits: 2 (0-4-0)
Course Description: Laboratory exercises in cognitive neuroscience.
Prerequisite: PSY 458, may be taken concurrently and PSY 250.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 460 Child Exceptionality and Psychopathology Credits: 3 (3-0-0)
Course Description: Definition and description of child exceptionality and psychopathology; theory and research in etiology, educational implications, and treatment.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 465 Adolescent Psychology Credits: 3 (3-0-0)
Course Description: Contemporary theory and research on adolescence including physiological and psychological changes, social influences.
Prerequisite: PSY 100.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Advanced supervised teaching, training, and discussion leadership in undergraduate courses.
Prerequisite: PSY 100.
Registration Information: Written consent of department chair required. A maximum of 10 combined credits for all 384 and 484 are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 486 Practicum Credits: Var[1-3] (0-0-0)
Course Description: Supervised work experience in approved psychological setting with periodic consultation of faculty.
Prerequisite: None.
Registration Information: Enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 487 Internship Credits: Var[1-3] (0-0-0)
Course Description: Supervised affiliation with and/or service work in approved psychological setting.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 488 Field Placement Credits: Var[1-3] (0-0-0)
Course Description: Supervised affiliation with and/or service work in approved psychological setting.
Prerequisite: None.
Registration Information: Enrollment restricted to students in the Addictions Counseling Concentration or Counseling/Clinical Concentration. Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

PSY 492A Seminar: Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: Instructor Option, Traditional.
Special Course Fee: No.

PSY 492B Seminar: Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 492C Seminar: Counseling/Clinical Psychology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 492D Seminar: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 492E Seminar: Perceptual and Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 492F Seminar: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 493 Capstone Seminar Credits: 3 (0-0-3)
Course Description: Special, controversial, and emerging topics in psychology, considered in the context of foundational knowledge and principles from the field.
Prerequisite: PSY 210 and PSY 250 and PSY 252.
Registration Information: Senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 495A Independent Study: Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in applied social psychology under direction of faculty.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 495B Independent Study: Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in cognitive psychology under direction of faculty.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 495C Independent Study: Counseling/Clinical Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in counseling/clinical psychology under direction of faculty.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 495D Independent Study: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in industrial/organizational psychology under direction of faculty.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 495E Independent Study: Perceptual and Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of the psychology of perceptual and brain sciences under direction of faculty.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 495F Independent Study: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of topics in psychology under direction of faculty.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 496A Group Study: Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of applied social psychology under direction of faculty.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 496B Group Study: Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of cognitive psychology under direction of faculty.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 496C Group Study: Counseling/Clinical Psychology Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of counseling/clinical psychology under direction of faculty.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 496D Group Study: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of industrial/organizational psychology under direction of faculty.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 496E Group Study: Perceptual and Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of perceptual and brain sciences within psychology under direction of faculty.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 496F Group Study: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of topics in psychology under direction of faculty.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 498A Research: Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in applied social psychology, culminating in a formal research paper.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 498B Research: Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in cognitive psychology, culminating in a formal research paper.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 498C Research: Counseling/Clinical Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in counseling/clinical psychology, culminating in a formal research paper.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 498D Research: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in industrial/organizational psychology, culminating in a formal research paper.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 498E Research: Perceptual and Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in perceptual and brain sciences within psychology, culminating in a formal research paper.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 498F Research: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project on special topics in psychology, culminating in a formal research paper.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 499A Thesis: Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in applied social psychology, culminating in a thesis presented to a faculty committee.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 499B Thesis: Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in cognitive psychology, culminating in a thesis presented to a faculty committee.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 499C Thesis: Counseling/Clinical Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in counseling/clinical psychology, culminating in a thesis presented to a faculty committee.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 499D Thesis: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in industrial/organizational psychology, culminating in a thesis presented to a faculty committee.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 499E Thesis: Perceptual and Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in perceptual/brain sciences within psychology, culminating in a thesis presented to a faculty committee.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 499F Thesis: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in a topic area of psychology, culminating in a thesis presented to a faculty committee.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 515 Women's Health Credits: 3 (3-0-0)
Course Description: Current issues in women's health.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PSY 517 Perspectives in Global Health Credits: 3 (0-0-3)
Also Offered As: IE 517.
Course Description: Science, skills, and beliefs directed at the maintenance and improvement of health for all people.
Prerequisite: None.
Registration Information: Credit not allowed for both PSY 517 and IE 517.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

PSY 550 Responsible Conduct of Psychological Research Credit: 1 (1-0-0)
Course Description: Application of professional norms and research ethics in the conduct of psychological research.
Prerequisite: None.
Registration Information: Graduate standing or consent of instructor. This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 595A Independent Study: Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a topic in applied social psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 595B Independent Study: Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a topic in cognitive psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 595C Independent Study: Counseling/Clinical Psych Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a topic in counseling/clinical psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 595D Independent Study: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a topic in industrial/organizational psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 595E Independent Study: Perceptual/Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a topic in perceptual and brain sciences under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 595F Independent Study: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a special topic in psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 596A Group Study:Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of a topic in applied social psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 596B Group Study:Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of a topic in cognitive psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 596C Group Study:Counseling/Clinical Psych Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of a topic in counseling/clinical psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 596D Group Study:Industrial/Organizational Psych Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of a topic in industrial/organizational psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 596E Group Study:Perceptual/Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of a topic in perceptual and brain sciences under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 596F Group Study:Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of a special topic in psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 600A Advanced Psychology: History Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600B Advanced Psychology: Cognitive Neuroscience Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600C Advanced Psychology: Neuropsychology Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600D Advanced Psychology: Sensation and Perception Credits: 3 (3-0-0)
Also Offered As: NB 600.
Course Description: Neural mechanisms of human perception; color and depth perception, pitch, loudness, and the effects of aging.
Prerequisite: PSY 100 to 799 - at least 15 credits and PSY 456.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both PSY 600D and NB 600.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600E Advanced Psychology: Animal Learning Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600F Advanced Psychology: Human Learning and Memory Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600G Advanced Psychology: Social Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600H Advanced Psychology: Lifespan Development Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600I Advanced Psychology: Personality Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600J Advanced Psychology: Health Psychology Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600K Advanced Psychology: Measurement Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both PSY 600K and PSY 605.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600L Advanced Psychology: Human Performance, Motor and Intellectual Capacities Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600M Advanced Psychology: Cognitive Processes Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 601 Measurement Laboratory Credit: 1 (0-2-0)
Course Description: Laboratory experience using measurement concepts and procedures.
Prerequisite: PSY 600K, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PSY 605 Applied Measurement Theory Credits: 3 (0-0-3)
Course Description: Study and application of measurement theory and methods for test construction and validation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology. Credit not allowed for both PSY 605 and PSY 600K. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 610 Counseling and Clinical Pre-Practicum I Credits: 3 (3-0-0)
Course Description: Basic assessment and intervention skills; accurate observation, conceptualization, and response.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 611 Counseling and Clinical Pre-Practicum II Credits: 3 (3-0-0)
Course Description: Counseling and clinical techniques; assessment and intervention strategies; special applications.
Prerequisite: PSY 610.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 612 Introduction to Addiction Counseling Credits: 3 (3-0-0)
Course Description: Therapies used to treat individuals with substance use disorders, with an emphasis on empirically supported treatments.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Master of Addiction Counseling.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 613 Advanced Addiction Counseling Credits: 3 (3-0-0)
Course Description: Advanced therapies used to treat individuals with substance use disorders, with an emphasis on empirically supported treatments.
Prerequisite: PSY 612.
Restriction: Must be a: Graduate, Professional.
Registration Information: Psychology graduate students.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 643 Industrial/Organizational Psychology I Credits: 3 (3-0-0)
Course Description: Integration of multiple perspectives for examining work organizations, roles, and relationships, and organizational entry and socialization.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both PSY 643 and PSY 647.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 644 Industrial/Organizational Psychology II Credits: 3 (3-0-0)
Course Description: Multiple perspectives for examining individual and organizational development, orientation to organizations, and science and practice in industrial/organizational psychology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 645 Industrial/Organizational Psychology at Work I Credits: 2 (2-0-0)
Course Description: Integrating theory, research, and practice in industrial/organizational settings. Assessment and development of applications of psychology in organizations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 646 Industrial/Organizational Psychology at Work II Credits: 2 (2-0-0)
Course Description: Development and application of scientific, ethical, and professional standards and competencies in applying psychology in industrial/organizational settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 647 Applied Industrial Psychology Credits: 3 (0-0-3)
Course Description: Applications of theory and methods for recruitment, selection, training, and performance management within organizations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology. Credit not allowed for both PSY 647 and PSY 643. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 648 Applied Organizational Psychology Credits: 3 (0-0-3)
Course Description: Study of work behavior, roles, and relationships within organizations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 652 Methods of Research in Psychology I Credits: 4 (3-2-0)
Course Description: Psychological research emphasizing hypothesis testing and simple research designs, introducing general linear model approach.
Prerequisite: STAT 300 to 499 - at least 1 course.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both PSY 652 and PSY 662.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 653 Methods of Research in Psychology II Credits: 4 (3-2-0)
Course Description: Advanced research designs emphasizing general linear model approach.
Prerequisite: PSY 652.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both PSY 653 and PSY 663
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 655A Research Issues and Models in Psychology:Applied Credits: 3 (3-0-0)
Course Description: Generation and development of research ideas, evaluating approaches, interpreting and reporting findings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 655B Research Issues and Models in Psychology: General Experimental Credits: 3 (3-0-0)
Course Description: Generation and development of research ideas, evaluating approaches, interpreting and reporting findings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 660 Applied Cross-Cultural Industrial/Organizational Psychology Credits: 3 (0-0-3)
Course Description: Cultural differences in the application of individual and organizational interventions to improve human and organizational effectiveness.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology; PSY 647 or PSY 648. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 661 Applied Organizational Development Credits: 3 (0-0-3)
Course Description: Techniques and interventions for developing, improving and effecting change in organizations through diagnosis, planned change, and survey feedback.
Prerequisite: PSY 648.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only. Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 662 Applied Psychological Research Methods I Credits: 4 (0-0-4)
Course Description: Psychological research emphasizing hypothesis testing and simple research designs, the general linear model approach with emphasis on application.
Prerequisite: STAT 300 to 499 - at least 1 course.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology. Credit not allowed for both PSY 662 and PSY 652. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 663 Applied Psychological Research Methods II Credits: 4 (0-0-4)
Course Description: Advanced research designs emphasizing general linear model approach with emphasis on application.
Prerequisite: PSY 662.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology. Credit not allowed for both PSY 663 and PSY 653. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 665 Applied Psychological Research Design Credits: 3 (0-0-3)
Course Description: Review of scientific method, generation of hypotheses, and design of laboratory and field research studies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology; any graduate applied statistics course. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 666 Succession Planning and Leadership Development Credits: 3 (0-0-3)
Course Description: Examines modern theories of leadership, strategies for succession planning; training, coaching, mentoring, professional development for leadership.
Prerequisite: PSY 648.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 667 Competency Modeling and Criterion Development Credits: 3 (0-0-3)
Course Description: Conducting job analyses and competency modeling within organizations, application of the results of those processes to criterion development.
Prerequisite: PSY 647.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 668 Workforce Training and Development Credits: 3 (0-0-3)
Course Description: An overview of adult learning theory, emphasizing the role of I/O psychology in identifying, designing, transferring, and evaluating training.
Prerequisite: PSY 647.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 669 Capstone: Practicum and Skills Development Credits: 3 (0-0-3)
Course Description: Refine I/O consulting skills through applied research/consulting projects with actual organizations, working in virtual teams with faculty mentors.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied I/O Psychology; 32 hours of program requirements. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 670 Psychological Measurement-Personality Credits: 3 (3-0-0)
Course Description: Construction, administration, interpretation of objectional measures of personality including aptitudes, abilities, interests.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 672 Psychological Assessment Credits: 3 (3-0-0)
Course Description: Use of test data to determine cognitive functioning and predict behavior; supervised test administration and interpretation.
Prerequisite: PSY 670.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 675 Ethics and Professional Psychology Practice Credits: 3 (3-0-0)
Course Description: Ethical practice of psychology, duty-to-warn statutes, Colorado law, problematic ethical situations.
Prerequisite: PSY 611.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Master of Addiction Counseling.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 677 Psychology of Women, Men, and Gender Credits: 3 (0-0-3)
Course Description: Focuses on the psychology of women, men and gender, by intersectionalities, and in cultural, transnational context. Topics include gendered life paths; gender and the media; gender and relationships; gender and health, gender and work; and gender and globalization.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 684 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Supervised teaching, training and discussion leadership in undergraduate courses.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 686A Practicum: Counseling and Diagnosis I Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 686C Practicum:Industrial/Organizational I Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 692B.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 686D Practicum: School I Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 692B.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 686E Practicum: Applied Social I Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 686F Practicum:Perceptual and Brain Sciences I Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 686G Practicum: Cognitive I Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 692A Seminar: Applied Social Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 692B Seminar: Cognitive Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 692C Seminar: Counseling Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 692D Seminar: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Seminar on advanced topics in industrial/organizational psychology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 692E Seminar: Perceptual and Brain Sciences Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 692F Seminar: Special Topics in Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 699A Thesis: Applied Social Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 699B Thesis: Cognitive Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 699C Thesis: Counseling Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 699D Thesis: Industrial/Organizational Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 699E Thesis: Perceptual and Brain Sciences Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 720 Psychopathology Credits: 3 (3-0-0)
Course Description: Adult and child behavior pathology; theory, research, and methods related to etiology, defining characteristics, and maintaining causes.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Psychology graduate students or admission to the Master of Addiction Counseling.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 722 Empirically Validated Therapies Credits: 3 (3-0-0)
Course Description: Outline of major empirically validated approaches to assessment and treatment including cognitive-behavioral therapies, interpersonal therapy.
Prerequisite: PSY 720.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 724 Motivational Interviewing Credits: 3 (3-0-0)
Course Description: Motivational interviewing in the treatment of individuals with substance use disorders.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Psychology graduate students or admission to the Master of Addiction Counseling.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 726 Neuropharmacology of Addiction Credits: 3 (3-0-0)
Course Description: Neurobiological basis of addiction and how addictive substances affect neurochemistry.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Psychology graduate students or admission to the Master of Addiction Counseling.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 727 Theories of Vocational Development Credits: 3 (3-0-0)
Course Description: Nature and current status of vocational development theory with implications for career counseling.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Psychology graduate students only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 729 Counseling and Psychotherapy II Credits: 3 (3-0-0)
Course Description: Theory and practice of group psychotherapy and counseling.
Prerequisite: PSY 722.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 754 Multivariate Analysis in Behavioral Sciences Credits: 3 (3-0-0)
Course Description: Multivariate analysis, including factor and component analysis, applied to psychological research.
Prerequisite: PSY 653.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

PSY 775 Diversity Issues in Counseling Credits: 3 (3-0-0)
Course Description: Diversity issues in clients and counselors such as gender, race, age, sexual orientation, education, religion, disability, socioeconomic status.
Prerequisite: PSY 611.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 776 Business and Practice of Addiction Counseling Credits: 3 (3-0-0)
Course Description: Business aspects and professional development issues associated with a career in addiction counseling.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Psychology graduate students or admission to the Master of Addiction Counseling.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: Philosophy, approaches, and techniques of college-level instruction; supervised teaching with consultation of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 786A Advanced Practicum: Counseling and Diagnosis II Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 686A.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 786C Advanced Practicum:Industrial/Organizational II Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 686C.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 786D Advanced Practicum: School II Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 686D.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 786E Advanced Practicum: Clinical Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 686A or PSY 686C or PSY 686D or PSY 686E or PSY 686F or PSY 686G.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 786F Advanced Practicum: Supervision Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 686A or PSY 686C or PSY 686D or PSY 686E or PSY 686F or PSY 686G.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 786G Advanced Practicum: Applied Social II Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 686E.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 786H Advanced Practicum: Perceptual and Brain Sciences II Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 686F.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 786I Advanced Practicum: Cognitive II Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 686G.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 786J Advanced Practicum: Vocational Assessment Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 610 and PSY 727.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 787 Internship Credits: Var[1-18] (0-0-0)
Course Description: Supervised work experience under departmental guidelines in approved psychological agency or setting.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 792A Advanced Seminar: Applied Social Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 792B Advanced Seminar: Cognitive Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 792C Advanced Seminar: Counseling Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 792D Advanced Seminar: Industrial/Organizational Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 792E Advanced Seminar: Perceptual and Brain Sciences Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 792F Advanced Seminar: Special Topics in Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 793 Clinical Supervision of Addiction Counseling Credits: 3 (3-0-0)
Course Description: Tools and models in the supervision and treatment of addictions.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Master of Addiction Counseling.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 795A Independent Study: Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent investigation of a topic in applied social psychology under direction of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Primarily for doctoral candidates in psychology.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 795B Independent Study: Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent investigation of a topic in cognitive psychology under direction of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Primarily for doctoral candidates in psychology.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 795C Independent Study: Counseling/Clinical Psych Credits: Var[1-3] (0-0-0)
Course Description: Independent investigation of a topic in counseling/clinical psychology under direction of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Primarily for doctoral candidates in psychology.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 795D Independent Study: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent investigation of a topic in industrial/organizational psychology under direction of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Primarily for doctoral candidates in psychology.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 795E Independent Study: Perceptual/Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description: Independent investigation of a topic in perceptual and brain sciences under direction of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Primarily for doctoral candidates in psychology.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 795F Independent Study: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent investigation of a special topic in psychology under direction of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Primarily for doctoral candidates in psychology.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 799A Dissertation: Applied Social Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 799B Dissertation: Cognitive Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 799C Dissertation: Counseling Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 799D Dissertation: Industrial/Organizational Psych Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 799E Dissertation: Perceptual and Brain Sciences Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Major in Psychology

Psychology is one of the most popular and versatile majors. The major emphasizes a strong background in the natural sciences (e.g., mathematics, chemistry, biology, statistics, human physiology), writing, and research.

Electives enable students to obtain a second major or minor in a field of interest or take pre-professional courses and graduate with:

1. A combination of courses and experiences to qualify for semiprofessional jobs in psychological settings or closely-related fields (e.g., addictions counseling);
2. A combination of courses providing a background for careers outside of psychology (e.g., human resources);
3. Pre-professional courses for potential admittance into professional training programs (e.g., medicine, occupational therapy, veterinary medicine); and/or
4. A complement of courses for potential admittance into psychology graduate school programs. Advanced degrees are often a prerequisite for professional careers in psychology.

Learning Outcomes

Students will:

- Demonstrate understanding of the basic theories and principles of behavior.
- Demonstrate knowledge of psychological principles and concepts across several content areas.
- Demonstrate knowledge and appreciation of the scientific methods used in psychological research by engaging in analytical and critical thinking.

Potential Occupations

A B.S. degree in Psychology prepares students for a variety of career opportunities. Because of the strong science orientation, students develop a number of important skills required in a broad range of occupations. Skills such as written and oral communication, cooperation, analytical and critical thinking, and a background in the sciences demonstrate versatility and an ability to pursue a variety of career paths. Participating in paid or volunteer work, internships, research, study abroad and experiential education opportunities are highly recommended to increase students' employment opportunities.

Possible career opportunities include, but are not limited to: addictions counselor, human services worker, case worker, mental health services worker, probation officer, community relations officer, educator, program developer/administrator, human resources administrator, labor relations representative, compensation and benefits administrator, public relations specialist/special events administrator, advertising producer/writer, account services representative, media representative, market researcher, government program administrator, business manager, buying agent, sales representative, real estate broker, industrial/organizational consultant, psychometrician, neuropsychologist (with advanced degree), cognitive neuroscientist (with advanced degree), engineering psychologist (with advanced degree), clinical psychologist (with advance degree), family therapist (with advanced degree), lawyer (with advanced degree), occupational therapist (with advanced degree), veterinarian (with advanced degree) or physician (with advanced degree).

Concentrations

- Addictions Counseling Concentration
- Clinical/Counseling Psychology Concentration
- General Psychology Concentration
- Industrial/Organizational Concentration
- Mind, Brain, and Behavior Concentration

Major in Psychology, Addictions Counseling Concentration

The Addictions Counseling concentration provides students with an undergraduate degree in psychology while completing the required courses for becoming certified addictions counselors (Level 1) in the state of Colorado. Besides coursework, students are required to complete internship hours at an approved facility. Students who are interested in the clinical/counseling field of psychology, but do not wish to seek an advanced degree in psychology, may find this an attractive concentration.

Requirements Effective Fall 2018

Students must have a C or better in each of the following courses: PSY 100, PSY 192, PSY 210, PSY 250, PSY 252, PSY 311A, PSY 350, and the three lecture-lab pairs in psychology.

Maximum of 12 credits allowed toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 487, PSY 488, PSY 495A-PSY 495F, PSY 496A-PSY 496F, PSY 498A-PSY 498F, PSY 499A-PSY 499F.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
CS 110	Personal Computing		4
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
PSY 100	General Psychology (GT-SS3)	3C	3
PSY 192	Psychology First-Year Seminar		1
PSY 210	Psychology of the Individual in Context		3
Select one course from the following:			3
PHIL 100	Appreciation of Philosophy (GT-AH3)	3B	
PHIL 103	Moral and Social Problems (GT-AH3)	3B	
PHIL 110	Logic and Critical Thinking (GT-AH3)	3B	
PHIL 120	History and Philosophy of Scientific Thought (GT-AH3)	3B	
PHIL 205	Introduction to Ethics		
PHIL 210	Introduction to Formal Logic		
Historical Perspectives		3D	3
Social and Behavioral Sciences[1]		3C	3
	Total Credits		30

Sophomore

CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	1
PSY 250	Research Design and Analysis I		3
PSY 252	Mind, Brain, and Behavior		3
PSY 320	Abnormal Psychology		3
SPCM 200	Public Speaking		3
Select one course from the following:			3

STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
STAT 315	Statistics for Engineers and Scientists		
Arts and Humanities		3B	6
Diversity and Global Awareness		3E	3
Elective			1
	Total Credits		30

Junior

CO 300	Writing Arguments (GT-CO3)	2	3
PSY 310	Basic Counseling Skills		3
PSY 311A	Basic Counseling Skills Laboratory: CACI	4C	2
PSY 350	Research Design and Analysis II		3
PSY 360	Psychology of Drug Addiction Treatment		3
PSY 362	Professional Issues in Addiction Treatment		3
PSY 364	Infectious Diseases and Substance Use		3
PSY 454[2]	Biological Psychology	4B	3
PSY 455[2]	Biological Psychology Laboratory	4A	2
Electives			5
	Total Credits		30

Senior

BMS 300	Principles of Human Physiology		4
PSY 488	Field Placement	4C	6
Select one course from the following:			3
CHEM 320	Chemistry of Addictions		
PSY 410	Psychobiology of Addictions		
Select two groups from the following:[2]			9-10
Group A:			
PSY 315	Social Psychology	4B	
PSY 317	Social Psychology Laboratory	4A	
Group B:			
PSY 370	Psychological Measurement and Testing	4B	
PSY 371	Psychological Measurement and Testing Lab	4A	
Group C:			
PSY 452	Cognitive Psychology	4B	
PSY 453	Cognitive Psychology Laboratory	4A	
Group D:			
PSY 458	Cognitive Neuroscience	4B	
PSY 459	Cognitive Neuroscience Laboratory	4A	
Electives[3]			7-8
	Total Credits		30
	Program Total Credits:		120

1. Select from the list of courses in category 3C of the AUCC except HONR 492 or any PSY course.
2. Students should select a total of three lecture/lab pairs of courses over the junior and senior years. Two pairs are necessary to satisfy AUCC Cat 4A and 4B requirements.
3. Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program: Students must have a C or better in each of the following courses: PSY 100, PSY 192, PSY 210, PSY 250, PSY 252, PSY 311A, PSY 350, and the three lecture-lab pairs in psychology.

Maximum of 12 credits allowed toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 487, PSY 488,

PSY 495A-PSY 495F, PSY 496A-PSY 496F, PSY 498A-PSY 498F, PSY 499A-PSY 499F.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
CS 110	Personal Computing		X		4
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
PSY 100	General Psychology (GT-SS3)		X	3C	3
PSY 192	Psychology First-Year Seminar		X		1
Historical Perspectives				3D	3
	Total Credits				15

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
LIFE 102	Attributes of Living Systems (GT-SC1)		X	3A	4
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	X		1B	1
PSY 210	Psychology of the Individual in Context		X		3
Select one course from the following:					3
PHIL 100	Appreciation of Philosophy (GT-AH3)			3B	
PHIL 103	Moral and Social Problems (GT-AH3)			3B	
PHIL 110	Logic and Critical Thinking (GT-AH3)			3B	
PHIL 120	History and Philosophy of Scientific Thought (GT-AH3)			3B	
PHIL 205	Introduction to Ethics				
PHIL 210	Introduction to Formal Logic				
Social and Behavioral Sciences (Except HONR 492 or any PSY course)				3C	3
CO 150 and PSY 100 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 107	Fundamentals of Chemistry (GT-SC2)		X	3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)		X	3A	1
PSY 250	Research Design and Analysis I		X		3
PSY 320	Abnormal Psychology		X		3
Select one course from the following:			X		3
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
STAT 315	Statistics for Engineers and Scientists				
Elective					1
	Total Credits				15

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
PSY 252	Mind, Brain, and Behavior	X			3
SPCM 200	Public Speaking		X		3
Arts and Humanities				3B	6
Diversity and Global Awareness				3E	3
PSY 210, PSY 250, PSY 252, and STAT requirement must be completed by the end of Semester 4.		X			
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 300	Writing Arguments (GT-CO3)		X	2	3
PSY 310	Basic Counseling Skills		X		3
PSY 311A	Basic Counseling Skills Laboratory: CACI		X	4C	2

PSY 350	Research Design and Analysis II		X		3
PSY 360	Psychology of Drug Addiction Treatment				3
Elective					1
PSY 320 must be completed by the end of Semester 5.		X			
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
PSY 362	Professional Issues in Addiction Treatment				3
PSY 364	Infectious Diseases and Substance Use				3
PSY 454	Biological Psychology			4B	3
PSY 455	Biological Psychology Laboratory			4A	2
Electives					4
CHEM 107, CHEM 108, LIFE 102, PSY 311A, and PSY 350 must be completed by the end of Semester 6.		X			
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
BMS 300	Principles of Human Physiology				4
Select one group from the following:					4-5
Group A:					
PSY 315	Social Psychology			4B	
PSY 317	Social Psychology Laboratory			4A	
Group B:					
PSY 370	Psychological Measurement and Testing			4B	
PSY 371	Psychological Measurement and Testing Lab			4A	
Group C:					
PSY 452	Cognitive Psychology			4B	
PSY 453	Cognitive Psychology Laboratory			4A	
Group D:					
PSY 458	Cognitive Neuroscience			4B	
PSY 459	Cognitive Neuroscience Laboratory			4A	
PSY 488	Field Placement	X		4C	3
Elective					3
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:		X			3
CHEM 320	Chemistry of Addictions				
PSY 410	Psychobiology of Addictions				
Select one group from the following not previously taken:		X			4-5
Group A:					
PSY 315	Social Psychology			4B	
PSY 317	Social Psychology Laboratory			4A	
Group B:					
PSY 370	Psychological Measurement and Testing			4B	
PSY 371	Psychological Measurement and Testing Lab			4A	
Group C:					
PSY 452	Cognitive Psychology			4B	
PSY 453	Cognitive Psychology Laboratory			4A	
Group D:					
PSY 458	Cognitive Neuroscience			4B	
PSY 459	Cognitive Neuroscience Laboratory			4A	
PSY 488	Field Placement	X		4C	3
Electives		X			4-5

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X	
	Total Credits	15
	Program Total Credits:	120

Major in Psychology, Clinical/ Counseling Psychology Concentration

The Clinical/Counseling Psychology concentration prepares students to pursue graduate education and careers in clinical and counseling psychology. Students in this concentration complete a set of core courses that focus on the application of psychological principles to personal and interpersonal functioning, assessment, and intervention. In addition to coursework, students are required to complete an internship at an approved facility as part of their capstone experience.

Requirements Effective Fall 2018

Students must have a C or better in each of the following courses: PSY 100, PSY 192, PSY 210, PSY 250, PSY 252, PSY 330, PSY 350, and the three lecture-lab pairs in psychology.

Maximum of 12 credits allowed toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 487, PSY 488, PSY 495A-PSY 495F, PSY 496A-PSY 496F, PSY 498A-PSY 498F, PSY 499A-PSY 499F.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
CS 110	Personal Computing		4
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
PSY 100	General Psychology (GT-SS3)	3C	3
PSY 192	Psychology First-Year Seminar		1
PSY 210	Psychology of the Individual in Context		3
Select one course from the following:			3
PHIL 100	Appreciation of Philosophy (GT-AH3)	3B	
PHIL 103	Moral and Social Problems (GT-AH3)	3B	
PHIL 110	Logic and Critical Thinking (GT-AH3)	3B	
PHIL 120	History and Philosophy of Scientific Thought (GT-AH3)	3B	
PHIL 205	Introduction to Ethics		
PHIL 210	Introduction to Formal Logic		
Historical Perspectives		3D	3
Social and Behavioral Sciences[1]		3C	3
	Total Credits		30

Sophomore

CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	1
PSY 250	Research Design and Analysis I		3
PSY 252	Mind, Brain, and Behavior		3
PSY 320	Abnormal Psychology		3
SPCM 200	Public Speaking		3
Select one course from the following:			3
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
STAT 315	Statistics for Engineers and Scientists		
Arts and Humanities		3B	6
Diversity and Global Awareness		3E	3

Elective			1
	Total Credits		30
Junior			
CO 300	Writing Arguments (GT-CO3)	2	3
PSY 310	Basic Counseling Skills		3
PSY 311B	Basic Counseling Skills Laboratory: Non-CACI		2
PSY 330	Clinical and Counseling Psychology	4C	3
PSY 350	Research Design and Analysis II		3
PSY 370[2]	Psychological Measurement and Testing	4B	3
PSY 371[2]	Psychological Measurement and Testing Lab	4A	1
Electives			12
	Total Credits		30
Senior			
BMS 300	Principles of Human Physiology		4
PSY 315[2]	Social Psychology	4B	3
PSY 317[2]	Social Psychology Laboratory	4A	2
PSY 488	Field Placement	4C	3
Select one group of courses from the following:[2]			5
Group A:			
PSY 454	Biological Psychology	4B	
PSY 455	Biological Psychology Laboratory	4A	
Group B:			
PSY 458	Cognitive Neuroscience	4B	
PSY 459	Cognitive Neuroscience Laboratory	4A	
Select six credits from the following:			6
PSY 300	Positive Psychology		
PSY 305	Psychology of Religion		
PSY 325	Psychology of Personality		
PSY 327	Psychology of Women		
PSY 328	Psychology of Human Sexuality		
PSY 335	Forensic Psychology		
PSY 364	Infectious Diseases and Substance Use		
PSY 401	History and Systems of Psychology		
PSY 437	Psychology of Gender		
PSY 452	Cognitive Psychology		
PSY 460	Child Exceptionality and Psychopathology		
PSY 465	Adolescent Psychology		
PSY 492C[3]	Seminar: Counseling/Clinical Psychology		
PSY 495C[3]	Independent Study: Counseling/Clinical Psychology		
PSY 496C[3]	Group Study: Counseling/Clinical Psychology		
PSY 498C[3]	Research: Counseling/Clinical Psychology		
PSY 499C[3]	Thesis: Counseling/Clinical Psychology		
Electives[4]			7
	Total Credits		30
	Program Total Credits:		120

1 Select any course in category 3C of the AUCC except HONR 492 or any PSY course.

2 Students should select a total of three lecture/lab pairs of courses over the junior and senior years. Two pairs are necessary to satisfy AUCC Cat 4A and 4B requirements.

3 Students may substitute other subtopics with department approval.

4 Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program: Students must have a C or better in each of the following courses: PSY 100, PSY 192, PSY 210, PSY 250, PSY 252, PSY 330, PSY 350, and the three lecture-lab pairs in psychology.

Maximum of 12 credits allowed for graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486,PSY 487, PSY 488, PSY 495A-PSY 495F, PSY 496A-PSY 496F, PSY 498A-PSY 498F, PSY 499A-PSY 499F.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
CS 110	Personal Computing		X		4
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
PSY 100	General Psychology (GT-SS3)		X	3C	3
PSY 192	Psychology First-Year Seminar		X		1
Historical Perspectives				3D	3
	Total Credits				15

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
LIFE 102	Attributes of Living Systems (GT-SC1)		X	3A	4
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	X		1B	1
PSY 210	Psychology of the Individual in Context		X		3
Select one course from the following:					3
PHIL 100	Appreciation of Philosophy (GT-AH3)			3B	
PHIL 103	Moral and Social Problems (GT-AH3)			3B	
PHIL 110	Logic and Critical Thinking (GT-AH3)			3B	
PHIL 120	History and Philosophy of Scientific Thought (GT-AH3)			3B	
PHIL 205	Introduction to Ethics				
PHIL 210	Introduction to Formal Logic				
Social and Behavioral Sciences (Except HONR 492 or any PSY course)				3C	3
CO 150 and PSY 100 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 107	Fundamentals of Chemistry (GT-SC2)		X	3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)		X	3A	1
PSY 250	Research Design and Analysis I		X		3
PSY 320	Abnormal Psychology		X		3
Select one course from the following:			X		3
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
STAT 315	Statistics for Engineers and Scientists				
Elective					1
	Total Credits				15

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
PSY 252	Mind, Brain, and Behavior	X			3
SPCM 200	Public Speaking		X		3
Arts and Humanities				3B	6
Diversity and Global Awareness				3E	3
PSY 210, PSY 250, PSY 252, and STAT requirement must be completed by the end of Semester 4.		X			
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 300	Writing Arguments (GT-CO3)		X	2	3
PSY 310	Basic Counseling Skills		X		3
PSY 311B	Basic Counseling Skills Laboratory: Non-CACI				2
PSY 350	Research Design and Analysis II				3
Electives					4
	Total Credits				15

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
PSY 330	Clinical and Counseling Psychology	X		4C	3
PSY 370	Psychological Measurement and Testing		X	4B	3
PSY 371	Psychological Measurement and Testing Lab		X	4A	1
Electives					8
CHEM 107, CHEM 108, LIFE 102, PSY 310, PSY 330, and PSY 350 must be completed by the end of Semester 6.		X			
	Total Credits				15

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
BMS 300	Principles of Human Physiology				4
PSY 315	Social Psychology			4B	3
PSY 317	Social Psychology Laboratory			4A	2
PSY 488	Field Placement			4C	3
Electives					3
	Total Credits				15

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one group from the following:		X			5
Group A:					
PSY 454	Biological Psychology			4B	
PSY 455	Biological Psychology Laboratory			4A	
Group B:					
PSY 458	Cognitive Neuroscience			4B	
PSY 459	Cognitive Neuroscience Laboratory			4A	
Select six credits from the following:		X			6
PSY 300	Positive Psychology				
PSY 305	Psychology of Religion				
PSY 325	Psychology of Personality				
PSY 327	Psychology of Women				
PSY 328	Psychology of Human Sexuality				
PSY 335	Forensic Psychology				
PSY 364	Infectious Diseases and Substance Use				
PSY 401	History and Systems of Psychology				
PSY 437	Psychology of Gender				
PSY 452	Cognitive Psychology				
PSY 460	Child Exceptionality and Psychopathology				
PSY 465	Adolescent Psychology				
PSY 492C	Seminar: Counseling/Clinical Psychology				
PSY 495C	Independent Study: Counseling/Clinical Psychology				
PSY 496C	Group Study: Counseling/Clinical Psychology				
PSY 498C	Research: Counseling/Clinical Psychology				
PSY 499C	Thesis: Counseling/Clinical Psychology				
Electives		X			4

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X	
	Total Credits	15
	Program Total Credits:	120

Major in Psychology, General Psychology Concentration

Students who prefer a broad view of the field often choose the General Psychology concentration. Students in this concentration can tailor the psychology lecture/lab pair and upper division psychology elective requirements to fit their interests. Students with an interest in the applied applications of psychology are encouraged to participate in internships, while those with an interest in pursuing an advanced degree in graduate school are encouraged to seek research experience with a faculty member.

Requirements Effective Fall 2018

Students must have a C or better in each of the following courses: PSY 100, PSY 192, PSY 210, PSY 250, PSY 252, PSY 350, PSY 493, and the three lecture-lab pairs in psychology.

Maximum of 12 credits allowed toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 487, PSY 488, PSY 495A-PSY 495F, PSY 496A-PSY 496F, PSY 498A-PSY 498F, PSY 499A-PSY 499F.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
CS 110	Personal Computing		4
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
PSY 100	General Psychology (GT-SS3)	3C	3
PSY 192	Psychology First-Year Seminar		1
PSY 210	Psychology of the Individual in Context		3
Select one course from the following:			3
PHIL 100	Appreciation of Philosophy (GT-AH3)	3B	
PHIL 103	Moral and Social Problems (GT-AH3)	3B	
PHIL 110	Logic and Critical Thinking (GT-AH3)	3B	
PHIL 120	History and Philosophy of Scientific Thought (GT-AH3)	3B	
PHIL 205	Introduction to Ethics		
PHIL 210	Introduction to Formal Logic		
Historical Perspectives		3D	3
Social and Behavioral Sciences[1]		3C	3
	Total Credits		30

Sophomore

CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	1
PSY 250	Research Design and Analysis I		3
PSY 252	Mind, Brain, and Behavior		3
SPCM 200	Public Speaking		3
Select one one course from the following:			3
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
STAT 315	Statistics for Engineers and Scientists		
Arts and Humanities		3B	6
Diversity and Global Awareness		3E	3

Electives			4
	Total Credits		30
Junior			
CO 300	Writing Arguments (GT-CO3)	2	3
PSY 350	Research Design and Analysis II		3
Select one pair of courses from the following:[2]			4-5
Group A:			
PSY 315	Social Psychology	4B	
PSY 317	Social Psychology Laboratory	4A	
Group B:			
PSY 340	Organizational Psychology	4B	
PSY 341	Organizational Psychology Laboratory	4A	
Group C:			
PSY 370	Psychological Measurement and Testing	4B	
PSY 371	Psychological Measurement and Testing Lab	4A	
Group D:			
PSY 440	Industrial Psychology	4B	
PSY 441	Industrial Psychology Laboratory	4A	
Group E:			
PSY 452	Cognitive Psychology	4B	
PSY 453	Cognitive Psychology Laboratory	4A	
Group F:			
PSY 454	Biological Psychology	4B	
PSY 455	Biological Psychology Laboratory	4A	
Group G:			
PSY 456	Sensation and Perception	4B	
PSY 457	Sensation and Perception Laboratory	4A	
Group H:			
PSY 458	Cognitive Neuroscience	4B	
PSY 459	Cognitive Neuroscience Laboratory	4A	
Upper-Division Psychology			6
Electives			13-14
	Total Credits		30
Senior			
BMS 300	Principles of Human Physiology		4
PSY 493	Capstone Seminar	4C	3
Select two pairs of courses from the following not taken in the junior year:[2]			8-10
Group A:			
PSY 315	Social Psychology	4B	
PSY 317	Social Psychology Laboratory	4A	
Group B:			
PSY 340	Organizational Psychology	4B	
PSY 341	Organizational Psychology Laboratory	4A	
Group C:			
PSY 370	Psychological Measurement and Testing	4B	
PSY 371	Psychological Measurement and Testing Lab	4A	
Group D:			
PSY 440	Industrial Psychology	4B	
PSY 441	Industrial Psychology Laboratory	4A	
Group E:			

PSY 452	Cognitive Psychology	4B
PSY 453	Cognitive Psychology Laboratory	4A
Group F:		
PSY 454	Biological Psychology	4B
PSY 455	Biological Psychology Laboratory	4A
Group G:		
PSY 456	Sensation and Perception	4B
PSY 457	Sensation and Perception Laboratory	4A
Group H:		
PSY 458	Cognitive Neuroscience	4B
PSY 459	Cognitive Neuroscience Laboratory	4A
Electives[3]		13-15
	Total Credits	30
	Program Total Credits:	120

1 Select any course in category 3C of the AUCC except HONR 492 or any PSY course.

2 Students should select a total of three lecture/lab pairs of courses over the junior and senior years. Two pairs are necessary to satisfy AUCC Cat 4A and 4B requirements.

3 Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Students must have a C or better in each of the following courses: PSY 100, PSY 192, PSY 210, PSY 250, PSY 252, PSY 350, PSY 493, and the three lecture-lab pairs in psychology.

Maximum of 12 credits allowed toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 487, PSY 488, PSY 495A-PSY 495F, PSY 496A-PSY 496F, PSY 498A-PSY 498F, PSY 499A-PSY 499F.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
CS 110	Personal Computing		X		4
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
PSY 100	General Psychology (GT-SS3)		X	3C	3
PSY 192	Psychology First-Year Seminar		X		1
Historical Perspectives				3D	3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
LIFE 102	Attributes of Living Systems (GT-SC1)		X	3A	4
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	X		1B	1
PSY 210	Psychology of the Individual in Context		X		3
Select one course from the following:					3
PHIL 100	Appreciation of Philosophy (GT-AH3)			3B	
PHIL 103	Moral and Social Problems (GT-AH3)			3B	
PHIL 110	Logic and Critical Thinking (GT-AH3)			3B	
PHIL 120	History and Philosophy of Scientific Thought (GT-AH3)			3B	
PHIL 205	Introduction to Ethics				
PHIL 210	Introduction to Formal Logic				
Social and Behavioral Sciences (Except HONR 492 or any PSY course)				3C	3
CO 150 and PSY 100 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 107	Fundamentals of Chemistry (GT-SC2)		X	3A	4

CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)		X	3A	1
PSY 250	Research Design and Analysis I		X		3
Select one course from the following:			X		3
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
STAT 315	Statistics for Engineers and Scientists				
Electives					4
	Total Credits				15

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
PSY 252	Mind, Brain, and Behavior	X			3
SPCM 200	Public Speaking		X		3
Arts and Humanities				3B	6
Diversity and Global Awareness				3E	3
PSY 210, PSY 250, PSY 252, and STAT requirement must be completed by the end of Semester 4.					
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 300	Writing Arguments (GT-CO3)		X	2	3
PSY 350	Research Design and Analysis II		X		3
Upper-Division PSY course					3
Electives					6
	Total Credits				15

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one group from the following:			X		4-5
GROUP A:					
PSY 315	Social Psychology			4B	
PSY 317	Social Psychology Laboratory			4A	
GROUP B:					
PSY 340	Organizational Psychology			4B	
PSY 341	Organizational Psychology Laboratory			4A	
GROUP C:					
PSY 370	Psychological Measurement and Testing			4B	
PSY 371	Psychological Measurement and Testing Lab			4A	
GROUP D:					
PSY 440	Industrial Psychology			4B	
PSY 441	Industrial Psychology Laboratory			4A	
GROUP E:					
PSY 452	Cognitive Psychology			4B	
PSY 453	Cognitive Psychology Laboratory			4A	
GROUP F:					
PSY 454	Biological Psychology			4B	
PSY 455	Biological Psychology Laboratory			4A	
GROUP G:					
PSY 456	Sensation and Perception			4B	
PSY 457	Sensation and Perception Laboratory			4A	
GROUP H:					
PSY 458	Cognitive Neuroscience			4B	
PSY 459	Cognitive Neuroscience Laboratory			4A	
Upper-Division PSY course					3
Electives					7-8

CHEM 107, CHEM 108, LIFE 102, and PSY 350 must be completed by the end of Semester 6.			X		
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
BMS 300	Principles of Human Physiology				4
Select one group from the following:			X		4-5
Group A:					
PSY 315	Social Psychology			4B	
PSY 317	Social Psychology Laboratory			4A	
Group B:					
PSY 340	Organizational Psychology			4B	
PSY 341	Organizational Psychology Laboratory			4A	
Group C:					
PSY 370	Psychological Measurement and Testing			4B	
PSY 371	Psychological Measurement and Testing Lab			4A	
Group D:					
PSY 440	Industrial Psychology			4B	
PSY 441	Industrial Psychology Laboratory			4A	
Group E:					
PSY 452	Cognitive Psychology			4B	
PSY 453	Cognitive Psychology Laboratory			4A	
Group F:					
PSY 454	Biological Psychology			4B	
PSY 455	Biological Psychology Laboratory			4A	
Group G:					
PSY 456	Sensation and Perception			4B	
PSY 457	Sensation and Perception Laboratory			4A	
Group H:					
PSY 458	Cognitive Neuroscience			4B	
PSY 459	Cognitive Neuroscience Laboratory			4A	
Electives					6-7
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
PSY 493	Capstone Seminar	X		4C	3
Select one group from the following:		X			4-5
Group A:					
PSY 315	Social Psychology			4B	
PSY 317	Social Psychology Laboratory			4A	
Group B:					
PSY 340	Organizational Psychology			4B	
PSY 341	Organizational Psychology Laboratory			4A	
Group C:					
PSY 370	Psychological Measurement and Testing			4B	
PSY 371	Psychological Measurement and Testing Lab			4A	
Group D:					
PSY 440	Industrial Psychology			4B	
PSY 441	Industrial Psychology Laboratory			4A	
Group E:					
PSY 452	Cognitive Psychology			4B	
PSY 453	Cognitive Psychology Laboratory			4A	
Group F:					

PSY 454	Biological Psychology		4B	
PSY 455	Biological Psychology Laboratory		4A	
Group G:				
PSY 456	Sensation and Perception		4B	
PSY 457	Sensation and Perception Laboratory		4A	
Group H:				
PSY 458	Cognitive Neuroscience		4B	
PSY 459	Cognitive Neuroscience Laboratory		4A	
Electives		X		7-8
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X		
	Total Credits			15
	Program Total Credits:			120

Major in Psychology, Industrial/ Organizational Concentration

The Industrial/Organizational concentration prepares students to move into the workforce with a bachelor's degree or to pursue graduate education in industrial/organizational psychology. Students in this concentration take seminars that focus on psychology in the workplace. These seminars cover topics such as leadership, work-life balance, training, and motivation. Students are strongly encouraged to participate in experiential education opportunities to enhance their marketability in the workforce, such as internships. Students are also encouraged to work as research assistants in order to strengthen their graduate school applications.

Requirements Effective Fall 2018

Students must have a C or better in each of the following courses: PSY 100, PSY 192,PSY 210, PSY 250, PSY 252, PSY 350, PSY 493, and the three lecture-lab pairs in psychology.

Maximum of 12 credits allowed toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 487, PSY 488, PSY 495A-PSY 495F, PSY 496A-PSY 496F, PSY 498A-PSY 498F, PSY 499A-PSY 499F.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
CS 110	Personal Computing		4
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
PSY 100	General Psychology (GT-SS3)	3C	3
PSY 192	Psychology First-Year Seminar		1
PSY 210	Psychology of the Individual in Context		3
Select one course from the following:			3
PHIL 100	Appreciation of Philosophy (GT-AH3)	3B	
PHIL 103	Moral and Social Problems (GT-AH3)	3B	
PHIL 110	Logic and Critical Thinking (GT-AH3)	3B	
PHIL 120	History and Philosophy of Scientific Thought (GT-AH3)	3B	
PHIL 205	Introduction to Ethics		
PHIL 210	Introduction to Formal Logic		
Historical Perspectives		3D	3
Social and Behavioral Sciences[1]		3C	3
	Total Credits		30

Sophomore

CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	1

PSY 250	Research Design and Analysis I		3
PSY 252	Mind, Brain, and Behavior		3
PSY 292A	Seminar: Industrial/Organizational		1
Select one course from the following:			3
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
STAT 315	Statistics for Engineers and Scientists		
Arts and Humanities		3B	6
Diversity and Global Awareness		3E	3
Electives			6
	Total Credits		30

Junior

CO 300	Writing Arguments (GT-CO3)	2	3
PSY 340[2]	Organizational Psychology	4B	3
PSY 341[2]	Organizational Psychology Laboratory	4A	1
PSY 350	Research Design and Analysis II		3
PSY 370[2]	Psychological Measurement and Testing	4B	3
PSY 371[2]	Psychological Measurement and Testing Lab	4A	1
PSY 440[2]	Industrial Psychology	4B	3
PSY 441[2]	Industrial Psychology Laboratory	4A	1
SPCM 200	Public Speaking		3
Electives			9
	Total Credits		30

Senior

BMS 300	Principles of Human Physiology		4
PSY 492D[3]	Seminar: Industrial/Organizational Psychology		3
PSY 493	Capstone Seminar	4C	3
Select 6 credits from the following:			6
PSY 310	Basic Counseling Skills		
PSY 315	Social Psychology		
PSY 325	Psychology of Personality		
PSY 452	Cognitive Psychology		
PSY 492D[3]	Seminar: Industrial/Organizational Psychology		
PSY 495D	Independent Study: Industrial/Organizational Psychology		
PSY 496D	Group Study: Industrial/Organizational Psychology		
PSY 498D	Research: Industrial/Organizational Psychology		
PSY 499D	Thesis: Industrial/Organizational Psychology		
Electives[4]			14
	Total Credits		30
	Program Total Credits:		120

1. Select any course in category 3C of the AUCC except HONR 492 or any PSY course.
2. Students should select a total of three lecture/lab pairs of courses. Two pairs are necessary to satisfy AUCC Cat 4A and 4B requirements.
3. Students must complete at least one 3-credit Industrial/Organizational Psychology seminar, PSY 492D. Content changes from semester to semester and the course may be taken for credit multiple times.
4. Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

Students must have a C or better in each of the following courses: PSY 100, PSY 192, PSY 210, PSY 250, PSY 252, PSY 350, PSY 493, and the three lecture-lab pairs in psychology.

Maximum of 12 credits allowed toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 487, PSY 488, PSY 495A-PSY 495F, PSY 496A-PSY 496F, PSY 498A-PSY 498F, PSY 499A-PSY 499F. .

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
CS 110	Personal Computing		X		4
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
PSY 100	General Psychology (GT-SS3)		X	3C	3
PSY 192	Psychology First-Year Seminar		X		1
Historical Perspectives				3D	3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
LIFE 102	Attributes of Living Systems (GT-SC1)		X	3A	4
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	X		1B	1
PSY 210	Psychology of the Individual in Context		X		3
Select one course from the following:					3
PHIL 100	Appreciation of Philosophy (GT-AH3)			3B	
PHIL 103	Moral and Social Problems (GT-AH3)			3B	
PHIL 110	Logic and Critical Thinking (GT-AH3)			3B	
PHIL 120	History and Philosophy of Scientific Thought (GT-AH3)			3B	
PHIL 205	Introduction to Ethics				
PHIL 210	Introduction to Formal Logic				
Social and Behavioral Sciences (Except HONR 492 or any PSY course)[1]				3C	3
CO 150 and PSY 100 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 107	Fundamentals of Chemistry (GT-SC2)		X	3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)		X	3A	1
PSY 250	Research Design and Analysis I		X		3
Select one:			X		3
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
STAT 315	Statistics for Engineers and Scientists				
Electives					4
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
PSY 252	Mind, Brain, and Behavior	X			3
PSY 292A	Seminar: Industrial/Organizational		X		1
Arts and Humanities				3B	6
Diversity and Global Awareness				3E	3
Elective					2
PSY 210, PSY 250, PSY 252 and the STAT requirement must be completed by the end of Semester 4.		X			
	Total Credits				15

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 300	Writing Arguments (GT-CO3)		X	2	3

PSY 340	Organizational Psychology		X	4B	3
PSY 341	Organizational Psychology Laboratory		X	4A	1
PSY 350	Research Design and Analysis II		X		3
Electives					5
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
PSY 370	Psychological Measurement and Testing			4B	3
PSY 371	Psychological Measurement and Testing Lab			4A	1
PSY 440	Industrial Psychology		X	4B	3
PSY 441	Industrial Psychology Laboratory		X	4A	1
SPCM 200	Public Speaking		X		3
Elective					4
CHEM 107, CHEM 108, LIFE 102, and PSY 350 must be completed by the end of Semester 6.		X			
	Total Credits				15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
BMS 300	Principles of Human Physiology				4
PSY 492D	Seminar: Industrial/Organizational Psychology				3
Select 3 credits from the following:					3
PSY 310	Basic Counseling Skills				
PSY 315	Social Psychology				
PSY 325	Psychology of Personality				
PSY 452	Cognitive Psychology				
PSY 492D	Seminar: Industrial/Organizational Psychology				
PSY 495D	Independent Study: Industrial/Organizational Psychology				
PSY 496D	Group Study: Industrial/Organizational Psychology				
PSY 498D	Research: Industrial/Organizational Psychology				
PSY 499D	Thesis: Industrial/Organizational Psychology				
Electives					5
PSY 340 and PSY 341 must be completed by the end of Semester 7.		X			
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
PSY 493	Capstone Seminar	X		4C	3
Select three credits from the following:		X			3
PSY 310	Basic Counseling Skills				
PSY 315	Social Psychology				
PSY 325	Psychology of Personality				
PSY 452	Cognitive Psychology				
PSY 492D	Seminar: Industrial/Organizational Psychology				
PSY 495D	Independent Study: Industrial/Organizational Psychology				
PSY 496D	Group Study: Industrial/Organizational Psychology				
PSY 498D	Research: Industrial/Organizational Psychology				
PSY 499D	Thesis: Industrial/Organizational Psychology				
Electives		X			9
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Major in Psychology, Mind, Brain, and Behavior Concentration

The Mind, Brain, and Behavior Concentration prepares students to be competitive candidates for graduate programs in cognitive psychology, cognitive neuroscience, behavioral neuroscience, and sensation and perception. Many students considering a career in medicine or an allied health profession also choose to complete this concentration. Students acquire a stronger science and quantitative background compared to the other concentrations in psychology. Students are encouraged to participate as undergraduate research assistants and work with a faculty member on a research project.

Requirements Effective Fall 2018

Students must have a C or better in each of the following courses: PSY 100, PSY 192, PSY 210, PSY 250,PSY 252, PSY 350, PSY 493, and the three lecture-lab pairs in psychology.

Maximum of 12 credits allowed toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 487, PSY 488, PSY 495A-PSY 495F, PSY 496A-PSY 496F, PSY 498A-PSY 498F, PSY 499A-PSY 499F.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
CS 110	Personal Computing		4
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
PSY 100	General Psychology (GT-SS3)	3C	3
PSY 192	Psychology First-Year Seminar		1
PSY 252	Mind, Brain, and Behavior		3
Select one course from the following:			3
PHIL 100	Appreciation of Philosophy (GT-AH3)	3B	
PHIL 103	Moral and Social Problems (GT-AH3)	3B	
PHIL 110	Logic and Critical Thinking (GT-AH3)	3B	
PHIL 120	History and Philosophy of Scientific Thought (GT-AH3)	3B	
PHIL 205	Introduction to Ethics		
PHIL 210	Introduction to Formal Logic		
Historical Perspectives		3D	3
Social and Behavioral Sciences[1]		3C	3
	Total Credits		30

Sophomore

CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	1
PSY 210	Psychology of the Individual in Context		3
PSY 250	Research Design and Analysis I		3
PSY 292B	Seminar: Mind, Brain Behavior		1
SPCM 200	Public Speaking		3
Select one course from the following:			3
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
STAT 315	Statistics for Engineers and Scientists		
Arts and Humanities		3B	6
Diversity and Global Awareness		3E	3
Electives			3
	Total Credits		30

Junior

BMS 300	Principles of Human Physiology		4
CO 300	Writing Arguments (GT-CO3)	2	3
PSY 350	Research Design and Analysis II		3
PSY 352	Learning and Memory		3
Select one pair of courses from the following:[2]			5
Group A:			
PSY 452	Cognitive Psychology	4B	
PSY 453	Cognitive Psychology Laboratory	4A	
Group B:			
PSY 454	Biological Psychology	4B	
PSY 455	Biological Psychology Laboratory	4A	
Group C:			
PSY 456	Sensation and Perception	4B	
PSY 457	Sensation and Perception Laboratory	4A	
Group D:			
PSY 458	Cognitive Neuroscience	4B	
PSY 459	Cognitive Neuroscience Laboratory	4A	
Select at least five credits from the following:			5
MATH 125	Numerical Trigonometry (GT-MA1)	1B	
MATH 126	Analytic Trigonometry (GT-MA1)	1B	
MATH 141	Calculus in Management Sciences (GT-MA1)	1B	
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	
MATH 157	One Year Calculus IA (GT-MA1)	1B	
MATH 159	One Year Calculus IB (GT-MA1)	1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	
STAT 158	Introduction to R Programming		
STAT 305	Sampling Techniques		
STAT 341	Statistical Data Analysis I		
STAT 342	Statistical Data Analysis II		
Electives			7
	Total Credits		30

Senior

PSY 493	Capstone Seminar	4C	3
Select one course from the following:			3-5
BMS 301	Human Gross Anatomy		
BMS 325	Cellular Neurobiology		
BMS 330	Microscopic Anatomy		
BMS 345	Functional Neuroanatomy		
BMS 430	Endocrinology		
BMS 450	Pharmacology		
Select two pairs of courses not taken in junior year from the following: [2]			10
Group A:			
PSY 452	Cognitive Psychology	4B	
PSY 453	Cognitive Psychology Laboratory	4A	
Group B:			
PSY 454	Biological Psychology	4B	
PSY 455	Biological Psychology Laboratory	4A	
Group C:			
PSY 456	Sensation and Perception	4B	

PSY 457	Sensation and Perception Laboratory	4A
Group D:		
PSY 458	Cognitive Neuroscience	4B
PSY 459	Cognitive Neuroscience Laboratory	4A
Electives[3]		12-14
	Total Credits	30
	Program Total Credits:	120

1 Select any course in category 3C of the AUCC except HONR 492 or any PSY course.

2 Students should select a total of three lecture/lab pairs of courses over the junior and senior years. Two pairs are necessary to satisfy AUCC Cat 4A and 4B requirements.

3 Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
Students must have a C or better in each of the following courses: PSY 100, PSY 192, PSY 210, PSY 250, PSY 252, PSY 350, PSY 493, and the three lecture-lab pairs in psychology.

Maximum of 12 credits allowed toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 487, PSY 488, PSY 495A-PSY 495F, PSY 496A-PSY 496F, PSY 498A-PSY 498F, PSY 499A-PSY 499F.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
CS 110	Personal Computing		X		4
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
PSY 100	General Psychology (GT-SS3)		X	3C	3
PSY 192	Psychology First-Year Seminar		X		1
Historical Perspectives				3D	3
	Total Credits				15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
LIFE 102	Attributes of Living Systems (GT-SC1)		X	3A	4
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	X		1B	1
PSY 252	Mind, Brain, and Behavior		X		3
Select one course from the following:					3
PHIL 100	Appreciation of Philosophy (GT-AH3)			3B	
PHIL 103	Moral and Social Problems (GT-AH3)			3B	
PHIL 110	Logic and Critical Thinking (GT-AH3)			3B	
PHIL 120	History and Philosophy of Scientific Thought (GT-AH3)			3B	
PHIL 205	Introduction to Ethics				
PHIL 210	Introduction to Formal Logic				
Social and Behavioral Sciences (Except HONR 492 or any PSY course)				3C	3
CO 150 and PSY 100 must be completed by the end of Semester 2.		X			
	Total Credits				15

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 107	Fundamentals of Chemistry (GT-SC2)		X	3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)		X	3A	1
PSY 250	Research Design and Analysis I		X		3
Select one course from the following:			X		3
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
STAT 315	Statistics for Engineers and Scientists				
Diversity and Global Awareness				3E	3

Elective					1
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
PSY 210	Psychology of the Individual in Context	X			3
PSY 292B	Seminar: Mind, Brain Behavior		X		1
SPCM 200	Public Speaking		X		3
Arts and Humanities				3B	6
Elective					2
PSY 210, PSY 250, PSY 252, and the STAT requirement must be completed by the end of Semester 4.		X			
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
PSY 350	Research Design and Analysis II		X		3
PSY 352	Learning and Memory				3
Select at least five credits from the following:					5
MATH 125	Numerical Trigonometry (GT-MA1)			1B	
MATH 126	Analytic Trigonometry (GT-MA1)			1B	
MATH 141	Calculus in Management Sciences (GT-MA1)			1B	
MATH 155	Calculus for Biological Scientists I (GT-MA1)			1B	
MATH 157	One Year Calculus IA (GT-MA1)			1B	
MATH 159	One Year Calculus IB (GT-MA1)			1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)			1B	
STAT 158	Introduction to R Programming				
STAT 305	Sampling Techniques				
STAT 341	Statistical Data Analysis I				
STAT 342 (Spring Offering Term)	Statistical Data Analysis II				
Electives					4
CHEM 107, CHEM 108, and LIFE 102 must be completed by the end of Semester 5.		X			
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
BMS 300	Principles of Human Physiology	X			4
CO 300	Writing Arguments (GT-CO3)		X	2	3
Select one group from the following:			X		5
Group A:					
PSY 452	Cognitive Psychology			4B	
PSY 453	Cognitive Psychology Laboratory			4A	
Group B:					
PSY 454	Biological Psychology			4B	
PSY 455	Biological Psychology Laboratory			4A	
Group C:					
PSY 456	Sensation and Perception			4B	
PSY 457	Sensation and Perception Laboratory			4A	
Group D:					
PSY 458	Cognitive Neuroscience			4B	
PSY 459	Cognitive Neuroscience Laboratory			4A	
Elective					3
BMS 300 and PSY 350 must be completed by the end of Semester 6.		X			
	Total Credits				15

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3-5
BMS 301	Human Gross Anatomy				
BMS 325	Cellular Neurobiology				
BMS 330	Microscopic Anatomy				
BMS 345	Functional Neuroanatomy				
BMS 430	Endocrinology				
BMS 450	Pharmacology				
Select one group from the following:					5
Group A:					
PSY 452	Cognitive Psychology			4B	
PSY 453	Cognitive Psychology Laboratory			4A	
Group B:					
PSY 454	Biological Psychology			4B	
PSY 455	Biological Psychology Laboratory			4A	
Group C:					
PSY 456	Sensation and Perception			4B	
PSY 457	Sensation and Perception Laboratory			4A	
Group D:					
PSY 458	Cognitive Neuroscience			4B	
PSY 459	Cognitive Neuroscience Laboratory			4A	
Electives					5-7
	Total Credits				15

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
PSY 493	Capstone Seminar	X		4C	3
Select one group from the following:		X			5
Group A:					
PSY 452	Cognitive Psychology			4B	
PSY 453	Cognitive Psychology Laboratory			4A	
Group B:					
PSY 454	Biological Psychology			4B	
PSY 455	Biological Psychology Laboratory			4A	
Group C:					
PSY 456	Sensation and Perception			4B	
PSY 457	Sensation and Perception Laboratory			4A	
Group D:					
PSY 458	Cognitive Neuroscience			4B	
PSY 459	Cognitive Neuroscience Laboratory			4A	
Electives		X			7
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Graduate Certificate in Organizational Development

The Graduate Certificate in Organizational Development provides an introduction to the concepts and practices related to systems and technologies that facilitate organizational change and enhance organizational effectiveness. The certificate is designed for professionals involved with recruitment, selection, placement, training, and performance management of employees and staff in organizations.

Effective Fall 2017

Additional coursework may be required due to prerequisites.

Code	Title	Credits
PSY 648	Applied Organizational Psychology	3
PSY 661	Applied Organizational Development	3
PSY 666	Succession Planning and Leadership Development	3
Program Total Credits:		9

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Graduate Certificate in Performance Management

The Graduate Certificate in Performance Management provides an introduction to the concepts and practices related to systems and technologies that help manage the performance of individuals in organizations. The certificate is designed for professionals involved with recruitment, selection, placement, training, and performance management of employees and staff in organizations.

Effective Fall 2017

Additional coursework may be required due to prerequisites.

Code	Title	Credits
PSY 647	Applied Industrial Psychology	3
PSY 667	Competency Modeling and Criterion Development	3
PSY 668	Workforce Training and Development	3
Program Total Credits:		9

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Master of Addiction Counseling, Plan C (M.A.C.)

The Master of Addiction Counseling is designed to provide students the education needed to become a Licensed Addiction Counselor. With this degree and licensure, graduates will be able to enter the workforce as treatment providers for those struggling with substance use and substance use disorders. The program is structured as one year of course work and one year of internship in order to satisfy state requirements for certification and licensure. This program is seen as a continuation of the Major in Psychology, Addictions Counseling Concentration.

Requirements Effective Fall 2018

First Year		
Fall		**Credits**
PSY 612	Introduction to Addiction Counseling	3
PSY 675	Ethics and Professional Psychology Practice	3
PSY 724	Motivational Interviewing	3
PSY 726	Neuropharmacology of Addiction	3
	Total Credits	12
Spring		
PSY 613	Advanced Addiction Counseling	3
PSY 720	Psychopathology	3
PSY 776	Business and Practice of Addiction Counseling	3
PSY 793	Clinical Supervision of Addiction Counseling	3
	Total Credits	12
Second Year		
Fall		
PSY 787	Internship	9
	Total Credits	9
Spring		
PSY 787	Internship	9
	Total Credits	9
	Program Total Credits:	42

A minimum of 42 credits are required to complete this program.

Master of Applied Industrial/ Organizational Psychology, Plan C (M.A.I.O.P)

This Master of Applied Industrial/Organizational Psychology (M.A.I.O.P.) degree program studies the behavior of individuals in businesses and organizations to determine how to improve performance and productivity for that organization. Learn how to use research and measurement skills to solve practical workplace issues and to apply the principles of psychology to human resources and leadership challenges within an organization. This degree is practitioner-oriented, providing practical knowledge and skills focusing on research and consulting.

Requirements Effective Spring 2009

First Year		
		Credits
PSY 605	Applied Measurement Theory	3
PSY 647	Applied Industrial Psychology	3
PSY 648	Applied Organizational Psychology	3
PSY 662	Applied Psychological Research Methods I	4
PSY 663	Applied Psychological Research Methods II	4
PSY 666	Succession Planning and Leadership Development	3
	Total Credits	20

Second Year		
PSY 660	Applied Cross-Cultural Industrial/ Organizational Psychology	3
PSY 661	Applied Organizational Development	3
PSY 665	Applied Psychological Research Design	3
PSY 667	Competency Modeling and Criterion Development	3
PSY 668	Workforce Training and Development	3
PSY 669	Capstone: Practicum and Skills Development	3
	Total Credits	18
	Program Total Credits:	38

A minimum of 38 credits are required to complete this program.

Department of Statistics

Office in Statistics Building, Room 102
(970) 491-5269 or (970) 491-6546
stat.colostate.edu (http://www.stat.colostate.edu)

Professor F. Jay Breidt, Interim Department Chair
Professor Dan Cooley, Associate Chair
Professor Benjamin Prytherch, Undergraduate Advisor

Undergraduate Majors

- Major in Statistics (No new students are being admitted to the stand alone major.)
  - General Statistics Concentration
  - Mathematical Statistics Concentration

Minors

- Minor in Applied Statistics
- Minor in Statistics

Graduate Graduate Programs in Statistics

The department offers graduate programs leading to Master of Applied Statistics, Master of Science and Doctor of Philosophy degrees. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Statistics (http://www.stat.colostate.edu).

Certificates

- Data Analysis
- Theory and Applications of Regression Models

Master's Programs

- Master of Applied Statistics, Plan C (M.A.S.)
  - Master of Applied Statistics, Plan C, Data Science Specialization
  - Master of Applied Statistics, Plan C, Statistical Science Specialization
- Master of Science in Statistics, Plan A*
- Master of Science in Statistics, Plan B*

Ph.D.

- Ph.D. in Statistics*

* Please see department for program of study.

Courses

Subjects in this department include: Applied Statistics (STAA) and Statistics (STAT).

Applied Statistics (STAA)

STAA 551 Regression Models and Applications Credits: 2 (2-0-0)
Course Description: Model estimation and goodness of fit for linear models; confidence intervals for prediction and estimation; lack of fit, model diagnostics, transformations, model selection, influential observations, collinearity, interaction, weighted least squares, imputation.
Prerequisite: MATH 369 and STAT 315.
Restriction: Must be a: Graduate.
Registration Information: Admission to the Master of Applied Statistics or admission to the Graduate Certificate in Theory and Applications of Regression Models. Written consent of instructor. This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 552 Generalized Regression Models Credits: 2 (2-0-0)
Course Description: Categorical data analysis, estimation and testing for contingency tables, introduction to generalized linear models, logit and probit models for binary regression, extensions to nominal and ordinal multicategory responses, count data, Poisson and negative binomial regression, log-linear models.
Prerequisite: STAA 551, may be taken concurrently or STAT 512 or STAT 540.
Registration Information: Written consent of instructor. This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 553 Experimental Design Credits: 2 (2-0-0)
Course Description: Analysis of variance, covariance, randomized block, latin square, factorial, balanced and unbalanced designs. Applications to agriculture, biosciences. Implementation in SAS and R.
Prerequisite: (STAA 551 or STAT 540) and (STAA 562 or STAT 530).
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Written consent of instructor. This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 554 Mixed Models Credits: 2 (2-0-0)
Course Description: Topics in linear models that have both fixed and random predictors: split-plot and related designs, mixed-effects factorials, repeated measures, random coefficients, and spatial models for designed experiments. Introduction to generalized linear and nonlinear mixed models. Statistical topics will be integrated with implementation in SAS and R.
Prerequisite: STAA 552.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Must have concurrent registration in STAA 553. Written consent of instructor. This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 555 Statistical Consulting Skills Credit: 1 (1-0-0)
Also Offered As: STAT 555.
Course Description: Skills necessary to collaborate with non-statisticians. Communicate both verbally and in writing with collaborators while honing in on study objectives and identifying measures and factors. Readings of selected papers and texts and mock client sessions and shadowing. Common statistical tools necessary for statistical consulting will be reviewed.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered online. Credit not allowed for both STAA 555 and STAT 555.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 556 Statistical Consulting Credits: 2 (2-0-0)
Course Description: Effective consulting to meet with clients, analyze real data, and prepare reports.
Prerequisite: STAA 500 to 599 - at least 28 credits.
Registration Information: Written consent of instructor. This is a partial semester course. Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 561 Probability with Applications Credits: 2 (2-0-0)
Course Description: Random variables, continuous and discrete distributions, expectations, joint and conditional distributions, moments and moment generating functions, transformations, order statistics.
Prerequisite: MATH 369 or STAT 315.
Restriction: Must be a: Graduate.
Registration Information: Admission to the Master of Applied Statistics or admission to the Graduate Certificate in Theory and Applications of Regression Models. Written consent of instructor. This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 562 Mathematical Statistics with Applications Credits: 2 (2-0-0)
Course Description: Theory and applications of estimations, testing, and confidence intervals. Computer simulations, sampling from the normal distribution.
Prerequisite: STAA 561, may be taken concurrently or STAT 520.
Registration Information: Written consent of instructor. This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 565 Quantitative Reasoning Credit: 1 (1-0-0)
Course Description: Confounding, types of bias such as selection bias and regression effect bias, Simpson's paradox, experiments versus observational studies.
Prerequisite: STAA 551 or STAT 512, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 566 Data Visualization Methods Credit: 1 (1-0-0)
Course Description: Principles of effective graphs, data visualization methods, grammar of graphics, multi-panel conditioning, exploratory data analysis using graphics, 3D plotting, ROC curves, data wrangling.
Prerequisite: STAA 551, may be taken concurrently or STAT 512, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Admission to Master of Applied Statistics program or Graduate Certificate in Data Analysis. This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 567 Computational and Simulation Methods Credit: 1 (1-0-0)
Course Description: Statistical computation and simulation methods used to estimate probability distribution of non-standard test statistics, find estimators, test hypotheses, and compute confidence intervals. Optimization, bootstrapping, pivoting techniques.
Prerequisite: (STAA 551, may be taken concurrently or STAT 512, may be taken concurrently or STAT 540, may be taken concurrently) and (STAA 561, may be taken concurrently or STAT 511A or STAT 511B or STAT 520, may be taken concurrently).
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Written consent of instructor. This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 568 Topics Industrial/Organizational Statistics Credit: 1 (1-0-0)
Course Description: Six Sigma techniques, DMAIC, CT trees, VOC tools, data collection, process capability, capability metrics, graphical data exploration, and process control.
Prerequisite: (STAA 553, may be taken concurrently or STAT 512, may be taken concurrently) and (STAA 561 or STAT 511A or STAT 520).
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 571 Survey Statistics Credits: 2 (2-0-0)
Course Description: Survey design, simple random, stratified, and cluster samples. Estimation and variance estimation.
Prerequisite: (STAA 551 or STAT 540) and (STAA 562 or STAT 530).
Registration Information: Written consent of instructor. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 572 Nonparametric Methods Credits: 2 (2-0-0)
Course Description: Rank-based methods, nonparametric inferential techniques, scatterplot smoothing, nonparametric function estimation, environmental applications.
Prerequisite: (STAA 551, may be taken concurrently or STAT 512, may be taken concurrently or STAT 540, may be taken concurrently) and (STAA 561, may be taken concurrently or STAT 511A or STAT 511B or STAT 520, may be taken concurrently).
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 573 Analysis of Time Series Credits: 2 (2-0-0)
Course Description: Exploratory analysis of time series, including periodicity and trends, moving average and auto-regressive models, estimation and forecasting. Financial and environmental applications.
Prerequisite: (STAA 551, may be taken concurrently or STAT 540, may be taken concurrently) and (STAA 561, may be taken concurrently or STAT 520, may be taken concurrently).
Restriction: Must be a: Graduate.
Registration Information: Admission to Master of Applied Statistics program or Graduate Certificate in Data Analysis; students in the Graduate Certificate in Data Analysis require permission of the instructor. This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 574 Methods in Multivariate Analysis Credits: 2 (2-0-0)
Course Description: Multivariate ANOVA, principal components, factor analysis, cluster analysis, discrimination analysis.
Prerequisite: STAA 551, may be taken concurrently and STAA 561.
Registration Information: Written consent of instructor. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 575 Applied Bayesian Statistics Credits: 2 (2-0-0)
Course Description: Bayesian analysis of statistical models, prior and posterior distributions, computing methods, interpretation.
Prerequisite: (STAA 552) and (STAA 562 or STAT 530) and (STAA 567).
Registration Information: Written consent of instructor. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 576 Methods in Spatial Statistics Credits: 2 (2-0-0)
Course Description: Covariance estimation, covariance/variogram models, spatial regression models, spatial prediction, spatial point patterns.
Prerequisite: (STAA 552) and (STAA 561 or STAT 520).
Restriction: Must not be a: Graduate.
Registration Information: Graduate standing. Written consent of instructor. This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 577 Statistical Learning and Data Mining Credits: 2 (2-0-0)
Course Description: Applications-oriented overview into how to use statistical methods to do data mining, inference, and prediction.
Prerequisite: STAA 551, may be taken concurrently and STAA 561.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 578 Machine Learning Credits: 2 (2-0-0)
Course Description: K-means clustering, perceptron algorithm, evaluating model performance, neural networks, learning theory and dimension reduction.
Prerequisite: STAA 577, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Sections may be offered: Online. Credit not allowed for both CS 545 and STAA 578.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Statistics (STAT)

Course Descriptions

STAT 100 Statistical Literacy (GT-MA1) Credits: 3 (2-0-1)

Course Description: Learn to be an intelligent consumer of statistical information. Concepts of randomness and probability, variation, types of measurement, errors in measurement, experiments versus observational studies, Simpson's paradox, biases in statistical studies, p-value.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Mathematics 1B, Mathematics (GT-MA1).

STAT 158 Introduction to R Programming Credit: 1 (1-0-0)

Course Description: Programming using the R Project for the Statistical Computing. Data objects, for loops, if statements, using packages.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 192 First-Year Seminar in Statistics Credit: 1 (0-0-1)

Course Description: Explore careers in statistics and the variety of problems encountered by statisticians.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 201 General Statistics Credits: 3 (2-0-1)

Course Description: Graphs, descriptive statistics, confidence intervals, hypothesis tests, correlation and simple regression, tests of association.
Prerequisite: MATH 100 to 200 - at least 1 credit.
Registration Information: Mathematics placement exam or one credit of 100-level mathematics. Intended as a one-semester terminal course. Must register for lecture and recitation. Sections may be offered: Online. Credit not allowed for both STAT 201 and STAT 204.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 204 Statistics for Business Students Credits: 3 (2-2-0)

Course Description: Surveys, sampling, descriptive statistics, confidence intervals, contingency tables, control charts, regression, exponential smoothing, forecasting.
Prerequisite: MATH 100 to 200 - at least 1 credit.
Registration Information: Mathematics placement exam or one credit of 100-level mathematics. Must register for lecture and laboratory. Credit not allowed for both STAT 204 and STAT 201.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 301 Introduction to Statistical Methods Credits: 3 (3-0-0)

Course Description: Statistical methods in science; descriptive methods, simple probability, sampling distributions, confidence intervals, hypothesis testing, one-way ANOVA, chi-square tests, correlation, simple and multiple regression, practical concerns in inference (e.g. interpreting p-values, publication bias, replicability), reading and evaluating statistical results in published papers and popular media. Emphasis on using software rather than hand calculation to conduct analyses.
Prerequisite: MATH 117 or MATH 118 or MATH 124 or MATH 125 or MATH 126 or MATH 141 or MATH 155 or MATH 159 or MATH 160.
Registration Information: Sections may be offered: Online. Credit allowed for only one of the following: STAT 301, STAT 307, or STAT 311.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option, Traditional.
Special Course Fee: No.

STAT 303 Introduction to Communications Principles Credits: 3 (3-0-0)

Also Offered As: ECE 303.
Course Description: Basic concepts in design and analysis of communication systems.
Prerequisite: MATH 340, may be taken concurrently and MATH 261 with a minimum grade of C.
Registration Information: Sections may be offered: Online. Credit not allowed for both ECE 303 and STAT 303.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 305 Sampling Techniques Credits: 3 (3-0-0)

Course Description: Sample designs: simple random, stratified, systematic, cluster, unequal probability, two-phase; methods of estimation and sample size determination.
Prerequisite: STAT 301 or STAT 307 or ERHS 307 or STAT 311 or STAT 315.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 307 Introduction to Biostatistics Credits: 3 (3-0-0)

Course Description: Biostatistical methods; confidence intervals, hypothesis tests, simple correlation and regression, one-way analysis of variance.
Prerequisite: MATH 117 or MATH 118 or MATH 124 or MATH 125 or MATH 126 or MATH 141 or MATH 155 or MATH 160.
Registration Information: Credit allowed for only one of the following: STAT 301, STAT 307, or STAT 311.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.

Special Course Fee: No.

STAT 315 Statistics for Engineers and Scientists Credits: 3 (3-0-0)

Course Description: Calculus-based probability and statistics: distribution theory, estimation, hypothesis testing, applications to engineering and the sciences.
Prerequisite: MATH 155 or MATH 159 or MATH 160.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 341 Statistical Data Analysis I Credits: 3 (3-0-0)

Course Description: Estimation and inference based upon Gaussian linear regression models; residual analysis; variable selection; non-linear regression.
Prerequisite: (STAT 158) and (STAT 301 or STAT 307 or STAT 311 or STAT 315).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 342 Statistical Data Analysis II Credits: 3 (3-0-0)

Course Description: Single-factor analysis of variance models; multi-factor analysis of variance models; randomized block design; Latin squares; split-plot design.
Prerequisite: STAT 340 or STAT 341.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 358 Introduction to Statistical Computing in SAS Credits: 2 (2-0-0)

Course Description: Statistical procedures and database operations using the SAS programming language.
Prerequisite: STAT 315 or STAT 341.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 384 Supervised College Teaching Credits: Var[1-3] (0-0-0)

Course Description: Participation as a statistics tutor.
Prerequisite: STAT 342.
Registration Information: Sophomore standing. Written consent of advisor. A maximum of 10 combined credits for all 384 and 484 courses are counted toward graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 400 Statistical Computing Credits: 3 (3-0-0)

Course Description: Computationally intensive statistical methods: optimization for statistical problems; simulation & Monte Carlo methods; resampling methods; smoothing.
Prerequisite: (CS 160 or CS 163 or CS 164 or MATH 151 and MATH 153) and (STAT 420, may be taken concurrently).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 420 Probability and Mathematical Statistics I Credits: 3 (3-0-0)

Course Description: Probability, random variables, distribution functions, and expectations; joint and conditional distributions and expectations; transformations.
Prerequisite: MATH 255 or MATH 261.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 421 Introduction to Stochastic Processes Credits: 3 (3-0-0)

Course Description: Modeling phenomena with stochastic processes and the simulation and analysis of stochastic process models.
Prerequisite: (MATH 229 or MATH 369) and (STAT 420).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 430 Probability and Mathematical Statistics II Credits: 3 (3-0-0)

Course Description: Theories and applications of estimation, testing, and confidence intervals, sampling distributions including normal, gamma, beta X-squared, t, and F.
Prerequisite: STAT 420.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 440 Bayesian Data Analysis Credits: 3 (3-0-0)

Course Description: Applied Bayesian data analysis, Bayesian inference and interpretation of results, computing methods including MCMC, model selection and evaluation.
Prerequisite: (STAT 315 or STAT 430) and (STAT 342).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 460 Applied Multivariate Analysis Credits: 3 (3-0-0)

Course Description: Principles for multivariate estimation and testing; multivariate analysis of variance, discriminant analysis; principal components, factor analysis.
Prerequisite: (STAT 340 or STAT 341) and (DSCI 369 or MATH 229 or MATH 340 or MATH 369).
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 472 Statistical Consulting Capstone Credits: 3 (0-0-3)

Course Description: Statistical consulting skills including data analysis, problem solving, report writing, oral communication, and planning experiments.
Prerequisite: STAT 342 and STAT 420, may be taken concurrently.
Restriction: Must be a: Undergraduate.
Registration Information: Senior standing. Statistics majors only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 495 Independent Study Credits: Var[1-18] (0-0-0)

Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.

Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 498 Undergraduate Research in Statistics Credits: Var[1-3] (0-0-0)

Course Description: Research skills and techniques; includes both oral and written communication of results.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 500 Statistical Computer Packages Credit: 1 (0-2-0)

Course Description: Comparison, evaluation, and use of computer packages for univariate and multivariate statistical analyses.
Prerequisite: STAT 340 and STAT 350.
Registration Information: Admission to the Master of Applied Statistics program can substitute for STAT 350. Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 501 Statistical Science Credit: 1 (1-0-0)

Course Description: Overview of statistics theory; use in agriculture, business, environment, engineering; modeling; computing; statisticians as researchers/consultants.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

STAT 511A Design and Data Analysis for Researchers I: R Software Credits: 4 (3-0-1)

Course Description: Statistical methods for experimenters/researchers emphasizing design and analysis of experiments using R software.
Prerequisite: STAT 301 or STAT 307 or STAT 311 or STAT 315.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 511B Design and Data Analysis for Researchers I: SAS Software Credits: 4 (3-0-1)

Course Description: Statistical methods for experimenters/researchers emphasizing design and analysis of experiments using SAS software.
Prerequisite: STAT 301 or STAT 307 or STAT 311 or STAT 315.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 512 Design and Data Analysis for Researchers II Credits: 4 (3-0-1)

Course Description: Statistical methods for experimenters and researchers emphasizing design and analysis of experiments.
Prerequisite: STAT 511A or STAT 511B.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 520 Introduction to Probability Theory Credits: 4 (4-0-0)

Course Description: Probability, random variables, distributions, expectations, generating functions, limit theorems, convergence, random processes.
Prerequisite: MATH 369 and MATH 261 and MATH 317.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 521 Stochastic Processes I Credits: 3 (3-0-0)

Course Description: Characterization of stochastic processes. Markov chains in discrete and continuous time, branching processes, renewal theory, Brownian motion.
Prerequisite: STAT 520.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 523 Quantitative Spatial Analysis Credits: 3 (3-0-0)

Also Offered As: NR 523.
Course Description: Techniques in spatial analysis: point pattern analysis, spatial autocorrelation, trend surface and spectral analysis.
Prerequisite: ERHS 307 or STAT 301 or STAT 307.
Registration Information: Credit not allowed for both STAT 523 and NR 523.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 524 Financial Statistics Credits: 3 (3-0-0)

Also Offered As: FIN 524.
Course Description: Probability and statistical concepts and quantitative tools used in financial modeling and decision-making.
Prerequisite: MATH 345 and STAT 420.
Registration Information: Admission to MSBA program with Financial Risk Management specialization can substitute for MATH 345. Credit not allowed for both STAT 524 and FIN 524. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 525 Analysis of Time Series I Credits: 3 (3-0-0)

Course Description: Trend and seasonality, stationary processes, Hilbert space techniques, spectral distribution function, fitting ARIMA models, linear prediction.
Prerequisite: STAT 430.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 530 Mathematical Statistics Credits: 3 (3-0-0)

Course Description: Sampling distributions, estimates, testing, confidence intervals, exact and asymptotic theories of maximum likelihood and distribution-free methods.
Prerequisite: STAT 520.

Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 540 Data Analysis and Regression Credits: 3 (3-0-0)

Course Description: Introduction to multiple regression and data analysis with emphasis on graphics and computing.
Prerequisite: STAT 300 to 481 - at least 6 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 544 Biostatistical Methods for Quantitative Data Credits: 3 (3-0-0)

Also Offered As: ERHS 544.
Course Description: Regression and analysis of variance methods applied to both observational studies and designed experiments in the biological sciences.
Prerequisite: STAT 301 or STAT 307 or ERHS 307.
Registration Information: Credit not allowed for both STAT 544 and ERHS 544.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 547 Statistics for Environmental Monitoring Credits: 3 (3-0-0)

Also Offered As: CIVE 547.
Course Description: Applications of statistics in environmental pollution studies involving air, water, or soil monitoring; sampling designs; trend analysis; censored data.
Prerequisite: STAT 301.
Registration Information: Credit not allowed for both STAT 547 and CIVE 547. Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 548 Bioinformatics Algorithms Credits: 4 (3-2-0)

Also Offered As: CS 548.
Course Description: Computational methods for analysis of DNA/protein sequences and other biological data.
Prerequisite: STAT 301 or STAT 307 or STAT 315.
Registration Information: Student should have preexisting knowledge of a contemporary programming language. Credit not allowed for both STAT 548 and CS 548.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 555 Statistical Consulting Skills Credit: 1 (1-0-0)

Also Offered As: STAA 555.
Course Description: Skills necessary to collaborate with non-statisticians. Communicate both verbally and in writing with collaborators while honing in on study objectives and identifying measures and factors. Readings of selected papers and texts and mock client sessions and shadowing. Common statistical tools necessary for statistical consulting will be reviewed.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered online. Credit not allowed for both STAA 555 and STAT 555.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 556 Directed Statistical Consulting Credits: 2 (1-2-0)

Course Description: Skills necessary to collaborate with non-statisticians, including project management, presentation, and technical writing. Serve in the walk-in consulting lab. Collaborate on a semester-long active CSU project identified by the instructor. Engage in all phases of the long-term project.
Prerequisite: STAT 555.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 560 Applied Multivariate Analysis Credits: 3 (3-0-0)

Course Description: Multivariate analysis of variance; principal components; factor analysis; discriminant analysis; cluster analysis.
Prerequisite: STAT 520 and STAT 540.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 570 Nonparametric Statistics Credits: 3 (3-0-0)

Course Description: Distribution and uses of order statistics; nonparametric inferential techniques, their uses and mathematical properties.
Prerequisite: STAT 430.
Terms Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 586 Practicum in Consulting Techniques Credit: 1 (0-0-1)

Course Description: Instruction on planning studies, writing reports, and interacting with clients. Attend and critique consulting sessions.
Prerequisite: STAT 540.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 592 Seminar Credit: 1 (0-0-1)

Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 600 Statistical Computing Credits: 3 (3-0-0)

Course Description: Optimization and integration in statistics; Monte Carlo methods; simulation; bootstrapping; density estimation; smoothing.
Prerequisite: STAT 520 and STAT 540.
Restriction: Must be a: Graduate, Professional.

Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 604 Managerial Statistics Credits: 2 (2-0-0)

Also Offered As: BUS 604.
Course Description: Introduction to statistical thinking and methods used to support managerial decision making.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the MBA program. Credit not allowed for both STAT 604 and BUS 604.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 605 Theory of Sampling Techniques Credits: 3 (3-0-0)

Course Description: Survey designs; simple random, stratified, cluster samples; theory of estimation; optimization techniques for minimum variance or costs.
Prerequisite: (STAT 301 or STAT 307 or ERHS 307 or STAT 311 or STAT 315) and (STAT 430).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 620 Introduction to Measure Theoretic Probability Credits: 3 (3-0-0)

Course Description: Introduction to rigorous probability theory in real Euclidean spaces based on a foundation of measure theory.
Prerequisite: STAT 520.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 623 Spatial Statistics Credits: 3 (3-0-0)

Course Description: Spatial autocorrelation, geostatistical models and kriging, analysis/modeling of point patterns, discretely-indexed spatial models.
Prerequisite: STAT 430.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 630 Advanced Statistical Data Analysis Credits: 3 (3-0-0)

Course Description: Advanced statistical modeling techniques and data analysis methods, including likelihood-based methods, M-estimation, bootstrap and EM algorithm, and other advanced topics. For example, Jackknife, permutation tests, and nonparametric statistics.
Prerequisite: STAT 530 and STAT 620 and STAT 640.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both STAT 630 and STAT 680A2.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 640 Design and Linear Modeling I Credits: 4 (4-0-0)

Course Description: Introduction to linear models; experimental design; fixed, random, and mixed models.
Prerequisite: MATH 369 and STAT 540.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 645 Categorical Data Analysis and GLIM Credits: 3 (3-0-0)

Course Description: Generalized linear models, binary and polytomous data, log linear models, quasilikelihood, survival data models.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in STAT 640.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 650 Design and Linear Modeling II Credits: 3 (3-0-0)

Course Description: Mixed factorials; response surface methodology; Taguchi methods; variance components.
Prerequisite: STAT 640.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 670 Bayesian Statistics Credits: 3 (3-0-0)

Course Description: Bayesian statistical theory and applications, including Markov chain Monte Carlo methods which are used to facilitate inference for more complex statistical models.
Prerequisite: STAT 530, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 673 Hierarchical Modeling in Ecology Credits: 3 (3-0-0)

Also Offered As: FW 673.
Course Description: Hierarchical ecological modeling using common forms of data in fish and wildlife studies and emphasizing spatial and temporal aspects of analysis.
Prerequisite: ESS 575 or STAT 420.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both STAT 673 and FW 673.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

STAT 675A Topics in Statistical Methods: Sampling Credits: Var[1-3] (0-0-0)

Course Description:
Prerequisite: STAT 430.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.

Special Course Fee: No.

STAT 684 Supervised College Teaching Credits: Var[1-3] (0-0-0)

Course Description: Guidance and instruction in effective teaching of college courses in statistics.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in M.S. or Ph.D. program in statistics.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

STAT 695 Independent Study Credits: Var[1-18] (0-0-0)

Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 699 Thesis Credits: Var[1-18] (0-0-0)

Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 720 Probability Theory Credits: 3 (3-0-0)

Course Description: Measure theoretic probability, characteristic functions; convergence; laws of large numbers; central limit, extreme value, asymptotic theory.
Prerequisite: STAT 620.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 730 Advanced Theory of Statistics I Credits: 4 (4-0-0)

Course Description: Minimal sufficiency, maximal invariance; Neyman-Pearson theory; Fisher, Kullback-Leibler information; asymptotic properties of maximum-likelihood methods.
Prerequisite: STAT 530 and STAT 720.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 740 Advanced Statistical Methods Credits: 3 (3-0-0)

Course Description: Generalized additive models; recursive partitioning regression and classification; graphical models and belief networks; spatial statistics.
Prerequisite: STAT 640.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in STAT 730.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 792 Seminar Credit: 1 (0-0-1)

Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 793 Seminar on Advanced Statistical Methods Credits: 3 (0-0-3)

Course Description:
Prerequisite: STAT 640.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in STAT 730. May be taken up to two times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 795 Independent Study Credits: Var[1-18] (0-0-0)

Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 796 Group Study Credits: Var[1-18] (0-0-0)

Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 799 Dissertation Credits: Var[1-18] (0-0-0)

Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Statistics

Statistics is the science of modeling, summarizing, and analyzing data. Statisticians help people produce trustworthy data, analyze the data, and present the results in a useful manner. Statisticians work with people from other professional backgrounds to solve practical problems. They provide crucial guidance in determining what information is reliable and which predictions can be trusted. An exciting aspect of the field is the diversity of areas where statistical methods are used; this is one reason for continuing strong demand for well-trained statisticians. With the popularity of big data and the focus on quantitative analysis in many fields, there will continue to be a high demand for graduates with a statistics major or minor. Students who succeed in the field of statistics typically have strong quantitative skills, analytical minds, and like to help other people solve problems.

Learning Outcomes

Students completing this program will be able to:

- Conceptualize analytical questions in terms of a model,
- Apply their knowledge of the core set of statistical methods,
- Perform data analysis using statistical software,
- Interpret and communicate statistical results,
- Either attend graduate school in statistics or find professional employment in a statistics field upon completion of a statistics major.

Potential Occupations

Statisticians find employment in a wide range of industries including medicine (evaluating new medicines and medical treatments), computing, business, market research, natural resources, government, and more. Almost every industry has a statistician or a group of statisticians somewhere in the organization. Graduate school is another pathway after graduation. Many of our undergraduate majors have continued on to graduate school in statistics, either at CSU or other universities. Almost all statistics majors are able to find work in this field and/or gain entrance to graduate school after successfully completing a Statistics degree.

Concentrations

- General Statistics Concentration
- Mathematical Statistics Concentration

Requirements

No new students are being admitted to this stand-alone major. Students interested in this area of study, please visit the General Statistics Concentration or Mathematical Statistics Concentration program pages.

Major in Statistics, General Statistics Concentration

The General Statistics concentration provides a solid foundation in statistical theory as well as education and training in modern statistical methods.

If you are interested in the General Statistics concentration, please contact our department at stats@stat.colostate.edu.

Requirements
Effective Fall 2018

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
STAT 158	Introduction to R Programming		1
STAT 315	Statistics for Engineers and Scientists		3
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Electives			9
	Total Credits		30

Sophomore

JTC 300	Professional and Technical Communication (GT-CO3)	2	3
MATH 235	Introduction to Mathematical Reasoning		2
MATH 261	Calculus for Physical Scientists III		4
MATH 369	Linear Algebra I		3
STAT 341	Statistical Data Analysis I		3
STAT 342	Statistical Data Analysis II		3
Select one group from the following:			3-4
Group A (Select one course):			
CS 150	Culture and Coding (GT-AH3)	3B	
CS 163	CS1---No Prior Programming Experience		
CS 164	CS1--Prior Programming Experience		
Group B:			
CS 155	Introduction to Unix		
CS 156	Introduction to C Programming I		
In addition to CS 155 and CS 156, select at least two of the following:			
CS 157	Introduction to C Programming II		
CS 158/MATH 158	Mathematical Algorithms in C		
MATH 151	Mathematical Algorithms in Matlab I		

MATH 152	Mathematical Algorithms in Maple		
Biological and Physical Sciences		3A	7
	Total Credits		28-29

Junior

STAT 358	Introduction to Statistical Computing in SAS		2
STAT 420	Probability and Mathematical Statistics I		3
STAT 430	Probability and Mathematical Statistics II	4A	3
Select one course from the following:			3-4
MATH 301	Introduction to Combinatorial Theory		
MATH 317	Advanced Calculus of One Variable		
MATH 331	Introduction to Mathematical Modeling		
MATH 340	Introduction to Ordinary Differential Equations		
MATH 345	Differential Equations		
MATH 360	Mathematics of Information Security		
MATH 450	Introduction to Numerical Analysis I		
MATH 469	Linear Algebra II		
Select one course from the following:			3
STAT 400	Statistical Computing		
STAT 440	Bayesian Data Analysis		
Select one course from the following:			3
STAT 305	Sampling Techniques		
STAT 460	Applied Multivariate Analysis		
Upper-Division CS/MATH/STAT Electives[1]			3
Arts and Humanities		3B	6
Social and Behavioral Sciences		3C	3
	Total Credits		29-30

Senior

STAT 472	Statistical Consulting Capstone	4A,4B,4C	3
Upper-Division CS/MATH/STAT Elective[1]			3
Electives[2]			25-27
	Total Credits		31-33
	Program Total Credits:		120

[1] Select upper-division (300- to 400-level) computer science, mathematics, or statistics courses (excluding courses ending in -82 to-99).

[2] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	4
STAT 158	Introduction to R Programming				1
Diversity and Global Awareness				3E	3
Elective					3
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 161	Calculus for Physical Scientists II (GT-MA1)	X		1B	4
STAT 315	Statistics for Engineers and Scientists				3

Historical Perspectives				3D	3
Electives					6
	Total Credits				16
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 261	Calculus for Physical Scientists III	X			4
STAT 341	Statistical Data Analysis I				3
Select one group from the following:		X			3-4
Group A (Select one course):					
CS 150	Culture and Coding (GT-AH3)			3B	
CS 163	CS1---No Prior Programming Experience				
CS 164	CS1--Prior Programming Experience				
Group B:					
CS 155	Introduction to Unix				
CS 156	Introduction to C Programming I				
In addition to CS 155 or CS 156, select at least two of the following:					
CS 157	Introduction to C Programming II				
CS 158/ MATH 158	Mathematical Algorithms in C				
MATH 151	Mathematical Algorithms in Matlab I				
MATH 152	Mathematical Algorithms in Maple				
Biological and Physical Sciences				3A	3
	Total Credits				13-14
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
JTC 300	Professional and Technical Communication (GT-CO3)			2	3
MATH 235	Introduction to Mathematical Reasoning				2
MATH 369	Linear Algebra I				3
STAT 342	Statistical Data Analysis II				3
Biological and Physical Sciences				3A	4
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
STAT 420	Probability and Mathematical Statistics I				3
Select one course from the following:					3-4
MATH 301	Introduction to Combinatorial Theory				
MATH 317	Advanced Calculus of One Variable				
MATH 331	Introduction to Mathematical Modeling				
MATH 340	Introduction to Ordinary Differential Equations				
MATH 345	Differential Equations				
MATH 360	Mathematics of Information Security				
MATH 450	Introduction to Numerical Analysis I				
MATH 469	Linear Algebra II				
Select one course from the following:					3
STAT 305	Sampling Techniques				
STAT 460	Applied Multivariate Analysis				
Arts and Humanities				3B	3
Social and Behavioral Sciences				3C	3
	Total Credits				15-16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
STAT 358	Introduction to Statistical Computing in SAS				2
STAT 430	Probability and Mathematical Statistics II			4A	3
Select one course from the following:					3

STAT 400	Statistical Computing				
STAT 440	Bayesian Data Analysis				
Arts and Humanities				3B	3
Upper-Division CS/MATH/STAT Elective					3
STAT 341 and STAT 342 must be completed by the end of Semester 6.		X			
	Total Credits				14

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Electives					15
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
STAT 472	Statistical Consulting Capstone	X		4A,4B,4C	3
Upper-Division CS/MATH/STAT Elective		X			3
Electives		X			10-12
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				16-18
	Program Total Credits:				120

Major in Statistics, Mathematical Statistics Concentration

The Mathematical Statistics concentration prepares students to be competitive candidates for graduate programs in statistics and biostatistics.

If you are interested in the Mathematical Statistics concentration, please contact our department at stats@stat.colostate.edu.

Requirements Effective Fall 2017

A minimum grade of C is required in each mathematics, statistics, and computer science course required for the major.

Freshman

		AUCC	**Credits**
CO 150	College Composition (GT-CO2)	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
STAT 158	Introduction to R Programming		1
STAT 315	Statistics for Engineers and Scientists		3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
Electives			6
	Total Credits		30

Sophomore

JTC 300	Professional and Technical Communication (GT-CO3)	2	3
MATH 235	Introduction to Mathematical Reasoning		2
MATH 261	Calculus for Physical Scientists III		4
MATH 369	Linear Algebra I		3
STAT 341	Statistical Data Analysis I		3
STAT 342	Statistical Data Analysis II		3
Select one course from the following:			4
CS 163	CS1--No Prior Programming Experience		
CS 164	CS1--Prior Programming Experience		
Biological and Physical Sciences		3A	7
	Total Credits		29

Junior

MATH 317	Advanced Calculus of One Variable		3
MATH 345	Differential Equations		4
STAT 305	Sampling Techniques		3
STAT 420	Probability and Mathematical Statistics I		3
STAT 430	Probability and Mathematical Statistics II	4A	3
Select one course from the following:			3
STAT 400	Statistical Computing		
STAT 440	Bayesian Data Analysis		
Arts and Humanities		3B	3
Social and Behavioral Sciences		3C	3
Electives			6
	Total Credits		31

Senior

MATH 417	Advanced Calculus I		3
Select two courses from the following:			6
MATH 430/ECE 430	Fourier and Wavelet Analysis with Apps		
MATH 450	Introduction to Numerical Analysis I		
MATH 451	Introduction to Numerical Analysis II		
MATH 469	Linear Algebra II		
STAT 421	Introduction to Stochastic Processes		3
STAT 460	Applied Multivariate Analysis		3
STAT 472	Statistical Consulting Capstone	4A,4B,4C	3
Electives			12
	Total Credits		30
	Program Total Credits:		120

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)	X		1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)		X	1B	4
STAT 158	Introduction to R Programming				1
Diversity and Global Awareness				3E	3
Elective					3
MATH 160 must be completed by end of Semester 3.		X			
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 161	Calculus for Physical Scientists II (GT-MA1)		X	1B	4
STAT 315	Statistics for Engineers and Scientists				3
Arts and Humanities				3B	3
Historical Perspectives				3D	3
Elective					3
MATH 161 must be completed by the end of Semester 4.		X			
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CS 163 or 164	CS1---No Prior Programming Experience CS1--Prior Programming Experience				4

MATH 261	Calculus for Physical Scientists III		X		4
STAT 341	Statistical Data Analysis I		X		3
Biological Physical Sciences				3A	3
	Total Credits				14
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
JTC 300	Professional and Technical Communication (GT-CO3)		X	2	3
MATH 235	Introduction to Mathematical Reasoning				2
MATH 369	Linear Algebra I				3
STAT 342	Statistical Data Analysis II				3
Biological Physical Sciences				3A	4
	Total Credits				15
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 317	Advanced Calculus of One Variable				3
STAT 420	Probability and Mathematical Statistics I				3
Select one course from the following:					3
STAT 400	Statistical Computing				
STAT 440	Bayesian Data Analysis				
Arts and Humanities				3B	3
Elective					3
MATH 261 must be completed by the end of Semester 5.		X			
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 345	Differential Equations				4
STAT 305	Sampling Techniques				3
STAT 430	Probability and Mathematical Statistics II			4A	3
Social and Behavioral Sciences				3C	3
Elective					3
STAT 341 and STAT 342 must be completed by the end of Semester 6.		X			
	Total Credits				16
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 417	Advanced Calculus I				3
STAT 460	Applied Multivariate Analysis				3
STAT 472	Statistical Consulting Capstone			4A,4B,4C	3
Electives					6
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Select two courses from the following:		X			6
MATH 430/ ECE 430	Fourier and Wavelet Analysis with Apps				
MATH 450	Introduction to Numerical Analysis I				
MATH 451	Introduction to Numerical Analysis II				
MATH 469	Linear Algebra II				
STAT 421	Introduction to Stochastic Processes	X			3
Electives		X			6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15
	Program Total Credits:				120

Minor in Applied Statistics

The minor in Applied Statistics is designed for students pursuing non-calculus based majors. The minor is a great way for students to highlight their quantitative abilities when applying for jobs and graduate school.

If you are interested in the minor in Applied Statistics, please contact our department at stats@stat.colostate.edu.

Requirements Effective Fall 2017

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

A minimum grade of C must be achieved in all statistics courses (STAT subject code and dual-listed) required for the minor in applied statistics.

Code	Title	Credits
STAT 341	Statistical Data Analysis I	3
STAT 342	Statistical Data Analysis II	3
GROUP A (Select one):		3
Students in the biological sciences should take STAT 307. Students in the social sciences should take STAT 311. Students with a calculus background should take STAT 315. Everyone else should take STAT 301.		
STAT 301	Introduction to Statistical Methods	
STAT 307	Introduction to Biostatistics	
STAT 311	Statistics for Behavioral Sciences I	
STAT 315	Statistics for Engineers and Scientists	
GROUP B (Select one):		3
STAT 305	Sampling Techniques	
STAT 312	Statistics for Behavioral Sciences II	
Electives: choose nine credits from the following, or permission of advisor. [1]		9
ECE 311	Linear System Analysis I	
ECE 312	Linear System Analysis II	
ECON 335/ AREC 335	Introduction to Econometrics	
ECON 435	Intermediate Econometrics	
F 321	Forest Biometry	
F 422	Quantitative Methods in Forest Management	
FW 370	Design of Fish and Wildlife Projects	
FW 471	Wildlife Data Collection and Analysis	
MATH 369	Linear Algebra I	
MATH 435	Projects in Applied Mathematics	
MATH 450	Introduction to Numerical Analysis I	
MATH 451	Introduction to Numerical Analysis II	
MECH 417	Control Systems	
MGT 301	Supply Chain Management	
MGT 475	International Business Management	
NR 421	Natural Resources Sampling	
NR 422	GIS Applications in Natural Resource Management	
PSY 317	Social Psychology Laboratory	
PSY 370	Psychological Measurement and Testing	
PSY 371	Psychological Measurement and Testing Lab	
STAT 358	Introduction to Statistical Computing in SAS	
STAT 400	Statistical Computing	
STAT 420	Probability and Mathematical Statistics I	
STAT 421	Introduction to Stochastic Processes	
STAT 430	Probability and Mathematical Statistics II	
STAT 440	Bayesian Data Analysis	
STAT 460	Applied Multivariate Analysis	
STAT 472	Statistical Consulting Capstone	
Program Total Credits:		21

[1] Electives approved by the undergraduate advisor in statistics or the department chair.

Minor in Statistics

Students with a minor in Statistics will get training in data analysis, probability, and quantitative reasoning, which will enhance any education in science, social science, medicine, finance, etc.

If you are interested a minor in Statistics, please contact our department at stats@stat.colostate.edu.

Requirements Effective Fall 2018

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

A minimum grade of C must be achieved in all STAT courses required for the minor in statistics.

Students in the **biological** and **social sciences** who are interested in applications of statistical methods should take STAT 301 (or STAT 307 or STAT 311) and STAT 305. Students in the **physical sciences** who are interested in applications of statistical methods should take STAT 315 and STAT 460. Students interested in **statistical theory** should take STAT 420 and STAT 430.

Code	Title	Credits
GROUP A (Select one):		3
STAT 301	Introduction to Statistical Methods	
STAT 307	Introduction to Biostatistics	
STAT 311	Statistics for Behavioral Sciences I	
STAT 315	Statistics for Engineers and Scientists	
GROUP B (Select one):		2-3
STAT 358	Introduction to Statistical Computing in SAS	
STAT 400	Statistical Computing	
STAT 420	Probability and Mathematical Statistics I	

STAT 440	Bayesian Data Analysis	
GROUP C (Must take ALL courses)		7
STAT 158	Introduction to R Programming	
STAT 341	Statistical Data Analysis I	
STAT 342	Statistical Data Analysis II	
GROUP D (Select one):		3
STAT 305	Sampling Techniques	
STAT 430	Probability and Mathematical Statistics II	
STAT 460	Applied Multivariate Analysis	
Electives - select at least 6 credits from the following not previously taken above:		6
ECE 311	Linear System Analysis I	
ECE 312	Linear System Analysis II	
ECON 335/ AREC 335	Introduction to Econometrics	
ECON 435	Intermediate Econometrics	
F 321	Forest Biometry	
F 422	Quantitative Methods in Forest Management	
FW 370	Design of Fish and Wildlife Projects	
FW 471	Wildlife Data Collection and Analysis	
MATH 369	Linear Algebra I	
MATH 435	Projects in Applied Mathematics	
MATH 450	Introduction to Numerical Analysis I	
MATH 451	Introduction to Numerical Analysis II	
MECH 417	Control Systems	
MGT 301	Supply Chain Management	
MGT 475	International Business Management	
NR 421	Natural Resources Sampling	
NR 422	GIS Applications in Natural Resource Management	
PSY 317	Social Psychology Laboratory	
PSY 370	Psychological Measurement and Testing	
PSY 371	Psychological Measurement and Testing Lab	
STAT 305	Sampling Techniques	
STAT 312	Statistics for Behavioral Sciences II	
STAT 358	Introduction to Statistical Computing in SAS	
STAT 400	Statistical Computing	
STAT 420	Probability and Mathematical Statistics I	
STAT 421	Introduction to Stochastic Processes	
STAT 430	Probability and Mathematical Statistics II	
STAT 440	Bayesian Data Analysis	
STAT 460	Applied Multivariate Analysis	
STAT 472	Statistical Consulting Capstone	
Program Total Credits:		21-22

Graduate Certificate in Data Analysis

The certificate provides a solid background in data analysis using modern software for professionals or graduate students in diverse fields who are seeking a short-term program that will strengthen their statistical skills.

Effective Spring 2019

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Required Courses:		
STAT 511A	Design and Data Analysis for Researchers I: R Software	4
or STAT 511B	Design and Data Analysis for Researchers I: SAS Software	
STAT 512	Design and Data Analysis for Researchers II	4
Select a minimum of one course from the following:		1-4
ANEQ 565	Interpreting Animal Science Research	
BZ 578/MIP 578	Genetics of Natural Populations	
CIS 575	Applied Data Mining and Analytics in Business	
CIVE 522	Engineering Hydrology	
CIVE 547/ STAT 547	Statistics for Environmental Monitoring	
CIVE 622	Risk Analysis of Water/Environmental Systems	
ERHS 535	R Programming for Research	
STAA 565	Quantitative Reasoning	
STAA 566	Data Visualization Methods	
STAA 568	Topics Industrial/Organizational Statistics	
Program Total Credits:		9-12

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Graduate Certificate in Theory and Applications of Regression Models

Applications of regression analysis, generalized regression models, probability and mathematical statistics and other topics in statistical analysis. The focus is on the practical methods in regression analysis, understanding patterns and structure in data, and the explanation of findings.

Distinctive Requirements for Certificate: GSLL 3095 and GSLL 3096 (or STAT 500) are required skills courses and should be taken first. GSLL 3095 is intended not only as a review, but also as instruction in using the math skills in a statistical context. It does not replace the math prerequisites indicated. GSLL 3096 covers use of SAS and R programming. STAT 500 is a 1-credit version of GSLL 3096.

Effective Spring 2017

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Required Credit Core:		
STAA 551	Regression Models and Applications	2
STAA 552	Generalized Regression Models	2
STAA 561	Probability with Applications	2
STAA 562	Mathematical Statistics with Applications	2

Select two credits from the following:		2
STAA 565	Quantitative Reasoning	
STAA 566	Data Visualization Methods	
STAA 567	Computational and Simulation Methods	
STAA 574	Methods in Multivariate Analysis	
Program Total Credits:		10

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Master of Applied Statistics, Plan C, Data Science Specialization

The Master of Applied Statistics, Plan C, Data Science Specialization emphasizes practical methods in statistics and data science, focusing on applications and computational aspects, rather than theory. The goal of this degree is to enable students to start working as data scientists in business, industry or government immediately after graduation. Students will receive a strong background in statistical and business computing while completing this degree. Full time students complete the M.A.S. degree in less than a year; however, this degree may also be completed part time, either online or on campus. Students who succeed in the field of data science typically have strong quantitative skills, analytical minds, and like to help other people solve problems.

Requirements Effective Fall 2018

Code	Title	Credits
Required Courses		
CIS 605	Business Visual Application Development	3
CIS 655	Business Database Systems	3
MATH 560	Linear Algebra	3
STAA 551	Regression Models and Applications	2
STAA 552	Generalized Regression Models	2
STAA 553	Experimental Design	2
STAA 556	Statistical Consulting	2
STAA 561	Probability with Applications	2
STAA 562	Mathematical Statistics with Applications	2
STAA 565	Quantitative Reasoning	1
STAA 577	Statistical Learning and Data Mining	2
STAA 578	Machine Learning	2
STAT 586	Practicum in Consulting Techniques	1
Select from the following electives:		3-4
CIS 570	Business Intelligence	
CIS 575	Applied Data Mining and Analytics in Business	
STAA 554	Mixed Models	
STAA 574	Methods in Multivariate Analysis	
STAA 575	Applied Bayesian Statistics	
Program Total Credits:		30-31

A minimum of 30 credits are required to complete this program.

Master of Applied Statistics, Plan C, Statistical Science Specialization

The Master of Applied Statistics, Plan C, Statistical Science Specialization emphasizes practical methods in statistics, focusing on applications and computational aspects, rather than theory. The goal of this degree is to enable students to start working as practicing statisticians in industry or government immediately after graduation. Students will receive a strong background in statistical computing while completing this degree. Full time students complete the M.A.S. degree in less than a year; however, this degree may also be completed part time, either online or on campus. Students who succeed in the field of statistics typically have strong quantitative skills, analytical minds, and like to help other people solve problems.

Requirements Effective Fall 2018

Code	Title	Credits
Required Courses		
STAA 551	Regression Models and Applications	2
STAA 552	Generalized Regression Models	2
STAA 553	Experimental Design	2
STAA 554	Mixed Models	2
STAA 556	Statistical Consulting	2
STAA 561	Probability with Applications	2
STAA 562	Mathematical Statistics with Applications	2
STAA 565	Quantitative Reasoning	1
STAA 566	Data Visualization Methods	1
STAA 567	Computational and Simulation Methods	1
STAA 568	Topics Industrial/Organizational Statistics	1
STAA 574	Methods in Multivariate Analysis	2
STAA 575	Applied Bayesian Statistics	2
STAT 586	Practicum in Consulting Techniques	1
Select 8 credits from the following:		8
STAA 571	Survey Statistics	
STAA 572	Nonparametric Methods	
STAA 573	Analysis of Time Series	
STAA 576	Methods in Spatial Statistics	
STAA 577	Statistical Learning and Data Mining	
STAA 578	Machine Learning	
Program Total Credits:		31

A minimum of 31 credits are required to complete this program.

College of Veterinary Medicine and Biomedical Sciences

Office in in Anatomy-Zoology Building, Room W102
(970) 491-7051
csu-cvmbs.colostate.edu (http://csu-cvmbs.colostate.edu)

Professor Mark Stetter, Dean
Professor Sandra Quackenbush, Associate Dean for Academic and Student Affairs
Associate Professor Melinda Frye, Associate Dean for Veterinary Academic and Student Affairs
Professor Susan VandeWoude, Associate Dean for Research

Undergraduate Majors

Biomedical Sciences
The following concentrations will be available within this major beginning Fall 2020:

- Anatomy and Physiology Concentration
- Environmental Public Health Concentration
- Microbiology and Infectious Disease Concentration

Environmental Health
Microbiology
Neuroscience

Undergraduate Minors

Biomedical Sciences
Environmental Health
Microbiology

College Programs

A concern for health and the diseases of animals and humans provides the unifying theme for the undergraduate, professional, and graduate programs of the College of Veterinary Medicine and Biomedical Sciences (CVMBS)—a manifestation of the concept of One Health. The College combines teaching, research, and public service activities in basic biomedical disciplines such as anatomy, neurobiology, physiology, microbiology, pathology, and radiological health sciences, with applied disciplines such as clinical veterinary medicine and surgery, diagnostic imaging, radiology, clinical laboratory sciences, epidemiology, and environmental health sciences. Graduates of the College in either the veterinary sciences or the biomedical sciences serve society in the broadest sense: they represent the concept that there is but "one medicine" supporting "one health" with human and animal health intimately interrelated within their environments.

Major Courses of Study

The CVMBS offers undergraduate, professional, and graduate courses of study. There are four undergraduate programs leading to the Bachelor of Science, with majors in Neuroscience in partnership with the College of Natural Sciences, Biomedical Sciences, Environmental Health and Microbiology. The Bachelor of Science degree requires a minimum of 120 credits with a minimum of 42 credits in upper-division courses. The four-year professional veterinary medical program leads to the Doctor of Veterinary Medicine degree; students in this program typically complete a baccalaureate degree prior to program admission. Graduate studies in each of the four departments of the college lead to Master of Science and Doctor of Philosophy degrees with selected professional master's programs serving emerging needs in society and through practitioner skill development.

Education Abroad

Education abroad programs are available to students in the CVMBS. Because the knowledge of at least one other culture is valuable in understanding our own, students are strongly encouraged to study outside the United States. Students interested in education abroad should plan far in advance by discussing opportunities with their academic advisor and by visiting the Office of International Programs (http://international.colostate.edu) in Laurel Hall.

Continuing and Distance Education

The CVMBS supports the veterinary profession by offering continuing education courses that enable practicing veterinarians to obtain new medical information and meet the Colorado Veterinary Practice Act continuing education requirements for re-licensure. The College shares responsibility for continuing education and maintains close liaison with the American Veterinary Medical Association (AVMA), the Colorado Veterinary Medical Association (CVMA), the Colorado Board of Veterinary Medicine, and the Western Interstate Commission for Higher Education (WICHE). Innovative programs like Health Professions preparation—for students finishing essential courses to prepare to pursue health professions—are offered through CSU Online.

Graduate Programs

Programs leading to the Master of Science and Doctor of Philosophy degrees are offered in all departments of the College.

Students with Bachelor of Science or Doctor of Veterinary Medicine (DVM) degrees, or well-qualified students who are currently pursuing veterinary medicine degrees, are eligible to study for advanced degrees in the Departments of Biomedical Sciences; Clinical Sciences; Environmental and Radiological Health Sciences; and Microbiology, Immunology, and Pathology.

The CVMBS and the College of Business have created a combined five-year **DVM-MBA** program of study that can result in earning both the Master of Business Administration (MBA) degree and the DVM degree. Applicants to the DVM program are encouraged to consider extending their veterinary education to include a one-year start to an MBA degree. After successfully completing the first year of the MBA program, students will be guaranteed admission to the first year of the DVM program and will be expected to complete the remaining MBA course requirements concurrently with the first two years of the DVM curriculum. This program was undertaken to improve training of our students in veterinary practice

management, business and economics beyond what is currently offered as core content within the DVM curriculum.

Combining the expertise from public/environmental health and veterinary medicine and partnering with the Colorado School of Public Health (http://publichealth.ucdenver.edu), the College has created a five-year **DVM-MPH** program which provides specialty training in veterinary medicine and public health. Students spend the first year in the Master of Public Health (MPH) program, years two and three jointly in the DVM and MPH programs, and then years four and five focusing on completing the DVM requirements. Given the threats to public health from zoonotic diseases, changing ecosystems due to climate, and enhanced need for health professionals versed in the interplay of human, animal and environmental factors, DVM-MPH graduates bring a critical skill set to bear on issues of significant public impact.

The CVMBS and the Department of Animal Sciences within the College of Agricultural Sciences have partnered in developing a **DVM-MS-Animal Sciences** five-year combined degree, aimed at offering robust training in livestock production, animal health, industry and economics to future livestock veterinarians. Students will be optimally equipped to provide animal health services, advise individuals within production units, provide leadership within professional organizations, and contribute to knowledge development through research. Students complete graduate coursework in Animal Sciences and initiate clinical/field research in the first year, then complete research requirements during the subsequent four years of DVM training.

There is a national need for veterinarians who can serve as the bridge between research and all aspects of animal health and welfare. The College has developed a seven-year **DVM-PhD** program that integrates clinical and research training to provide a dual degree to selected candidates. Numerous outstanding research opportunities exist in diverse areas that complement DVM training, including cancer biology, infectious disease, neurosciences, reproductive biology, epidemiology, orthopedic sciences, environmental health and toxicology. The typical DVM/PhD program progresses as follows:

- basic graduate study and laboratory rotations (year one)
- first two years of DVM training plus electives and graduate work (years two and three)
- exclusive research work in the PhD program (years four and five)
- completion of the DVM training (years six and seven)

For detailed information about CVMBS graduate programs, view the College Academic Departments site (http://csu-cvmbs.colostate.edu/academics/Pages/default.aspx). Information on DVM combined degrees may be viewed on the CVMBS site (http://csu-cvmbs.colostate.edu/dvm-program/Pages/default.aspx).

Interdepartmental Program

Doctor of Veterinary Medicine (DVM)

A four-year professional Doctor of Veterinary Medicine (DVM) program is offered annually to approximately 148 students. Each year, approximately 138 students are admitted to the DVM program located on the main CSU campus in Fort Collins, Colorado. Additionally, up to 10 students are admitted to the CSU-University of Alaska Fairbanks (UAF) 2+2 DVM Program. These students complete the first two years of the four-year program in Fairbanks, Alaska, and join the larger cohort to complete years three and four in Fort Collins. Students in the 2+2 Program graduate with a DVM degree from CSU, and enjoy unique opportunities at UAF in small animal sports medicine, rural outreach, conservation, and wildlife medicine.

Because the number of applicants exceeds the number of students who can be admitted to any class, the members of the DVM Admissions Committee for the CVMBS carefully evaluate each applicant in a holistic manner to recommend those best qualified. Information concerning the academic program which leads to the DVM degree may be found in the Graduate and Professional Bulletin or online (https://vetmedbiosci.colostate.edu/dvm/admission-requirements).

The full course of study requires four years beyond completion of the pre-veterinary requirements. While exceptional students may complete pre-veterinary requirements in two to three years and then be accepted into the DVM Program, it is much more common that students complete a baccalaureate degree or graduate degree, followed by four years in the professional program.

Pre-Veterinary Training for the Doctor of Veterinary Medicine Program

Students may complete pre-professional (pre-veterinary) training at any accredited institution whether these courses are part of a regularly offered baccalaureate program or whether the courses are taken as "stand alone" choices independent of a degree program. Courses must be substantially equivalent in subject content and level as offered for pre-veterinary students at CSU.

Inquiries regarding equivalent or substitute courses that may be taken *specifically* to meet pre-veterinary requirements should be directed to DVMAdmissions@colostate.edu. There is also a form for requests (Prerequisite Substitute Course Request (https://vetmedbiosci.colostate.edu/dvm/admission-requirements)), which is submitted to DVMAdmissions@colostate.edu.

The minimum course requirements for admission to the DVM program, exclusive of electives, are:

- Arts, Humanities, Behavioral and Social Sciences – at least 12 semester credits. (The required credits for English composition explicit in most programs of study as all university requirements—see category that follows—do not fulfill these requirements.)
- Biological Sciences – at least three semester credits in genetics and a laboratory associated with a biological science course.
- Chemistry – at least three semester credits in biochemistry (requiring organic chemistry as a prerequisite) and a laboratory associated with a chemistry course.
- English Composition – at least three semester credits.
- Physics – at least four semester credits with laboratory.
- Statistics – at least three semester credits (upper-division course preferred).

In addition to these minimum course requirements, 30 credits of elective courses are required. Highly recommended courses include anatomy, cell biology, developmental biology, histology, immunology, microbiology, nutrition, physiology, and computer science. These courses will enhance the student's preparation for the DVM program.

The pre-veterinary requirements include a total of 60 semester credits that must be completed prior to admission to the DVM program. Students may apply prior to completing all prerequisite requirements; however, in order to assure the most competitive application, one is encouraged to have the majority of the prerequisites completed at the time of application. The large majority of students will complete the pre-

veterinary requirements as part of a baccalaureate program. Exceptional students may apply for admission to the DVM program when only the pre-veterinary requirements are met.

Students who wish to pursue pre-professional veterinary medicine training (sufficient to meet minimum requirements to apply to the CSU DVM Program) through courses offered at CSU as part of their undergraduate degree program will find detailed information online (https://vetmedbiosci.colostate.edu/dvm/admission-requirements).

Combined Degree Programs

Colorado State University offers four combined degree programs, pairing the DVM with a graduate degree. These include the DVM-MBA, DVM-MPH, DVM-MS-Animal Sciences, and DVM-PhD. Please see "Graduate Programs" above for detailed information.

Food Animal Veterinary Career Incentive Program

There are many vacancies and numerous career opportunities in all sectors of private livestock practice, including mixed animal practice and specialty practices in dairy cattle, beef cow-calf, beef feedlots, sheep, small ruminants and swine. There are also many opportunities in public practice including food safety and inspection, communicable disease management, and regulatory veterinary medicine. Many practitioners and producers have found it difficult to recruit new graduates into food and fiber animal practice, especially in rural communities. Reduced veterinary participation in food and fiber production animal medicine may contribute to increased vulnerability of livestock industries to emerging infectious diseases, exotic and zoonotic diseases, public health risks from food safety and quality problems, lowered public confidence in animal agricultural products, as well as threats to the national economy. Thus, the overarching goal of the Food Animal Veterinary Career Incentive Program (FAVCIP) is to create a sustainable source of future veterinarians for underserved disciplines and geographic regions central to the future of safe and successful food and fiber animal production. This program includes a plan of academic work, experience, and mentoring that encompasses undergraduate and veterinary medical education and meets specific needs of animal agriculture through a cooperative venture of the CVMBS and the Department of Animal Sciences in the College of Agricultural Sciences. It should be noted that DVM students who do not complete the FAVCIP may still focus coursework and clinical experiences on livestock medicine, especially in years three and four.

Undergraduate students with a strong interest in the discipline will be encouraged to follow the FAVCIP curriculum and program requirements (http://csu-cvmbs.colostate.edu/dvm-program/Pages/DVM-Special-Programs.aspx) as they complete their Bachelor of Science in Animal Science at CSU.

Department of Biomedical Sciences

Office in H120 Anatomy/Zoology Building
(970) 491-6187
vetmedbiosci.colostate.edu/bms/ (https://vetmedbiosci.colostate.edu/bms)

Professor Colin Clay, Head

Undergraduate Majors

- Major in Biomedical Sciences
- Major in Neuroscience
  - Behavioral and Cognitive Neuroscience Concentration
  - Cell and Molecular Neuroscience Concentration

Minor

- Minor in Biomedical Sciences

Graduate

Graduate Programs in Biomedical Sciences

Graduate programs lead to the Master of Science and Doctor of Philosophy degrees in Biomedical Sciences. Students interested in graduate work should refer to the Graduate and Professional Bulletin or the Department of Biomedical Sciences (http://www.cvmbs.colostate.edu/bms).

Master's Programs

- Master of Science in Biomedical Sciences, Plan A
- Master of Science in Biomedical Sciences, Plan B
- Master of Science in Biomedical Sciences, Plan B, Anatomical and Physiological Sciences Specialization
- Master of Science in Biomedical Sciences, Plan B, Reproductive Technology Specialization

Ph.D.

- Ph.D. in Biomedical Sciences

Courses
Biomedical Sciences (BMS)

BMS 192 First Year Seminar in Biomedical Sciences Credit: 1 (0-0-1)
Course Description: The university and its resources, college survival skills, careers in the biomedical sciences; current issues in health and biotechnology.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 200 Concepts in Human Anatomy and Physiology Credit: 1 (0-0-1)
Course Description: Basic concepts in the anatomy and physiology of the human body.
Prerequisite: None.
Registration Information: Must have concurrent registration in BMS 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 260 Biomedical Sciences Credits: 3 (2-0-1)
Course Description: Opportunities and challenges in biomedical sciences; business of science, ethics, model systems, cellular and systemic physiology.
Prerequisite: LIFE 102.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 296 Honors–Physiological Concepts Credit: 1 (0-0-1)
Course Description: Honors breakout session integrating physiological concepts for students in BMS 260.
Prerequisite: None.
Registration Information: Must have concurrent registration in BMS 260.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 300 Principles of Human Physiology Credits: 4 (4-0-0)
Course Description: Physiology of humans.
Prerequisite: (BZ 101 or BZ 110 or LIFE 102) and (CHEM 103 or CHEM 107 or CHEM 111).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 301 Human Gross Anatomy Credits: 5 (3-2-1)
Course Description: Structure and function of the human body. Study of prosected human cadavers; clinical applications; living anatomy.
Prerequisite: BZ 110 or LIFE 102.
Registration Information: Must register for lecture, laboratory, and recitation.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

BMS 302 Laboratory in Principles of Physiology Credits: 2 (1-3-0)
Course Description: Basic physiology lab exercises.
Prerequisite: BMS 300, may be taken concurrently or BMS 360, may be taken concurrently.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BMS 302 and BMS 320.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BMS 305 Domestic Animal Gross Anatomy Credits: 4 (3-3-0)
Course Description: Comparative gross anatomy of domestic carnivores, ruminants, and horses.
Prerequisite: BZ 110 or LIFE 102.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BMS 305 and VS 333.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BMS 310 Anatomy for the Health Professions Credits: 4 (3-3-0)
Course Description: Gross anatomy of the human body from a regional perspective, utilizing clinical applications as a basis for anatomical understanding.
Prerequisite: LIFE 000 to 499.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 320 Virtual Laboratory in Physiology Credits: 2 (0-4-0)
Course Description: Physiology lab exercises using a virtual laboratory simulation system.
Prerequisite: BMS 300, may be taken concurrently or BMS 360, may be taken concurrently.
Registration Information: Credit not allowed for both BMS 320 and BMS 302. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 325 Cellular Neurobiology Credits: 3 (3-0-0)
Course Description: Cellular and molecular bases of nervous system function and behavior.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 330 Microscopic Anatomy Credits: 4 (3-3-0)
Course Description: Microscopic anatomy of mammalian tissue.
Prerequisite: BMS 300 or BMS 360.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BMS 330 and VS 331.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 345 Functional Neuroanatomy Credits: 4 (3-2-0)
Course Description: Functional systems and circuits of the human brain and spinal cord.
Prerequisite: BMS 300 or BMS 360.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BMS 360 Fundamentals of Physiology Credits: 4 (4-0-0)
Course Description: Cell, tissue, and organ function related to integrated whole body function.
Prerequisite: (BZ 110 or LIFE 102) and (CHEM 245, may be taken concurrently or CHEM 341, may be taken concurrently).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description: Supervision by and work with graduate teaching assistants in small group learning sessions involving students enrolled in BMS 300.
Prerequisite: BMS 300 or BMS 360.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 400 Neuroanatomy Through Clinical Case Studies Credit: 1 (0-0-1)
Course Description: Neuroanatomical case studies to reinforce and apply information gained in BMS 345, Functional Neuroanatomy.
Prerequisite: BMS 345, may be taken concurrently.
Registration Information: Biomedical sciences majors only. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 401 Laboratory Research in Biomedical Sciences Credits: 4 (0-9-1)
Course Description: Hands-on experience in laboratory research methods for students working individually on a project which stems from a larger research project of a faculty member's laboratory. All students will work in the same facility equipped with appropriate equipment and supplies to conduct the student research proposal.
Prerequisite: BMS 300 or BMS 360.
Registration Information: Must register for laboratory and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 405 Nerve and Muscle-Toxins, Trauma and Disease Credits: 3 (3-0-0)
Course Description: Structure, composition, function of nerves and muscles, etiology of genetic and autoimmune neuromuscular diseases, alteration by toxins and nerve gas.
Prerequisite: BMS 325 or BMS 345.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 409 Human and Animal Reproductive Biology Credits: 3 (3-0-0)
Course Description: Basis for male and female reproductive function in humans and animals.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 420 Cardiopulmonary Physiology Credits: 3 (3-0-0)
Course Description: Normal and pathophysiology of cardiovascular and pulmonary systems.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 421 Perspectives in Cardiopulmonary Diseases Credits: 2 (1-0-1)
Course Description: Pathophysiology of cardiopulmonary diseases.
Prerequisite: BMS 420, may be taken concurrently.
Registration Information: Must register for lecture and recitation. Biomedical sciences majors only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 425 Introduction to Systems Neurobiology Credits: 3 (3-0-0)
Course Description: Functional organization of the nervous system at the circuit level in producing simple and complex behaviors, sensations and cognition.
Prerequisite: BMS 325.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 430 Endocrinology Credits: 3 (3-0-0)
Course Description: Physiology of the glands of internal secretion.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 450 Pharmacology Credits: 3 (3-0-0)
Course Description: Pharmacologic principles, absorption, distribution, metabolism, excretion, side effects, and actions of drugs.
Prerequisite: (BMS 300 or BMS 360) and (BC 351 or LIFE 210).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 460 Essentials of Pathophysiology Credits: 3 (3-0-0)
Course Description: Integration of different facets of mechanisms underlying health and disease.
Prerequisite: BMS 300 or BMS 360.
Registration Information: Biomedical sciences majors only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 461 Pathophysiology Perspectives Credits: 2 (0-0-2)
Course Description: Capstone course in pathophysiology for Biomedical Sciences majors.
Prerequisite: None.
Registration Information: Must have concurrent registration in BMS 460. Biomedical sciences majors only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 487 Internship Credits: Var[1-6] (0-0-0)
Course Description: Work/research experience with an approved preceptor outside of a university laboratory.
Prerequisite: None.
Registration Information: Written consent of department required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 496A Honors: Human Gross Anatomy Credits: Var[1-3] (0-0-0)
Course Description: Honors breakout session for students in Human Gross Anatomy.
Prerequisite: BMS 301, may be taken concurrently or BMS 302, may be taken concurrently or BMS 360, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 496B Honors: Physiology Lab Credits: Var[1-3] (0-0-0)
Course Description: Honors breakout session for students in Physiology Lab.
Prerequisite: BMS 301, may be taken concurrently or BMS 302, may be taken concurrently or BMS 360, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 496C Honors: Physiology Case Studies Credits: Var[1-3] (0-0-0)
Course Description: Honors breakout session for students in Physiology Case Studies.
Prerequisite: BMS 301, may be taken concurrently or BMS 302, may be taken concurrently or BMS 360, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 496D Honors: Animal Gross Anatomy Credits: Var[1-3] (0-0-0)
Course Description: Honors breakout session for students in Animal Gross Anatomy.
Prerequisite: BMS 305, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 498 Research Credits: Var[1-3] (0-0-0)
Course Description: Faculty-directed research in biomedical sciences.
Prerequisite: BMS 300 or BMS 360.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 500 Mammalian Physiology I Credits: 4 (4-0-0)
Course Description: Cell physiology of nerve, skeletal, cardiac and smooth muscle with an emphasis on how cellular functions integrate into systems behavior.
Prerequisite: BMS 300 or BMS 360.
Registration Information: Credit not allowed for both BMS 500 and NB 501. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 501 Mammalian Physiology II Credits: 4 (4-0-0)
Course Description: Respiratory, renal, digestive, endocrine, metabolic, and reproductive function.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 503 Developmental Neurobiology Credits: 3 (3-0-0)
Also Offered As: NB 503.
Course Description: Molecular mechanisms involved in development of nervous system including differentiation, growth, pathfinding, and synaptogenesis.
Prerequisite: (BIO 100 to 481 or BZ 100 to 481 or LIFE 100 to 481) and (BC 100 to 481 and PH 100 to 481) and (MATH 141 or MATH 155 or MATH 160 to 161 or MATH 255 or MATH 261).
Registration Information: Credit not allowed for both BMS 503 and NB 503.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 505 Neuronal Circuits, Systems and Behavior Credits: 3 (3-0-0)
Also Offered As: NB 505.
Course Description: Anatomical and physiological organization of the nervous system.
Prerequisite: BMS 325 or BMS 500 or NB 501.
Registration Information: Credit not allowed for both BMS 505 or NB 505.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 521 Comparative Reproductive Physiology Credits: 3 (3-0-0)
Course Description: A comparative overview of reproduction in vertebrates (focusing on mammals) emphasizing both conserved and species-specific aspects of physiology.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 531 Domestic Animal Dissection Credits: 3 (0-9-0)
Course Description: Dissection of domestic animals.
Prerequisite: BMS 305.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BMS 540 Assisted Reproductive Technologies Lab I Credits: 3 (1-6-0)
Course Description: Principles and fundamental skills of assisted reproduction technologies, including sterile methods for collecting and culturing oocytes, in vitro fertilization and embryo culture.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Admission to the Master of Science in Biomedical Sciences, Plan B, Reproductive Technology Specialization. Must register for lecture and laboratory. Credit not allowed for both BMS 540 and BMS 580A2.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 541 Assisted Reproductive Technologies Lab II Credits: 3 (1-6-0)
Course Description: Principles and fundamental skills needed for assisted reproductive technologies, including advanced techniques for splitting, obtaining biopsies from and transferring embryos; as well as learning the latest industry techniques for collecting, staining, manipulating and labeling embryos.
Prerequisite: BMS 540.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Admission to the Master of Science in Biomedical Sciences, Plan B, Reproductive Technology Specialization. Must register for lecture and laboratory. Credit not allowed for both BMS 541 and BMS 580A3.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 545 Neuroanatomy Credits: 5 (3-4-0)
Course Description: Nervous system structure and function presented from a systems perspective; applied and comparative aspects are emphasized.
Prerequisite: None.
Registration Information: Written consent of instructor required. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BMS 575 Human Anatomy Dissection Credits: 4 (0-8-0)
Course Description: Regional approach to human gross anatomy through laboratory dissection of human cadaver.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

BMS 610A Managing a Career in Science: Survival Skills for Coursework (M.S.) Credit: 1 (1-0-0)
Course Description: Survival skills for professionals. How to succeed in science, including writing, teaching, speaking; finding the right job.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 610B Managing a Career in Research: Survival Skills for Research (M.S. and Ph.D.) Credit: 1 (1-0-0)
Course Description: Survival skills for professionals. How to succeed in science, including improving writing, teaching, speaking; finding the right job.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 619 Advanced Human Gross Anatomy Credits: 2 (0-0-2)
Course Description: Clinical application of human anatomy through case-based study.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 631 Mechanisms of Hormone Action Credits: 2 (2-0-0)
Course Description: Synthesis, secretion, and mechanisms of action of hormones.
Prerequisite: BMS 430 or BMS 501.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BMS 632 Metabolic Endocrinology Credits: 2 (2-0-0)
Course Description: Endocrine regulation of metabolic homeostasis; effects of exercise or pregnancy.
Prerequisite: BMS 631.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BMS 633 Domestic Animal Anatomy-Case Discussions Credits: 2 (0-0-2)
Course Description: Clinical case discussions utilized in advanced understanding of domestic animal anatomy and physiology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in BMS 531.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 640 Reproductive Physiology and Endocrinology Credits: 4 (4-0-0)
Course Description: Reproductive physiology and endocrinology of vertebrate animals.
Prerequisite: BMS 501.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BMS 642 Research Techniques for Gametes and Embryos Credit: 1 (0-3-0)
Course Description: Collection, storage, evaluation, in vitro manipulation, and replacement of sperm, oocytes, embryos, and other reproductive tissues.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Biomedical Sciences graduate program required.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 643 Applied Andrology Credits: 2 (1-3-0)
Course Description: The male side of reproduction including the development of the male reproductive tract, hormonal control of the tract and spermatogenesis, fundamentals of spermatogenesis and seminal plasma and the physiology of sperm. Current methods for collecting, analyzing, cryopreserving and preparing sperm for either artificial insemination or in vitro fertilization.
Prerequisite: BMS 300 or BMS 360 or BMS 409.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BMS 643 and BMS 680A2.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 692 Seminar-Classics in Neurosciences Credit: 1 (0-0-1)
Course Description: Review of classic papers in the neurosciences.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Biomedical Sciences graduate program required.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695A Independent Study: Developmental Anatomy Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695B Independent Study: Microscopic Anatomy Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695C Independent Study: Neuroanatomy Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695D Independent Study: Radiographic Anatomy Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695E Independent Study: Surgical Anatomy Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695F Independent Study: Gross Anatomy Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 696 Group Study-Neurosciences Credits: Var[1-3] (0-0-0)
Course Description: Current topics in neuroscience; how to evaluate scientific presentations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BMS 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 792A Seminar: Biomedical Sciences Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 792B Seminar: Neurophysiology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 792C Seminar: Reproductive Physiology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 795A Independent Study: Endocrinology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 795B Independent Study: Neurophysiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 795C Independent Study: Cell Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 795D Independent Study: Cardiopulmonary Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 795E Independent Study: Reproductive Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 796A Group Study: Topics in Neuroscience Credits: Var[1-4] (0-0-0)
Also Offered As: NB 796C.
Course Description: Faculty-directed exploration of areas of special interest in neuroscience.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. May not be taken concurrently with NB 796C.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 796B Group Study: Cardiopulmonary Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 796C Group Study: Reproductive Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Major in Biomedical Sciences

An undergraduate degree in Biomedical Sciences prepares students for a wide variety of opportunities which have a basis in cellular and molecular biology, human/animal anatomy and physiology. In addition to enrolling in required courses, students will have opportunities to engage in elective courses and laboratory research in specialty areas of endocrinology, pharmacology, neurophysiology, reproductive physiology, and cardiopulmonary physiology. In this process, students are able to tailor their educational experiences to specific career objectives. The curriculum will prepare graduates to pursue further studies in professional schools for medicine, veterinary medicine, pharmacy, dentistry, and optometry, as well as other programs such as physician assistant and physical therapy. This degree will also prepare students for graduate studies in the biomedical sciences as well as for employment in a variety of innovative and developing fields in biotechnology.

The basic science curriculum meets many requirements for entrance into professional schools. Experiential learning opportunities are encouraged and could include participating in laboratory research, teaching/tutoring in selected courses, volunteer experiences and leadership positions within student club(s), study abroad, internships, and honors curriculum. These opportunities are encouraged with the student's interests and career goals as the focus.

Learning Outcomes

- Obtain a solid background in anatomy and physiology and be able to integrate knowledge from the molecular to the systemic level
- Demonstrate strong writing and oral communication skills
- Develop scientific hypotheses and experiments to test them
- Work effectively in groups
- Demonstrate effective organization, leadership, and laboratory skills
- Think critically and logically

Potential Occupations

A Bachelor of Science degree in Biomedical Sciences will provide students with a variety of opportunities for further study or employment in the broad area of biomedical sciences. The coursework is designed to prepare students for health-related graduate and professional programs. Post-graduate opportunities will include additional studies in specialty areas of physiology such as neuroscience, reproductive endocrinology, cardiopulmonary, and patho-physiology. Employment opportunities can be found in government at the local, state, and national levels; research in a variety of settings such as university, industry, and private laboratories; education; administration and management; and industry such as biotechnology, pharmaceuticals, and medical devices. Students will be exposed to skill sets which are necessary in a competitive, ever changing job market.

Requirements Effective Fall 2019

Freshman

		AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CO 150	College Composition (GT-CO2)	1A	3
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
Select one from the following:			3
BMS 260[1]	Biomedical Sciences		
Major Related Elective (See list below)[1,2]			
Select one course from the following:			4
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	
Arts and Humanities		3B	6
Social and Behavioral Sciences		3C	3
	Total Credits		32

Sophomore

BMS 302	Laboratory in Principles of Physiology		2
BMS 360	Fundamentals of Physiology		4
LIFE 201B	Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2)	3A	3
LIFE 210	Introductory Eukaryotic Cell Biology		3
LIFE 212	Introductory Cell Biology Laboratory		2
Select one group from the following:			5-8
Group A			
CHEM 245	Fundamentals of Organic Chemistry		
CHEM 246	Fundamentals of Organic Chemistry Laboratory		
Group B			
CHEM 341	Modern Organic Chemistry I		
CHEM 343	Modern Organic Chemistry II		
CHEM 344	Modern Organic Chemistry Laboratory		
Select one course from the following:			3
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
Historical Perspectives		3D	3
	Total Credits		25-28

Junior

BC 351	Principles of Biochemistry		4
PH 121	General Physics I (GT-SC1)	3A	5
Select one course from the following:			4-5
BMS 301	Human Gross Anatomy		
BMS 305	Domestic Animal Gross Anatomy		
BMS 330	Microscopic Anatomy		
Major Related Electives (See list below)[2]			10
Advanced Writing		2	3
Global and Cultural Awareness		3E	3
	Total Credits		29-30

Senior

MIP 300	General Microbiology		3
MIP 302	General Microbiology Laboratory		2
Select one group from the following:			5
Group A:			
BMS 345	Functional Neuroanatomy	4B	
BMS 400	Neuroanatomy Through Clinical Case Studies	4A,4C	
Group B:			
BMS 420	Cardiopulmonary Physiology	4B	
BMS 421	Perspectives in Cardiopulmonary Diseases	4A,4C	
Group C:			
BMS 460	Essentials of Pathophysiology	4B	
BMS 461	Pathophysiology Perspectives	4A,4C	
Major Related Electives (See list below)[2]			6
Electives[3]			13-14
	Total Credits		29-30
	Program Total Credits:		120

Major Related Electives [2]

Code	Title	Credits
BC 463	Molecular Genetics	3
BC 465	Molecular Regulation of Cell Function	3
BMS 192	First Year Seminar in Biomedical Sciences	1
BMS 260	Biomedical Sciences	3
BMS 325	Cellular Neurobiology	3
BMS 330	Microscopic Anatomy [4]	4
BMS 345	Functional Neuroanatomy [5]	4
BMS 384	Supervised College Teaching [6]	1-5
BMS 401	Laboratory Research in Biomedical Sciences	4
BMS 405	Nerve and Muscle-Toxins, Trauma and Disease	3
BMS 409	Human and Animal Reproductive Biology	3
BMS 420	Cardiopulmonary Physiology [5]	3
BMS 425	Introduction to Systems Neurobiology	3
BMS 430	Endocrinology	3
BMS 450	Pharmacology	3
BMS 460	Essentials of Pathophysiology [5]	3
BMS 487	Internship [7]	1-6
BMS 495	Independent Study [7]	1-18
BMS 496A	Honors: Human Gross Anatomy [8]	1-3
BMS 496B	Honors: Physiology Lab [8]	1-3
BMS 496C	Honors: Physiology Case Studies [8]	1-3
BMS 496D	Honors: Animal Gross Anatomy [8]	1-3
BMS 498	Research [7]	1-3
BMS 500	Mammalian Physiology I	4
BMS 501	Mammalian Physiology II	4
BMS 521	Comparative Reproductive Physiology	3
BMS 531	Domestic Animal Dissection	3
BMS 575	Human Anatomy Dissection	4
BZ 220	Introduction to Evolution	3
CHEM 343	Modern Organic Chemistry II [9]	3
MIP 342	Immunology	4
MIP 351	Medical Bacteriology	3
PH 122	General Physics II (GT-SC1)	5

[1] Students are required to take a minimum total of 19 credits of Major Related Electives, which may include BMS 260. Freshmen must take BMS 260; transfer students may select a course from the Major Related Electives list, or a free elective, each with approval of advisor.

[2] Select from department list of Major Related Electives with approval of BMS key advisor.

[3] Select enough free electives at student's discretion to complete degree program of 120 credits. Enough upper division (300- and 400-level) credits must be taken to bring total number of upper division credits to 42.

[4] BMS 330 may be taken as a Major Related Elective if either BMS 301 or BMS 305 has already been taken to satisfy the anatomy requirement shown in the junior year of the major.

[5] Students may select this course for Major Related Electives if it is not used for All-University Core Curriculum (AUCC) Category 4 in the major.

[6] BMS 384 may be taken for a maximum of 3 credits.

[7] A maximum total of 3 credits earned in BMS 487, BMS 495, and BMS 498 may be used toward the Major Related Electives for the Biomedical Sciences major. Additional credits earned in these courses will count as free elective credits.

[8] Students may select only one of the subtopics from this course to apply toward the Major Related Electives. Students may take the other subtopics as free electives.

[9] CHEM 343 may count as a directed elective for students who select organic chemistry Group B in the Sophomore year.

Major Completion Map

Distinctive Requirements for Degree Program:

TO DECLARE MAJOR: competitive entry controls required and capped enrollment in place. Please see advisor in Department for more information.

TO PREPARE FOR FIRST SEMESTER: The curriculum for the Biomedical Sciences major assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester. Those pre-calculus requirements are listed as benchmark courses in Freshman Semester 1 below. LIFE 102 requires high school chemistry as a prerequisite; CHEM 111 requires Algebra II as a prerequisite (this prerequisite is met by having Algebra II by test credit, transfer credit, or placement out of MATH 117 and MATH 118 on Math Placement Exam.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
Students will be required to take either MATH 155 or MATH 160 in Freshman semester 2. Students who intend to take MATH 160 will need to take MATH 126 in addition to MATH 124 and MATH 125					
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
CO 150	College Composition (GT-CO2)		X	1A	3
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	4
Arts and Humanities				3B	3
MATH 124, MATH 125, and MATH 126 must be completed by the end of Semester 1, if necessary.					
	Total Credits				15

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II	X			3
CHEM 114	General Chemistry Lab II	X			1
Select one course from the following:					4
MATH 155	Calculus for Biological Scientists I (GT-MA1)			1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)			1B	
Select one course from the following:					3
BMS 260	Biomedical Sciences	X			
Major Related Elective (see Department List):					
Arts and Humanities				3B	3
Social and Behavioral Sciences				3C	3
	Total Credits				17

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 341	Modern Organic Chemistry I				3
LIFE 210	Introductory Eukaryotic Cell Biology	X			3
LIFE 212	Introductory Cell Biology Laboratory				2
Select one course from the following:					3
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				

Historical Perspectives				3D	3
	Total Credits				14
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
BMS 302	Laboratory in Principles of Physiology				2
BMS 360	Fundamentals of Physiology	X			4
CHEM 343	Modern Organic Chemistry II				3
CHEM 344	Modern Organic Chemistry Laboratory				2
LIFE 201B	Introductory Genetics: Molecular/Immunological/ Developmental (GT-SC2)			3A	3
CHEM 341 must be completed by the end of Semester 4.		X			
	Total Credits				14
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 351	Principles of Biochemistry				4
PH 121	General Physics I (GT-SC1)	X		3A	5
Major Related Electives (See Department List):					3
Advanced Writing				2	3
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					4-5
BMS 301	Human Gross Anatomy				
BMS 305	Domestic Animal Gross Anatomy				
BMS 330	Microscopic Anatomy				
Major Related Electives (See list on Major requirements tab.):					4
Global and Cultural Awareness				3E	3
Electives					3
	Total Credits				14-15
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one group from the following:					5
Group A:					
BMS 345	Functional Neuroanatomy			4B	
BMS 400	Neuroanatomy Through Clinical Case Studies			4A,4C	
Group B:					
BMS 420	Cardiopulmonary Physiology			4B	
BMS 421	Perspectives in Cardiopulmonary Diseases			4A,4C	
Group C:					
BMS 460	Essentials of Pathophysiology			4B	
BMS 461	Pathophysiology Perspectives			4A,4C	
Major Related Electives (See list on Major requirements tab.):					3
Electives					7
	Total Credits				15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
MIP 300	General Microbiology	X			3
MIP 302	General Microbiology Laboratory	X			2
Major Related Electives (See list on Major requirements tab.):		X			3
Electives		X			7-8
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				15-16
	Program Total Credits:				120

Major in Biomedical Sciences, Anatomy and Physiology Concentration

This program prepares students for a wide variety of opportunities which have a basis in cellular and molecular biology, human/animal anatomy and physiology. In addition to enrolling in required courses, students will have opportunities to engage in elective courses and laboratory research in specialty areas of endocrinology, pharmacology, pathophysiology, neurophysiology, reproductive physiology, and cardiopulmonary physiology. In this process, students are able to tailor their educational experiences to specific career objectives. The curriculum will prepare graduates to pursue further studies in professional schools for medicine, veterinary medicine, pharmacy, dentistry, and optometry, as well as other programs such as nursing, physician assistant and physical therapy.

The Anatomy and Physiology concentration will also prepare students for graduate studies in animal and human health sciences as well as for employment in a variety of innovative and developing fields in biotechnology.

The basic science curriculum meets many requirements for entrance into professional schools. Experiential learning opportunities are encouraged and could include participating in laboratory research, teaching/tutoring in selected courses, volunteer experiences and leadership positions within student club(s), study abroad, internships, and honors curriculum. These opportunities are encouraged with the student's interests and career goals as the focus.

Requirements Effective Summer 2020

Freshman

		AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CO 150	College Composition (GT-CO2)	1A	3
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
VMBS 100	Introduction to Biomedical Sciences Major		2
Select one from the following:			3
BMS 260[1]	Biomedical Sciences		
Concentration Elective (See list below)[1,2]			
Select one course from the following:			4
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	
Arts and Humanities		3B	3
Social and Behavioral Sciences		3C	3
	Total Credits		31

Sophomore

BMS 302	Laboratory in Principles of Physiology		2
BMS 360	Fundamentals of Physiology		4
LIFE 210	Introductory Eukaryotic Cell Biology		3
LIFE 212	Introductory Cell Biology Laboratory		2
Select one course from the following:			3-4
BZ 350	Molecular and General Genetics		
LIFE 201B	Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2)	3A	
SOCR 330	Principles of Genetics		
Select one group from the following:			5-8
Group A			
CHEM 245	Fundamentals of Organic Chemistry		
CHEM 246	Fundamentals of Organic Chemistry Laboratory		
Group B			
CHEM 341	Modern Organic Chemistry I		
CHEM 343[9]	Modern Organic Chemistry II		
CHEM 344	Modern Organic Chemistry Laboratory		
Select one course from the following:			3

STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
Arts and Humanities		3B	3
Historical Perspectives		3D	3
	Total Credits		28-32
Junior			
BC 351	Principles of Biochemistry		4
Select one course from the following			5
PH 121	General Physics I (GT-SC1)	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	
Select one course from the following:			4-5
BMS 301	Human Gross Anatomy		
BMS 305	Domestic Animal Gross Anatomy		
BMS 330	Microscopic Anatomy		
Concentration Electives (See list below)[2]			7
Electives			3
Advanced Writing		2	3
Diversity and Global Awareness		3E	3
	Total Credits		29-30
Senior			
MIP 300	General Microbiology		3
MIP 302	General Microbiology Laboratory		2
Select one group from the following:			5
Group A:			
BMS 345	Functional Neuroanatomy	4B	
BMS 400	Neuroanatomy Through Clinical Case Studies	4A,4C	
Group B:			
BMS 420	Cardiopulmonary Physiology	4B	
BMS 421	Perspectives in Cardiopulmonary Diseases	4A,4C	
Group C:			
BMS 460	Essentials of Pathophysiology	4B	
BMS 461	Pathophysiology Perspectives	4A,4C	
Concentration Electives (See list below)[2]			6
Electives[3]			11-16
	Total Credits		27-32
	Program Total Credits:		120

Concentration Electives [2]

Code	Title	Credits
BC 463	Molecular Genetics	3
BC 465	Molecular Regulation of Cell Function	3
BMS 192	First Year Seminar in Biomedical Sciences	1
BMS 260	Biomedical Sciences [1]	3
BMS 325	Cellular Neurobiology	3
BMS 330	Microscopic Anatomy [4]	4
BMS 345	Functional Neuroanatomy [5]	4
BMS 384	Supervised College Teaching [6]	1-5
BMS 401	Laboratory Research in Biomedical Sciences	4
BMS 405	Nerve and Muscle-Toxins, Trauma and Disease	3
BMS 409	Human and Animal Reproductive Biology	3
BMS 420	Cardiopulmonary Physiology [5]	3
BMS 425	Introduction to Systems Neurobiology	3
BMS 430	Endocrinology	3
BMS 450	Pharmacology	3
BMS 460	Essentials of Pathophysiology [5]	3
BMS 487	Internship [7]	1-6
BMS 495	Independent Study [7]	1-18
BMS 496A	Honors: Human Gross Anatomy [8]	1-3
BMS 496B	Honors: Physiology Lab [8]	1-3
BMS 496C	Honors: Physiology Case Studies [8]	1-3

BMS 496D	Honors: Animal Gross Anatomy [8]	1-3
BMS 498	Research [7]	1-3
BMS 500	Mammalian Physiology I	4
BMS 501	Mammalian Physiology II	4
BMS 521	Comparative Reproductive Physiology	3
BMS 531	Domestic Animal Dissection	3
BMS 575	Human Anatomy Dissection	4
BZ 220	Introduction to Evolution	3
CHEM 343	Modern Organic Chemistry II [9]	3
MIP 342	Immunology	4
MIP 351	Medical Bacteriology	3
PH 122	General Physics II (GT-SC1)	5

1 Students are required to take a minimum total of 19 credits of Concentration Electives, which may include BMS 260. Freshmen must take BMS 260; transfer students may select a course from the Concentration Electives list, or a free elective, each with approval of advisor.

2 Select from department list of Concentration Electives with approval of BMS key advisor.

3 Select enough free electives at student's discretion to complete degree program of 120 credits. Enough upper division (300- and 400-level) credits must be taken to bring total number of upper division credits to 42.

4 BMS 330 may be taken as a Concentration Elective if either BMS 301 or BMS 305 has already been taken to satisfy the anatomy requirement shown in the junior year.

5 Students may select this course for Concentration Electives if it is not used for All-University Core Curriculum (AUCC) Category 4 in the major.

6 BMS 384 may be taken for a maximum of 3 credits.

7 A maximum total of 3 credits earned in BMS 487, BMS 495, and BMS 498 may be used toward the Concentration Electives. Additional credits earned in these courses will count as free elective credits.

8 Students may select only one of the subtopics from this course to apply toward the Concentration Electives. Students may take the other subtopics as free electives.

9 CHEM 343 may count as a Concentration Elective for students who select organic chemistry Group B in the Sophomore year.

Concentration Electives – Select a minimum of 19 total credits

- BMS 260 may count as a Concentration Elective. Freshmen must take BMS 260.
- BMS 330 may count as a Concentration Elective if either BMS 301 or BMS 305 were taken to satisfy the anatomy requirement in the Junior year.
- BMS 345, BMS 420, and BMS 460 may count as Concentration Electives if not taken to satisfy All-University Core Curriculum (AUCC) Category 4 in the major.
- BMS 384 may be taken for a maximum of 3 credits.
- A maximum total of 3 credits earned in BMS 487, BMS 495, and BMS 498 may count toward the Concentration Electives. Additional credits earned in these courses will count as free elective credits.
- Only one of the following courses may count as a Concentration Elective: BMS 496A, BMS 496B, BMS 496C, BMS 496D. Additional credits earned in these courses will count as free elective credits.
- CHEM 343 may count as a directed elective for students who select organic chemistry Group B in the Sophomore year.

Code	Title	Credits
BC 463	Molecular Genetics	3
BC 465	Molecular Regulation of Cell Function	3
BMS 192	First Year Seminar in Biomedical Sciences	1
BMS 260	Biomedical Sciences [2]	3
BMS 325	Cellular Neurobiology	3
BMS 330	Microscopic Anatomy [2]	4
BMS 345	Functional Neuroanatomy [2]	4
BMS 384	Supervised College Teaching [2]	1-3
BMS 401	Laboratory Research in Biomedical Sciences	4
BMS 405	Nerve and Muscle-Toxins, Trauma and Disease	3
BMS 409	Human and Animal Reproductive Biology	3
BMS 420	Cardiopulmonary Physiology [2]	3
BMS 425	Introduction to Systems Neurobiology	3
BMS 430	Endocrinology	3
BMS 450	Pharmacology	3
BMS 460	Essentials of Pathophysiology [2]	3
A maximum of 3 credits may selected from the following:		
BMS 487	Internship [2]	
BMS 495	Independent Study [2]	
BMS 498	Research [2]	
A maximum of one course may selected from the following:		
BMS 496A	Honors: Human Gross Anatomy [2]	
BMS 496B	Honors: Physiology Lab [2]	
BMS 496C	Honors: Physiology Case Studies [2]	
BMS 496D	Honors: Animal Gross Anatomy [2]	
BMS 500	Mammalian Physiology I	4
BMS 501	Mammalian Physiology II	4
BMS 521	Comparative Reproductive Physiology	3
BMS 531	Domestic Animal Dissection	3
BMS 575	Human Anatomy Dissection	4
BZ 220	Introduction to Evolution	3
CHEM 343	Modern Organic Chemistry II [2]	3
MIP 342	Immunology	4
MIP 351	Medical Bacteriology	3
PH 122	General Physics II (GT-SC1)	5

1 Select enough free electives at student's discretion to complete degree program of 120 credits. Enough upper division (300- and 400-level) credits must be taken to bring total number of upper division credits to 42.

2 See Concentration Elective notes directly above this course list.

Major Completion Map

Distinctive Requirements for Degree Program:

To Declare Major: competitive entry controls required and capped enrollment in place. Please contact Director of Student Success in the CVMBS Student Success Center for more information.

To Prepare for First Semester: The curriculum for the anatomy and physiology concentration assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester. Those pre-calculus requirements are listed as benchmark courses in Freshman Semester 1 below. LIFE 102 requires high school chemistry as a prerequisite; CHEM 111 requires Algebra II as a prerequisite (this prerequisite is met by having Algebra II by test credit, transfer credit, or placement out of MATH 117 and MATH 118 on Math Placement Exam.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
Students will be required to take either MATH 155 or MATH 160 in Freshman semester 2. Students who intend to take MATH 160 will need to take MATH 126 in addition to MATH 124 and MATH 125					
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
CO 150	College Composition (GT-CO2)		X	1A	3
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	4
VMBS 100	Introduction to Biomedical Sciences Major				2
MATH 124, MATH 125, and MATH 126 must be completed by the end of Semester 1, if necessary.					
	Total Credits				14
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II	X			3
CHEM 114	General Chemistry Lab II	X			1
Select one course from the following:					4
MATH 155	Calculus for Biological Scientists I (GT-MA1)			1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)			1B	
Select one course from the following:					3
BMS 260	Biomedical Sciences	X			
Concentration Elective (see list on Requirements Tab):					
Arts and Humanities				3B	3
Social and Behavioral Sciences				3C	3
	Total Credits				17

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
LIFE 210	Introductory Eukaryotic Cell Biology	X			3
LIFE 212	Introductory Cell Biology Laboratory				2
Select one group from the following:					3-5
Group A					
CHEM 245	Fundamentals of Organic Chemistry				
CHEM 246	Fundamentals of Organic Chemistry Laboratory				
Group B					
CHEM 341	Modern Organic Chemistry I				
Select one course from the following:					3
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
Arts and Humanities				3B	3
	Total Credits				14-16
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
BMS 302	Laboratory in Principles of Physiology				2
BMS 360	Fundamentals of Physiology	X			4
Select the same group (A or B) as selected in semester 3:					0-5
Group A (no coursework this term)					
Group B					
CHEM 343	Modern Organic Chemistry II				

CHEM 344	Modern Organic Chemistry Laboratory				
Select one course from the following:					3-4
BZ 350	Molecular and General Genetics				
LIFE 201B	Introductory Genetics: Molecular/Immunological/ Developmental (GT-SC2)			3A	
SOCR 330	Principles of Genetics				
Historical Perspectives				3D	3
CHEM 341 must be completed by the end of Semester 4.		X			
	Total Credits				12-18

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 351	Principles of Biochemistry				4
Select one course from the following:					5
PH 121	General Physics I (GT-SC1)	X		3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)			3A	
Concentration Electives (See list on Requirements Tab):					3
Advanced Writing				2	3
	Total Credits				15

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					4-5
BMS 301	Human Gross Anatomy				
BMS 305	Domestic Animal Gross Anatomy				
BMS 330	Microscopic Anatomy				
Concentration Electives (See list on Requirements Tab):					4
Electives					3
Diversity and Global Awareness				3E	3
	Total Credits				14-15

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one group from the following:					5
Group A:					
BMS 345	Functional Neuroanatomy			4B	
BMS 400	Neuroanatomy Through Clinical Case Studies			4A,4C	
Group B:					
BMS 420	Cardiopulmonary Physiology			4B	
BMS 421	Perspectives in Cardiopulmonary Diseases			4A,4C	
Group C:					
BMS 460	Essentials of Pathophysiology			4B	
BMS 461	Pathophysiology Perspectives			4A,4C	
Concentration Electives (See list on Requirements Tab):					3
Electives					7
	Total Credits				15

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
MIP 300	General Microbiology	X			3
MIP 302	General Microbiology Laboratory	X			2
Concentration Electives (See list on Requirements Tab):		X			3
Electives		X			4-9
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				12-17
	Program Total Credits:				120

Major in Biomedical Sciences, Environmental Public Health Concentration

This program prepares students for employment by public sector environmental agencies, private industry, academic institutions, as well as graduate study in medicine, veterinary medicine, and related biomedical and health fields.

Students will begin their studies with foundational science courses including biology, physics, general chemistry, organic chemistry, math, and statistics, and then use these basic sciences as tools to solve environmental health problems. Students are involved in actual and simulated field projects with data gathering and analysis, characterization of environmental health problems, evaluation of alternative solutions, and presentation of results in written and oral formats. All students in the Environmental Health concentration will complete a professional internship for academic credit with a private sector company, environmental health agency, or research entity (public or private).

Requirements Effective Summer 2020

Freshman

		AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CO 150	College Composition (GT-CO2)	1A	3
ERHS 220	Environmental Health		3
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
MIP 260	The World of Parasites		3
VMBS 100	Introduction to Biomedical Sciences Major		2
Select a minimum of 3 credits from the following:			3-4
MATH 118	College Algebra in Context II (GT-MA1)	1B	
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	
MATH 125	Numerical Trigonometry (GT-MA1)	1B	
MATH 126	Analytic Trigonometry (GT-MA1)	1B	
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	
	Total Credits		27-28

Sophomore

ERHS 230	Environmental Health Field Methods		3
MIP 300	General Microbiology		3
MIP 302	General Microbiology Laboratory		2
Select one course from the following:			4
BMS 300	Principles of Human Physiology		
BMS 360	Fundamentals of Physiology		
Select one course from the following:			5
PH 121	General Physics I (GT-SC1)	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	
Select one course from the following:			3
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
Select one group from the following:			8
Group A			
CHEM 245	Fundamentals of Organic Chemistry		
CHEM 246	Fundamentals of Organic Chemistry Laboratory		
CHEM 338 or ERHS 448	Environmental Chemistry Environmental Contaminants: Exposure and Fate		
Group B			

CHEM 341	Modern Organic Chemistry I		
CHEM 343	Modern Organic Chemistry II		
CHEM 344	Modern Organic Chemistry Laboratory		
Social and Behavioral Sciences		3C	3
	Total Credits		31
Junior			
BC 351	Principles of Biochemistry		4
ERHS 320	Environmental Health--Water Quality	4A	3
ERHS 332	Principles of Epidemiology		3
ERHS 350	Principles of Occupational Safety and Health		3
ERHS 479	Environmental Health Practice	4C	1
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
Select one course from the following:			3
FTEC 400	Food Safety		
MIP 334	Food Microbiology		
Arts and Humanities		3B	6
Historical Perspectives		3D	3
	Total Credits		29
Senior			
ERHS 410	Environmental Health-Air and Waste Management	4B	3
ERHS 430	Human Disease and the Environment		3
ERHS 446	Environmental Toxicology		3
ERHS 450	Introduction to Radiation Biology		3
ERHS 487	Internship-Environmental Health	4C	4
Program Electives[1]			5
Diversity and Global Awareness		3E	3
Electives[2]			8-9
	Total Credits		32-33
	Program Total Credits:		120

1 Must be related to major and approved by an ERHS key advisor.

2 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
TO Declare Major: competitive entry controls required and capped enrollment in place. Please contact Director of Student Success in the CVMBS Student Success Center for more information.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
CO 150	College Composition (GT-CO2)			1A	3
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	4
VMBS 100	Introduction to Biomedical Sciences Major				2
Select 0-1 credits from the following:					0-1
MATH 118	College Algebra in Context II (GT-MA1)			1B	
MATH 124	Logarithmic and Exponential Functions (GT-MA1)			1B	
MATH 125	Numerical Trigonometry (GT-MA1)			1B	

MATH 126	Analytic Trigonometry (GT-MA1)			1B	
	Total Credits				14-15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II	X			3
CHEM 114	General Chemistry Lab II	X			1
ERHS 220	Environmental Health		X		3
MIP 260	The World of Parasites				3
Select 2-4 credits from the following (not previously taken):					2-4
MATH 117	College Algebra in Context I (GT-MA1)			1B	
MATH 118	College Algebra in Context II (GT-MA1)			1B	
MATH 124	Logarithmic and Exponential Functions (GT-MA1)			1B	
MATH 125	Numerical Trigonometry (GT-MA1)			1B	
MATH 126	Analytic Trigonometry (GT-MA1)			1B	
MATH 155	Calculus for Biological Scientists I (GT-MA1)			1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)			1B	
A minimum of 3 credits of AUCC 1B (Quantitative Reasoning) must be completed by the end of Semester 2.		X		1B	
	Total Credits				12-14
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ERHS 230	Environmental Health Field Methods		X		3
Select one course from the following:					4
BMS 300	Principles of Human Physiology				
BMS 360	Fundamentals of Physiology				
Select one course from the following:					5
PH 121	General Physics I (GT-SC1)		X	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)			3A	
Select one group from the following:					3-5
Group A					
CHEM 245	Fundamentals of Organic Chemistry				
CHEM 246	Fundamentals of Organic Chemistry Laboratory				
Group B					
CHEM 341	Modern Organic Chemistry I	X			
ERHS 220 must be completed by end of Semester 3.		X			
	Total Credits				15-17
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
MIP 300	General Microbiology	X			3
MIP 302	General Microbiology Laboratory				2
Select one course from the following:					3
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
Select the same Group (A or B) as selected in Semester 3:					3-5
Group A					
CHEM 338 or ERHS 448	Environmental Chemistry Environmental Contaminants: Exposure and Fate				
Group B					
CHEM 343	Modern Organic Chemistry II	X			
CHEM 344	Modern Organic Chemistry Laboratory	X			
Social and Behavioral Sciences				3C	3
BMS 300 or BMS 360 and ERHS 230 must be completed by the end of Semester 4.		X			
	Total Credits				14-16

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
ERHS 320	Environmental Health--Water Quality			4A	3
ERHS 350	Principles of Occupational Safety and Health				3
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
Select one course from the following:					3
FTEC 400	Food Safety				
MIP 334	Food Microbiology				
Historical Perspectives				3D	3
PH 121 or PH 141 must be completed by the end of Semester 5.		X			
	Total Credits				15

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 351	Principles of Biochemistry				4
ERHS 332	Principles of Epidemiology				3
ERHS 479	Environmental Health Practice	X		4C	1
Arts and Humanities				3B	6
BMS 300 or BMS 360 and STAT 301 or STAT 307 must be completed by the end of Semester 6.		X			
	Total Credits				14

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
ERHS 446	Environmental Toxicology	X			3
ERHS 487	Internship-Environmental Health	X		4C	4
Program Electives (See Major Requirements tab)					5
Electives					3-4
	Total Credits				15-16

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
ERHS 410	Environmental Health-Air and Waste Management	X		4B	3
ERHS 430	Human Disease and the Environment	X			3
ERHS 450	Introduction to Radiation Biology	X			3
Electives		X			5
Diversity and Global Awareness		X		3E	3
The benchmark courses for Semester 8 are the remaining courses in the entire program of study.		X			
	Total Credits				17
	Program Total Credits:				120

Major in Biomedical Sciences, Microbiology and Infectious Disease Concentration

This program offers a wide variety of opportunities which have a basis in cellular and molecular biology and infectious disease. In addition to enrolling in required courses, students will have opportunities to engage in elective courses and laboratory research in specialty areas of bacteriology, immunology, mycobacterial diseases, prion biology, vector borne infectious disease, and virology. In this process, students are able to tailor their educational experiences to specific career objectives. The curriculum will prepare graduates to pursue further studies in professional schools for medicine, veterinary medicine, pharmacy, dentistry, and optometry, as well as other programs such as nursing, physician assistant and physical therapy. This program will also prepare students for graduate studies in microbiology and infectious disease as well as for careers in research and employment in a variety of innovative and developing fields in biotechnology.

The basic science curriculum meets many requirements for entrance into professional schools. Experiential learning opportunities are encouraged and could include participating in laboratory research, teaching/tutoring in selected courses, volunteer experiences and leadership positions within student club(s), study abroad, internships, and honors curriculum. These opportunities are encouraged with the student's interests and career goals as the focus.

Requirements
Effective Summer 2020

Freshman

		AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CO 150	College Composition (GT-CO2)	1A	3
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
MIP 250	Eukaryotic Microbiology		3
MIP 260	The World of Parasites		3
VMBS 100	Introduction to Biomedical Sciences Major		2
Select a minimum of 3 credits from the following:		1B	3-4
MATH 118	College Algebra in Context II (GT-MA1)	1B	
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	
MATH 125	Numerical Trigonometry (GT-MA1)	1B	
MATH 126	Analytic Trigonometry (GT-MA1)	1B	
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	
Elective			3
	Total Credits		30-31

Sophomore

BC 351	Principles of Biochemistry		4
MIP 300	General Microbiology		3
MIP 302	General Microbiology Laboratory		2
MIP 342	Immunology		4
Select one group from the following:			8
Group A			
CHEM 245	Fundamentals of Organic Chemistry		
CHEM 246	Fundamentals of Organic Chemistry Laboratory		
Concentration Elective (see list below)			
Group B			
CHEM 341	Modern Organic Chemistry I		
CHEM 343[1]	Modern Organic Chemistry II		
CHEM 344	Modern Organic Chemistry Laboratory		
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
Elective			3
	Total Credits		30

Junior

Select one course from the following:			5
PH 121	General Physics I (GT-SC1)	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	
Select one course from the following:			3-4
MIP 443	Microbial Physiology		
MIP 450	Microbial Genetics		
Select one course from the following:			4
BMS 300	Principles of Human Physiology		
BMS 360	Fundamentals of Physiology		
Concentration Electives (See list below)			8

Advanced Writing		2	3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
	Total Credits		29-30

Senior

MIP 351	Medical Bacteriology	4B	3
MIP 420	Medical and Molecular Virology	4A	4
MIP 492	Senior Professional Development Seminar		2
Select one course from the following:			2-3
MIP 400A	Capstone in Microbiology: Medical Microbiology	4C	
MIP 400B	Capstone in Microbiology: Biotechnology	4C	
MIP 400C	Capstone in Microbiology: Immunology	4C	
MIP 400D	Capstone in Microbiology: Microbial Diversity/Ecology	4C	
MIP 400E	Capstone in Microbiology: Microbial Genetics	4C	
MIP 400F	Capstone in Microbiology: Virology	4C	
MIP 400G	Capstone in Microbiology: Service Learning	4C	
MIP 400H	Capstone in Microbiology: Prion Biology	4C	
MIP 400I	Capstone in Microbiology: Mycobacterial Biology	4C	
MIP 400J	Capstone in Microbiology: Big Data Sets in Microbiology	4C	
MIP 400K	Capstone in Microbiology: Parasitology	4C	
MIP 400L	Capstone in Microbiology: Microbiome Biology	4C	
MIP 400M	Capstone in Microbiology: Vector Biology	4C	
MIP 400N	Capstone in Microbiology: Environmental Sustainability Health Science	4C	
MIP 400O	Capstone in Microbiology: Pathology of Infectious Disease	4C	
MIP 400P	Capstone in Microbiology: Veterinary Microbiology	4C	
MIP 400Q	Capstone in Microbiology: One Health	4C	
MIP 400R	Capstone in Microbiology: Food Microbiology	4C	
MIP 400S	Capstone in Microbiology: Biofilm Biology	4C	
MIP 498	Research	4C	
Select one course from the following:			3
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
Arts and Humanities		3B	3
Concentration Electives (See list below)			5
Electives[2]			6-9
	Total Credits		29-31
	Program Total Credits:		120

Concentration Electives

Code	Title	Credits
Select a minimum of 16 credits from the following not taken elsewhere in the program. CHEM 343 may count as a Concentration Elective for students who select organic chemistry Group B in the Sophomore year.		
A minimum of two laboratory courses MUST be selected from the following:		
MIP 150	Introduction to Research Methods	
MIP 335	Food Microbiology Laboratory	
MIP 343	Immunology Laboratory	
MIP 352	Medical Bacteriology Laboratory	
MIP 425	Virology and Cell Culture Laboratory	
MIP 433/ESS 433	Microbial Ecology Laboratory	
MIP 462/ BSPM 462/BZ 462	Parasitology and Vector Biology	
MIP 550	Microbial and Molecular Genetics Laboratory	
Two unique courses (for a maximum of 6 credits) may be selected from the following:		
MIP 298	Introductory Research	
MIP 384	Supervised College Teaching	
MIP 495	Independent Study	
MIP 498	Research	
ANEQ 460	Meat Safety	2
BC 404	Comprehensive Biochemistry Laboratory	2
BC 463	Molecular Genetics	3

BMS 301	Human Gross Anatomy	5
BMS 305	Domestic Animal Gross Anatomy	4
BMS 325	Cellular Neurobiology	3
BMS 401	Laboratory Research in Biomedical Sciences	4
BMS 450	Pharmacology	3
BSPM 302	Applied and General Entomology	2
BZ 220	Introduction to Evolution	3
BZ 310	Cell Biology	4
BZ 333	Introductory Mycology	4
BZ 346	Population and Evolutionary Genetics	3
BZ 350	Molecular and General Genetics	4
BZ 360	Bioinformatics and Genomics	3
BZ 418	Ecology of Infectious Diseases	4
BZ 577/MIP 577	Computer Analysis in Population Genetics	2
BZ 578/MIP 578	Genetics of Natural Populations	4
CHEM 334	Quantitative Analysis Laboratory	1
CHEM 335	Introduction to Analytical Chemistry	3
CHEM 343	Modern Organic Chemistry II [1]	3
ERHS 210	Cancer Biology, Medicine, and Society	2
ERHS 320	Environmental Health--Water Quality	3
ERHS 332	Principles of Epidemiology	3
ERHS 430	Human Disease and the Environment	3
ERHS 502	Fundamentals of Toxicology	3
ERHS 567	Cell and Molecular Toxicology Techniques	3
FTEC 360	Brewing Processes	4
FTEC 460	Brewing Science II	4
FTEC 574	Current Issues in Food Safety	2
HORT 477	Enology-History and Winemaking	3
LIFE 103	Biology of Organisms-Animals and Plants	4
LIFE 201B	Introductory Genetics: Molecular/ Immunological/Developmental (GT-SC2)	3
LIFE 203	Introductory Genetics Laboratory	2
LIFE 210	Introductory Eukaryotic Cell Biology	3
LIFE 211	Introductory Cell Biology Honors Recitation	1
LIFE 212	Introductory Cell Biology Laboratory	2
LIFE 320	Ecology	3
MATH 155	Calculus for Biological Scientists I (GT-MA1)	4
MATH 160	Calculus for Physical Scientists I (GT-MA1)	4
MIP 192	Microbiology First-Year Seminar	2
MIP 275	Microcomputing Applications in Microbiology	2
MIP 303	General Microbiology--Honors Recitation	1
MIP 315	Pathology of Human and Animal Disease	3
MIP 334	Food Microbiology	3
MIP 350	Microbial Diversity	3
MIP 400A	Capstone in Microbiology: Medical Microbiology	2
MIP 400B	Capstone in Microbiology: Biotechnology	2
MIP 400C	Capstone in Microbiology: Immunology	2
MIP 400D	Capstone in Microbiology: Microbial Diversity/Ecology	2
MIP 400E	Capstone in Microbiology: Microbial Genetics	2
MIP 400F	Capstone in Microbiology: Virology	2
MIP 400G	Capstone in Microbiology: Service Learning	2
MIP 400H	Capstone in Microbiology: Prion Biology	2
MIP 400I	Capstone in Microbiology: Mycobacterial Biology	2
MIP 400J	Capstone in Microbiology: Big Data Sets in Microbiology	2
MIP 400K	Capstone in Microbiology: Parasitology	2
MIP 400L	Capstone in Microbiology: Microbiome Biology	2
MIP 400M	Capstone in Microbiology: Vector Biology	2
MIP 400N	Capstone in Microbiology: Environmental Sustainability & Health Science	2
MIP 400O	Capstone in Microbiology: Pathology of Infectious Disease	2
MIP 400P	Capstone in Microbiology: Veterinary Microbiology	2
MIP 400Q	Capstone in Microbiology: One Health	2
MIP 400R	Capstone in Microbiology: Food Microbiology	2
MIP 400S	Capstone in Microbiology: Biofilm Biology	2
MIP 401	Laboratory Research Methods in Microbiology	4
MIP 432	Microbial Ecology	3
MIP 436	Industrial Microbiology	4
MIP 443	Microbial Physiology	4
MIP 450	Microbial Genetics	3
MIP 496	Group Study	1-3
MIP 530	Advanced Molecular Virology	4
MIP 540	Biosafety in Research Laboratories	2
MIP 555	Principles and Mechanisms of Disease	3
MIP 563	Biology of Disease Vectors	3
MIP 570	Functional Genomics	3
PH 122	General Physics II (GT-SC1)	5
SOCR 330	Principles of Genetics	3
SOCR 455	Soil Microbiology	3
SOCR 456	Soil Microbiology Laboratory	1
VS 331	Histology	4
VS 333	Domestic Animal Anatomy	4

1 CHEM 343 may count as a Concentration Elective for students who select organic chemistry Group B in the Sophomore year.

2 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

To Declare Major: competitive entry controls required and capped enrollment in place. Please contact Director of Student Success in the CVMBS Student Success Center for more information.

To prepare for first semester: The curriculum for the microbiology and infectious disease concentration assumes students enter college

prepared to take MATH 124. Entering students who are not prepared to take MATH 124 will need to prerequisite requirements in the first semester. Those requirements are listed as benchmark courses in Freshman Semester 1 below. LIFE 102 requires high school chemistry as a prerequisite; CHEM 111 requires Algebra II as a prerequisite (this prerequisite is met by having Algebra II by test credit, transfer credit, or placement out of MATH 117 and MATH 118 on Math Placement Exam).

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
CO 150	College Composition (GT-CO2)			1A	3
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	4
VMBS 100	Introduction to Biomedical Sciences Major				2
Select 0-1 credits from the following:					0-1
MATH 118	College Algebra in Context II (GT-MA1)			1B	
MATH 124	Logarithmic and Exponential Functions (GT-MA1)		X	1B	
MATH 125	Numerical Trigonometry (GT-MA1)			1B	
MATH 126	Analytic Trigonometry (GT-MA1)			1B	
MATH 124 must be completed by the end of Semester 1, if necessary.		X			
	Total Credits				14-15

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II	X			3
CHEM 114	General Chemistry Lab II	X			1
MIP 250	Eukaryotic Microbiology				3
MIP 260	The World of Parasites	X			3
Select 2-4 credits from the following:					2-4
MATH 124	Logarithmic and Exponential Functions (GT-MA1)			1B	
MATH 125	Numerical Trigonometry (GT-MA1)			1B	
MATH 126	Analytic Trigonometry (GT-MA1)			1B	
MATH 155	Calculus for Biological Scientists I (GT-MA1)			1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)			1B	
Elective					3
CO 150 must be completed by the end of semester 2.		X			
3-4 credits of MATH must be completed by the end of semester 2.		X			
MATH 125 must be completed by the end of semester 2.		X			
	Total Credits				15-17

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
MIP 300	General Microbiology	X			3
MIP 302	General Microbiology Laboratory	X			2
Select one group from the following:					3-5
Group A: (5 credits)					
CHEM 245	Fundamentals of Organic Chemistry	X			
CHEM 246	Fundamentals of Organic Chemistry Laboratory	X			
Group B: (3 credits)					
CHEM 341	Modern Organic Chemistry I				
Social and Behavioral Sciences				3C	3
Elective					3
	Total Credits				14-16

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 351	Principles of Biochemistry		X		4
MIP 342	Immunology	X			4
Select the same Group (A or B) as selected Semester 3:					3-5

Group A: (3 credits)					
Concentration Elective (See list on Requirements Tab)					
Group B: (5 credits)					
CHEM 343	Modern Organic Chemistry II				
CHEM 344	Modern Organic Chemistry Laboratory				
Historical Perspectives				3D	3
	Total Credits				14-16

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
Select MIP 450 Semester 5 if MIP 443 will not be taken Semester 6:					0-3
MIP 450	Microbial Genetics				
Select one course from the following:					5
PH 121	General Physics I (GT-SC1)	X	X	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)	X		3A	
Concentration Electives (See list on Requirements Tab)					5
Diversity and Global Awareness				3E	3
	Total Credits				13-16

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Select MIP 443 Semester 6 if MIP 450 was not taken Semester 5:					0-4
MIP 443	Microbial Physiology				
Select one course from the following:					4
BMS 300	Principles of Human Physiology				
BMS 360	Fundamentals of Physiology				
Concentration Electives (See list on Requirements Tab)					3
Advanced Writing				2	3
Arts and Humanities				3B	3
Select MIP 450 (Fall) or MIP 443 (Spring) by end of semester 6.		X			
	Total Credits				13-17

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
MIP 420	Medical and Molecular Virology	X		4A	4
MIP 492	Senior Professional Development Seminar				2
Select one AUCC 4C course from the following:		X		4C	2-3
MIP 400A	Capstone in Microbiology: Medical Microbiology			4C	
MIP 400B	Capstone in Microbiology: Biotechnology			4C	
MIP 400C	Capstone in Microbiology: Immunology			4C	
MIP 400D	Capstone in Microbiology: Microbial Diversity/Ecology			4C	
MIP 400E	Capstone in Microbiology: Microbial Genetics			4C	
MIP 400F	Capstone in Microbiology: Virology			4C	
MIP 400G	Capstone in Microbiology: Service Learning			4C	
MIP 400H	Capstone in Microbiology: Prion Biology			4C	
MIP 400I	Capstone in Microbiology: Mycobacterial Biology			4C	
MIP 400J	Capstone in Microbiology: Big Data Sets in Microbiology			4C	
MIP 400K	Capstone in Microbiology: Parasitology			4C	
MIP 400L	Capstone in Microbiology: Microbiome Biology			4C	
MIP 400M	Capstone in Microbiology: Vector Biology			4C	
MIP 400N	Capstone in Microbiology: Environmental Sustainability Health Science			4C	
MIP 400O	Capstone in Microbiology: Pathology of Infectious Disease			4C	
MIP 400P	Capstone in Microbiology: Veterinary Microbiology			4C	
MIP 400Q	Capstone in Microbiology: One Health			4C	
MIP 400R	Capstone in Microbiology: Food Microbiology			4C	

MIP 400S	Capstone in Microbiology: Biofilm Biology			4C	
MIP 498	Research			4C	
Select one from the following:					3
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
Arts and Humanities				3B	3
	Total Credits				14-15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
MIP 351	Medical Bacteriology	X		4B	3
Concentration Electives (See list on Requirements Tab)		X			5
Electives		X			6-9
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				14-17
	Program Total Credits:				120

Major in Neuroscience

Molecular, Cellular and Integrative Neurosciences Special Academic Unit
mcin.colostate.edu/Undergrad (http://mcin.colostate.edu/Undergrad)

Assistant Professor Phillip L. Quirk, Undergraduate Program Director
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1680 Campus Delivery
970-491-1551

The Molecular, Cellular and Integrative Neuroscience Special Academic Unit offers an interdisciplinary undergraduate degree program with faculty in five different colleges and ten departments. Two different concentrations are offered as programs of study: Behavioral and Cognitive Neuroscience and Cell and Molecular Neuroscience. Both concentrations have a strong foundation in mathematics, physics, chemistry and biological sciences that utilize a common core for the first two years, differing in only a single course for each concentration, thus making it easy to switch between concentrations if a student's interest changes during the first two years. Both concentrations require completion of an undergraduate thesis, providing significant opportunities for experiential learning in research laboratories in which they work closely with faculty, and which sometimes lead to authorship of original publications. Electives allow students in one concentration to acquire breadth and depth in the other area, if desired.

Learning Outcomes

Students will obtain:

- A command of basic concepts in chemistry, physics, biology, biochemistry, molecular biology, and cellular biology as well as a more in-depth understanding of the structure and function of the nervous system.
- An understanding of how the brain works, from molecules to the mind, and how its function becomes disrupted in diseases and following brain injury.
- The ability to critically analyze and present the methods, results, and conclusions of scientific papers in the current neuroscience literature, and orally present technical material in a clear and comprehensible form.
- Experience in the use of a variety of laboratory techniques, ability to critically interpret experimental results, and ability to design new experiments.
- The ability to perform original research or to critically analyze published work to advance an understanding of a specific area of neuroscience by preparing and defending an undergraduate thesis.

Potential Occupations

Possible career opportunities for students with a B.S. in Neuroscience include, but are not limited to: research technician, medical or clinical lab technologist, production/quality assurance lab technician, pharmaceutical research worker or salesperson, human resource specialist, neurotoxicology technician, teacher, writer, and research analyst. Many Neuroscience majors go to professional schools in medicine, veterinary medicine, or health sciences, or into graduate programs encompassing virtually all areas of biomedical sciences and psychology.

Concentrations

- **Behavioral and Cognitive Neuroscience Concentration**
- **Cell and Molecular Neuroscience Concentration**

Major in Neuroscience, Behavioral and Cognitive Neuroscience Concentration

Overview

The Behavioral and Cognitive Neuroscience concentration integrates an understanding of neuroanatomy with the mechanisms of sensation/perception and learning/memory, generally applied to human behavior. Its focus is at the functional level of neuronal systems and networks. It differs from classical psychology in providing a more in-depth cellular and molecular basis for understanding behavior and neurological disorders that influence behavior. Graduates with this concentration are well prepared for many graduate and professional degree programs in health professions, as well as for careers in a variety of clinical settings, non-profit disease oriented foundations, and private sector organizations in either research-related or human resource service-related positions.

Requirements

The Behavioral and Cognitive Neuroscience concentration integrates an understanding of neuroanatomy with the mechanisms of sensation/perception and learning/memory, generally applied to human behavior. Its focus is at the functional level of neuronal systems and networks. It differs from classical psychology in providing a more in-depth cellular and molecular basis for understanding behavior and neurological disorders that influence behavior. Graduates with this concentration are well prepared for many graduate and professional degree programs in health professions, as well as for careers in a variety of clinical settings, non-profit disease oriented foundations, and private sector organizations in either research-related or human resource service-related positions.

Effective Fall 2017

Freshman

		AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CO 150	College Composition (GT-CO2)	1A	3
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
LIFE 201B	Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2)	3A	3
LIFE 203	Introductory Genetics Laboratory		2
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	4
NB 192	Introductory Neuroscience Seminar		1
PSY 100	General Psychology (GT-SS3)	3C	3
Arts and Humanities		3B	3
	Total Credits		32

Sophomore

CHEM 341	Modern Organic Chemistry I		3
CHEM 343	Modern Organic Chemistry II		3
CHEM 344	Modern Organic Chemistry Laboratory		2
Select one from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
LIFE 210	Introductory Eukaryotic Cell Biology		3
LIFE 212	Introductory Cell Biology Laboratory		2
Select one from the following:			5
PH 121	General Physics I (GT-SC1)	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	
PSY 252	Mind, Brain, and Behavior		3
Arts and Humanities		3B	3
Diversity and Global Awareness		3E	3
	Total Credits		30

Junior

BC 351	Principles of Biochemistry		4
BMS 300	Principles of Human Physiology		4
BMS 345	Functional Neuroanatomy		4
NB 399	Thesis Preparation		1
PSY 250	Research Design and Analysis I		3
PSY 458	Cognitive Neuroscience	4B	3
PSY 459	Cognitive Neuroscience Laboratory	4A	2
Select one from the following:			3
PSY 352	Learning and Memory		
PSY 452	Cognitive Psychology		

Select one from the following:			3
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
Historical Perspectives		3D	3
	Total Credits		30
Senior			
BMS 325	Cellular Neurobiology		3
NB 493	Senior Seminar	4C	1
NB 499	Senior Thesis	4A,4C	3
PSY 454	Biological Psychology		3
PSY 455	Biological Psychology Laboratory		2
PSY 456	Sensation and Perception	4B	3
PSY 457	Sensation and Perception Laboratory		2
Electives[1]			11
	Total Credits		28
	Program Total Credits:		120

[1] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	4
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
CO 150	College Composition (GT-CO2)		X	1A	3
NB 192	Introductory Neuroscience Seminar	X			1
Arts and Humanities				3B	3
MATH 124, MATH 125, MATH 126 must be completed by the end of Semester 1, if necessary.		X			
	Total Credits				16

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II	X			3
CHEM 114	General Chemistry Lab II	X			1
MATH 155	Calculus for Biological Scientists I (GT-MA1)			1B	4
PSY 100	General Psychology (GT-SS3)	X		3C	3
LIFE 201B	Introductory Genetics: Molecular/Immunological/ Developmental (GT-SC2)			3A	3
LIFE 203	Introductory Genetics Laboratory				2
	Total Credits				16

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 341	Modern Organic Chemistry I		X		3
LIFE 210	Introductory Eukaryotic Cell Biology	X			3
LIFE 212	Introductory Cell Biology Laboratory	X			2
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
Diversity and Global Awareness				3E	3
	Total Credits				14

Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 343	Modern Organic Chemistry II		X		3
CHEM 344	Modern Organic Chemistry Laboratory				2
Select one course from the following:					5
PH 121	General Physics I (GT-SC1)		X	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)		X	3A	
PSY 252	Mind, Brain, and Behavior				3
Arts and Humanities				3B	3
CHEM 341 must be completed by the end of Semester 4.		X			
	Total Credits				16

Junior

Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BMS 300	Principles of Human Physiology	X			4
PSY 250	Research Design and Analysis I				3
Select one course from the following:					3
PSY 352	Learning and Memory				
PSY 452	Cognitive Psychology				
Select one course from the following:					3
STAT 301	Introduction to Statistical Methods		X		
STAT 307	Introduction to Biostatistics		X		
Historical Perspectives				3D	3
	Total Credits				16

Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 351	Principles of Biochemistry	X			4
BMS 345	Functional Neuroanatomy		X		4
NB 399	Thesis Preparation		X		1
PSY 458	Cognitive Neuroscience			4B	3
PSY 459	Cognitive Neuroscience Laboratory			4A	2
	Total Credits				14

Senior

Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
BMS 325	Cellular Neurobiology	X			3
NB 493	Senior Seminar	X		4C	1
PSY 454	Biological Psychology				3
PSY 455	Biological Psychology Laboratory				2
Free Electives					6
	Total Credits				15

Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
NB 499	Senior Thesis	X		4A,4C	3
PSY 456	Sensation and Perception	X		4B	3
PSY 457	Sensation and Perception Laboratory	X			2
Free Electives		X			5
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				13
	Program Total Credits:				120

Major in Neuroscience, Cell and Molecular Neuroscience Concentration

The Cell and Molecular Neuroscience (CMN) concentration integrates neuroanatomy with the cellular and molecular basis of nervous system function. Its focus is to understand cellular processes in neurons and glia at the molecular level. It differs from degree programs in biochemistry or biomedical sciences by its specific focus on the nervous system. Required courses in microbiology, immunology, biochemistry, and advanced cell biology provide an excellent background for students interested in pursuing careers in medicine or biomedical research through graduate or professional schools. However, graduates with this concentration should also be well qualified for any positions in academia, government or the private sector where knowledge of cell and molecular processes is required, whether or not it is applied to the nervous system.

Students in the CMN Concentration with strong research interests and a GPA of 3.250 or above may qualify for early entry into the M.S. degree program in Biochemistry while pursuing the B.S. degree program in Neuroscience. Early entry requires that students have identified a faculty member willing to mentor them in their laboratory research for the M.S. degree and that they have obtained permission from the Neuroscience program and the Department of Biochemistry and Molecular Biology to apply to the graduate school for this. Students can apply to the graduate program (allowing them access to courses above those at the 500 level) during the semester that they complete 90 or more credits. Students will be moved from undergraduate to graduate standing the semester after they complete 120 or more credits. At that time they begin paying graduate tuition and fees and will lose all undergraduate institutional and scholarship aid, but they can qualify for many graduate assistantships and fellowships. Both degrees can be awarded during the same semester but the M.S. degree cannot be awarded before completing the requirements of the B.S. degree.

Requirements Effective Spring 2015

Freshman

		AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CO 150	College Composition (GT-CO2)	1A	3
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
LIFE 201B	Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2)	3A	3
LIFE 203	Introductory Genetics Laboratory		2
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	4
NB 192	Introductory Neuroscience Seminar		1
PSY 100	General Psychology (GT-SS3)	3C	3
Arts and Humanities		3B	3
	Total Credits		32

Sophomore

CHEM 341	Modern Organic Chemistry I		3
CHEM 343	Modern Organic Chemistry II		3
CHEM 344	Modern Organic Chemistry Laboratory		2
Select one from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
LIFE 210	Introductory Eukaryotic Cell Biology		3
LIFE 212	Introductory Cell Biology Laboratory		2
MATH 255	Calculus for Biological Scientists II	1B	4
Select one from the following:			5
PH 121	General Physics I (GT-SC1)	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	
PSY 252	Mind, Brain, and Behavior		3
Arts and Humanities		3B	3
	Total Credits		31

Junior

BC 401	Comprehensive Biochemistry I	4A	3
BC 403	Comprehensive Biochemistry II	4B	3
BC 404	Comprehensive Biochemistry Laboratory		2
BMS 300	Principles of Human Physiology		4
BMS 345	Functional Neuroanatomy		4
NB 399	Thesis Preparation		1
Select one from the following:			5
PH 122	General Physics II (GT-SC1)	3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	
Select one from the following:			3
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
Diversity and Global Awareness		3E	3
Historical Perspectives		3D	3
	Total Credits		31

Senior

BC 465	Molecular Regulation of Cell Function		3
BMS 325	Cellular Neurobiology		3
MIP 300	General Microbiology		3
MIP 342	Immunology		4
NB 493	Senior Seminar	4C	1
NB 499	Senior Thesis	4A,4C	3
Electives[1]			9
	Total Credits		26
	Program Total Credits:		120

[1] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	4
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
CO 150	College Composition (GT-CO2)		X	1A	3
NB 192	Introductory Neuroscience Seminar	X			1
Arts and Humanities				3B	3
MATH 124, MATH 125, MATH 126 must be completed by the end of Semester 1, if necessary.		X			
	Total Credits				16
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II	X			3
CHEM 114	General Chemistry Lab II	X			1
MATH 155	Calculus for Biological Scientists I (GT-MA1)			1B	4
PSY 100	General Psychology (GT-SS3)	X		3C	3
LIFE 201B	Introductory Genetics: Molecular/Immunological/ Developmental (GT-SC2)			3A	3

LIFE 203	Introductory Genetics Laboratory				2
	Total Credits				16
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 341	Modern Organic Chemistry I		X		3
LIFE 210	Introductory Eukaryotic Cell Biology	X			3
LIFE 212	Introductory Cell Biology Laboratory	X			2
MATH 255	Calculus for Biological Scientists II			1B	4
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 343	Modern Organic Chemistry II		X		3
CHEM 344	Modern Organic Chemistry Laboratory		X		2
Select one course from the following:					5
PH 121	General Physics I (GT-SC1)		X	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)		X	3A	
PSY 252	Mind, Brain, and Behavior				3
Arts and Humanities				3B	3
CHEM 341 must be completed by the end of Semester 4.		X			
	Total Credits				16
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 401	Comprehensive Biochemistry I	X			3
BMS 300	Principles of Human Physiology	X			4
Select one course from the following:					5
PH 122	General Physics II (GT-SC1)			3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)			3A	
Select one course from the following:					3
STAT 301	Introduction to Statistical Methods		X		
STAT 307	Introduction to Biostatistics		X		
	Total Credits				15
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 403	Comprehensive Biochemistry II			4B	3
BC 404	Comprehensive Biochemistry Laboratory				2
BMS 345	Functional Neuroanatomy		X		4
NB 399	Thesis Preparation		X		1
Diversity and Global Awareness				3E	3
Historical Perspectives				3D	3
	Total Credits				16
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
BMS 325	Cellular Neurobiology	X			3
MIP 300	General Microbiology	X			3
NB 493	Senior Seminar	X		4C	1
Free Electives					6
	Total Credits				13
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 465	Molecular Regulation of Cell Function	X			3
MIP 342	Immunology	X			4
NB 499	Senior Thesis	X		4A,4C	3

Free Electives	X	3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X	
Total Credits		13
Program Total Credits:		120

Minor in Biomedical Sciences

The minor in Biomedical Sciences provides students with a useful complement to majors in Animal Science, Biochemistry, Biological Science, Health and Exercise Science, Human Development and Family Studies, Microbiology, Psychology, and other biomedical science areas. The program offers a variety of courses which serve to broaden the background of students pursuing professional careers in biomedical sciences, human and veterinary medicine, and a variety of health-related disciplines. Candidates begin the program with a course in physiology. The remainder of the required 21 credits is selected to complement the student's educational goals and interests.

Requirements Effective Fall 2018

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

A minimum grade of C (2.000) in either BMS 300 or BMS 360 will be required for those students who are seeking to graduate with a minor in biomedical sciences.

Code	Title	Credits
Required Courses		
BMS 300	Principles of Human Physiology	4
or BMS 360	Fundamentals of Physiology	
Elective Courses		
Select 17 credits from the following:		17
BMS 200	Concepts in Human Anatomy and Physiology	
BMS 301	Human Gross Anatomy	
BMS 302	Laboratory in Principles of Physiology	
BMS 305	Domestic Animal Gross Anatomy	
BMS 325	Cellular Neurobiology	
BMS 330	Microscopic Anatomy	
BMS 345	Functional Neuroanatomy	
BMS 384	Supervised College Teaching [1]	
BMS 401	Laboratory Research in Biomedical Sciences	
BMS 405	Nerve and Muscle-Toxins, Trauma and Disease	
BMS 409	Human and Animal Reproductive Biology	
BMS 420	Cardiopulmonary Physiology	
BMS 425	Introduction to Systems Neurobiology	
BMS 430	Endocrinology	
BMS 450	Pharmacology	
BMS 495	Independent Study [1]	
BMS 531	Domestic Animal Dissection	
BMS 575	Human Anatomy Dissection	
Program Total Credits:		21

[1] A maximum total of 6 credits earned in BMS 384 and BMS 495 may be used toward the Elective Courses for the Biomedical Sciences minor.

Master of Science in Biomedical Sciences, Plan A

The traditional Master of Science in Biomedical Sciences, Plan A (http://csu-cvmbs.colostate.edu/academics/bms/Pages/master-science-biomedical-sciences.aspx) is a research-based program and typically takes two to three years to complete. While less comprehensive than a Ph.D., students complete a meaningful and original research project, which culminates in writing and defending a thesis. This option is designed for motivated students who have the ability to develop critical thinking skills and conduct research in one of the three primary areas of study in our department: cardiovascular physiology, reproductive physiology, and neurobiology.

Requirements Effective Fall 2017

Code	Title	Credits
Core Courses		
Select one group from the following:		4-8
Group A:		
BMS 500 & BMS 501	Mammalian Physiology I and Mammalian Physiology II	
Group B:		
BMS 500	Mammalian Physiology I	
or BMS 501	Mammalian Physiology II	
Select one from the following:		2
BMS 792A	Seminar: Biomedical Sciences	
BMS 792B	Seminar: Neurophysiology	
BMS 792C	Seminar: Reproductive Physiology	
GRAD 544	Ethical Conduct of Research	1
Selected Courses [1]		
BC 563	Molecular Genetics	
BC 565	Molecular Regulation of Cell Function	
BMS 503/NB 503	Developmental Neurobiology	
BMS 505/NB 505	Neuronal Circuits, Systems and Behavior	
BMS 545	Neuroanatomy	
BMS 631	Mechanisms of Hormone Action	
BMS 632	Metabolic Endocrinology	
BMS 640	Reproductive Physiology and Endocrinology	

BMS 642	Research Techniques for Gametes and Embryos	
BMS 684	Supervised College Teaching	
Select one from the following:		1-18
BMS 695A	Independent Study: Developmental Anatomy	
BMS 695B	Independent Study: Microscopic Anatomy	
BMS 695C	Independent Study: Neuroanatomy	
BMS 695D	Independent Study: Radiographic Anatomy	
BMS 695E	Independent Study: Surgical Anatomy	
BMS 695F	Independent Study: Gross Anatomy	
STAT 511A	Design and Data Analysis for Researchers I: R Software	4
or STAT 511B	Design and Data Analysis for Researchers I: SAS Software	
Thesis [1]		
BMS 699	Thesis	Var.
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

1 Select enough credits with approval of advisor and graduate committee to bring the program total to a minimum of 30 credits.

Master of Science in Biomedical Sciences, Plan B, Anatomical and Physiological Sciences Specialization

The Master of Science in Biomedical Sciences, Plan B, Anatomical and Physiological Sciences Specialization, is a one-year, non-thesis, coursework-intensive program, with an emphasis on upper-division and graduate-level coursework in gross anatomy, physiology, and neurobiology. The program can be completed in one year, culminating in written comprehensive exams. It was created to provide increased academic strength to students who aspire to attend professional school; however, it also serves students pursuing various careers in the biomedical sciences by providing them a solid biomedical foundation which can be applied to many career paths. Students must choose one of the following options to focus their studies: Human Anatomy, Neurobiology, or Animal Anatomy.

Requirements Effective Fall 2018

Human Anatomy Option [1]

Code	Title	Credits
BMS 500	Mammalian Physiology I	4
BMS 501	Mammalian Physiology II	4
BMS 545	Neuroanatomy	5
BMS 575	Human Anatomy Dissection	4
BMS 610A	Managing a Career in Science: Survival Skills for Coursework (M.S.)	1
BMS 619	Advanced Human Gross Anatomy	2
Electives [2]		12
Program Total Credits:		32

Neurobiology Option [1]

Code	Title	Credits
BMS 500	Mammalian Physiology I	4
BMS 503/NB 503	Developmental Neurobiology	3
BMS 505/NB 505	Neuronal Circuits, Systems and Behavior	3
BMS 545	Neuroanatomy	5
BMS 610A	Managing a Career in Science: Survival Skills for Coursework (M.S.)	1
Electives [2]		16
Program Total Credits:		32

Animal Anatomy Option [1]

Code	Title	Credits
BMS 500	Mammalian Physiology I	4
BMS 501	Mammalian Physiology II	4
BMS 531	Domestic Animal Dissection	3
BMS 545	Neuroanatomy	5
BMS 610A	Managing a Career in Science: Survival Skills for Coursework (M.S.)	1
BMS 633	Domestic Animal Anatomy-Case Discussions	2
Electives [2]		13
Program Total Credits:		32

Elective Courses [2]

Code	Title	Credits
BC 351	Principles of Biochemistry	4
BC 563	Molecular Genetics	4
BC 565	Molecular Regulation of Cell Function	4
BMS 420	Cardiopulmonary Physiology	3
BMS 430	Endocrinology	3
BMS 631	Mechanisms of Hormone Action	2
BMS 632	Metabolic Endocrinology	2
BMS 640	Reproductive Physiology and Endocrinology	4
BMS 684	Supervised College Teaching	1-18

A minimum of 32 credits are required to complete this program.

1 Comprehensive exam required

2 Select courses with approval of advisor and graduate committee.

Master of Science in Biomedical Sciences, Plan B

Effective Fall 2017

Code	Title	Credits
Core Courses		
Select one group from the following:		4-8
Group A:		

BMS 500 & BMS 501	Mammalian Physiology I and Mammalian Physiology II	
Group B:		
BMS 500	Mammalian Physiology I	
or BMS 501	Mammalian Physiology II	
Select one from the following:		2
BMS 792A	Seminar: Biomedical Sciences	
BMS 792B	Seminar: Neurophysiology	
BMS 792C	Seminar: Reproductive Physiology	
GRAD 544	Ethical Conduct of Research	1
Selected Courses [1]		Var
BC 563	Molecular Genetics	
BC 565	Molecular Regulation of Cell Function	
BMS 503/NB 503	Developmental Neurobiology	
BMS 505/NB 505	Neuronal Circuits, Systems and Behavior	
BMS 545	Neuroanatomy	
BMS 631	Mechanisms of Hormone Action	
BMS 632	Metabolic Endocrinology	
BMS 640	Reproductive Physiology and Endocrinology	
BMS 642	Research Techniques for Gametes and Embryos	
BMS 684	Supervised College Teaching	
BMS 695A	Independent Study: Developmental Anatomy	
BMS 695B	Independent Study: Microscopic Anatomy	
BMS 695C	Independent Study: Neuroanatomy	
BMS 695D	Independent Study: Radiographic Anatomy	
BMS 695E	Independent Study: Surgical Anatomy	
BMS 695F	Independent Study: Gross Anatomy	
STAT 511A	Design and Data Analysis for Researchers I: R Software	
or STAT 511B	Design and Data Analysis for Researchers I: SAS Software	
Required Scholarly Paper		
Program Total Credits:		30

Students must write a scholarly paper.

A minimum of 30 credits are required to complete this program.

1 Select enough credits with approval of advisor and graduate committee to bring the program total to a minimum of 30 credits.

Master of Science in Biomedical Sciences, Plan B, Reproductive Technology Specialization

The Master of Science in Biomedical Sciences, Plan B, Reproductive Technology Specialization (http://csu-cvmbs.colostate.edu/academics/bms/Pages/one-year-masters-reproductive-technologies.aspx)is a one-year, non-thesis study of Assisted Reproductive Technologies (ART), culminating in a research project or internship. It provides students with in-depth laboratory training in *in vitro* embryo production based on a bovine model, including techniques such as *in vitro* fertilization, embryo and semen cryopreservation and vitrification, embryo biopsy and micromanipulation, and basic maintenance of an assisted reproduction laboratory and all associated equipment. The curriculum prepares students for careers in applied reproduction, especially careers in human or bovine embryology, as well as application to professional or graduate school.

Requirements Effective Fall 2019

Code	Title	Credits
Core Courses		
BMS 521	Comparative Reproductive Physiology	3
BMS 540	Assisted Reproductive Technologies Lab I	3
BMS 541	Assisted Reproductive Technologies Lab II	3
BMS 642	Research Techniques for Gametes and Embryos	1
BMS 792C	Seminar: Reproductive Physiology	1
BMS 795E	Independent Study: Reproductive Physiology [1, 2]	3-4
Select one course from the following:		3-4
BMS 409	Human and Animal Reproductive Biology	
BMS 640	Reproductive Physiology and Endocrinology	
Select one course from the following:		4
BMS 500	Mammalian Physiology I	
BMS 501	Mammalian Physiology II	
Select one course from the following:		1
BMS 610A	Managing a Career in Science: Survival Skills for Coursework (M.S.)	
GRAD 544	Ethical Conduct of Research	
Selected Courses		
Select 6-8 credits from the following: (No more than 4 credits at the 300- or 400-level will count toward the master's degree) [3]		6-8
ANEQ 510	Bovine Reproduction Management	
BC 463	Molecular Genetics	
BMS 430	Endocrinology	
BMS 501	Mammalian Physiology II	
BMS 631	Mechanisms of Hormone Action	
BMS 632	Metabolic Endocrinology	
BMS 640	Reproductive Physiology and Endocrinology	
BZ 455	Human Heredity and Birth Defects	
CM 666/PHIL 666	Science and Ethics	
FW 465	Managing Human-Wildlife Conflicts	
FW 469	Conservation and Management of Large Mammals	
FW 555	Conservation Biology	
STAT 511A	Design and Data Analysis for Researchers I: R Software	
or STAT 511B	Design and Data Analysis for Researchers I: SAS Software	
VS 626	Infertility and Genital Disease	

Required Scholarly Paper [2]	
Program Total Credits	30

A minimum of 30 credits are required to complete this program.

1. Students must undertake an extensive laboratory project or internship working with oocyte culture IVF, embryo development, or cryopreservation.
2. Students must complete a scholarly paper detailing their extensive laboratory project or internship BMS 795E.
3. Select additional courses with advisor approval.

Ph.D. in Biomedical Sciences

This Ph.D. program (http://csu-cvmbs.colostate.edu/academics/bms/Pages/phd-biomedical-sciences.aspx) is research-based and typically takes five to six years to complete, culminating in writing and defending a dissertation. This option is more comprehensive in scope than the research-based master's degree and is designed for motivated students who have the ability to develop critical thinking skills and conduct original research in one of the three primary areas of study in the Department of Biomedical Sciences: cardiovascular physiology, reproductive physiology, and neurobiology.

Requirements Effective Fall 2017

Code	Title	Credits
Core Courses		
Select one group from the following:		4-8
Group A:		
BC 563 & BC 565	Molecular Genetics and Molecular Regulation of Cell Function	
Group B:		
BC 563	Molecular Genetics	
or BC 565	Molecular Regulation of Cell Function	
Select one group from the following:		4-8
Group A:		
BMS 500 & BMS 501	Mammalian Physiology I and Mammalian Physiology II	
Group B:		
BMS 500	Mammalian Physiology I	
or BMS 501	Mammalian Physiology II	
BMS 784	Supervised College Teaching	Var.
Select one group from the following:		4-8
Group A:		
BMS 792A	Seminar: Biomedical Sciences	
or BMS 792B	Seminar: Neurophysiology	
or BMS 792C	Seminar: Reproductive Physiology	
BMS 796A/ NB 796C	Group Study: Topics in Neuroscience	
or BMS 796B	Group Study: Cardiopulmonary Physiology	
or BMS 796C	Group Study: Reproductive Physiology	
Group B:		
BMS 792A	Seminar: Biomedical Sciences	
or BMS 792B	Seminar: Neurophysiology	
or BMS 792C	Seminar: Reproductive Physiology	
or		
BMS 796A/ NB 796C	Group Study: Topics in Neuroscience	
or BMS 796B	Group Study: Cardiopulmonary Physiology	
or BMS 796C	Group Study: Reproductive Physiology	
GRAD 544	Ethical Conduct of Research	1
Selected Courses [1]		Var.
BMS 503/NB 503	Developmental Neurobiology	
BMS 505/NB 505	Neuronal Circuits, Systems and Behavior	
BMS 545	Neuroanatomy	
BMS 631	Mechanisms of Hormone Action	
BMS 632	Metabolic Endocrinology	
BMS 640	Reproductive Physiology and Endocrinology	
BMS 642	Research Techniques for Gametes and Embryos	
BMS 795A	Independent Study: Endocrinology	
BMS 795B	Independent Study: Neurophysiology	
BMS 795C	Independent Study: Cell Physiology	
BMS 795D	Independent Study: Cardiopulmonary Physiology	
BMS 795E	Independent Study: Reproductive Physiology	
BMS 796A/ NB 796C	Group Study: Topics in Neuroscience	
BMS 796B	Group Study: Cardiopulmonary Physiology	
BMS 796C	Group Study: Reproductive Physiology	
NB 502/CM 502	Techniques in Molecular & Cellular Biology	
NB 771	Writing, Submitting, and Reviewing Grants	
NB 793	Neuroscience Seminar	
NB 796A	Group Study: Ion Channels	
NB 796B	Group Study: Neuronal Growth and Regeneration	
NB 796D	Group Study: Seizures and Epilepsy	
NB 796E	Group Study: Neuroendocrine Mechanisms	
STAT 511A	Design and Data Analysis for Researchers I: R Software	
or STAT 511B	Design and Data Analysis for Researchers I: SAS Software	
STAT 512	Design and Data Analysis for Researchers II	
Dissertation		
BMS 799	Dissertation	Var
Program Total Credits:		72

A minimum of 72 credits are required to complete this program.

1. Select courses with approval of advisor and graduate committee.

Department of Clinical Sciences

Office in Veterinary Teaching Hospital, 300 West Drake Road, Room A201
(970) 297-1274
vetmedbiosci.colostate.edu/cs/ (https://vetmedbiosci.colostate.edu/cs)

Professor Wayne Jensen, Department Head

Faculty in the Department of Clinical Sciences participate in training professional veterinary medical students and graduate students. For the veterinary medical student curriculum, students are instructed in the diagnosis, medical and surgical treatment, and prevention and management of domestic and exotic animal diseases. Through field service clinical experience, students receive on-the-farm training in livestock herd health management and production medicine. Our major clinical training center is the Veterinary Teaching Hospital, which operates state-of-the-art primary and referral services in all areas of small animal medicine and surgery, equine, and agricultural animal clinical care.

Undergraduate

No undergraduate major is offered.

Graduate

Graduate Programs in Clinical Sciences

Graduate programs offered in the department lead to Master of Science or Doctor of Philosophy degrees. Particular research focus areas within the department include epidemiology, musculoskeletal diseases, cancer biology, cardiovascular diseases, regenerative medicine, and infectious diseases of animals.

The department also offers a three-year combined master's degree and residency program in large and small animal surgery, anesthesiology, cardiology, dentistry, internal medicine, neurology, oncology, ophthalmology, dermatology, small and large animal sports medicine and rehabilitation, and emergency and critical care medicine. These training programs partially fulfill requirements for board certification in these specialties. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Clinical Sciences (https://vetmedbiosci.colostate.edu/cs).

Master's Program

- Master of Science in Clinical Sciences

Ph.D.

- Ph.D. in Clinical Sciences*

* Please see department for program of study.

Courses

Clinical Sciences (VS)

VS 301 Research Seminar on Human-Animal Interactions Credit: 1 (0-0-1)
Course Description: Research seminar designed to help students explore various topics and current research related to human-animal interactions. The seminar will include lectures by various faculty, online threaded discussions, and a small capstone project.
Prerequisite: None.
Registration Information: Completion of AUCC Category 2. Offered as an online course only. Credit not allowed for both VS 280A1 and VS 301.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 310 Communication Skills for Animal Professions Credits: 3 (3-0-0)
Course Description: Professional training and specifically tailored communication skills designed to meet the needs of animal professionals.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 313 Prevention and Control of Livestock Diseases Credits: 3 (3-0-0)
Also Offered As: ANEQ 313.
Course Description: Common ailments of livestock; sanitation and disease prevention and control.
Prerequisite: (ANEQ 230 or BMS 300 or ANEQ 305) and (ANEQ 310, may be taken concurrently and ANEQ 320, may be taken concurrently).
Registration Information: Junior or senior standing. Credit not allowed for both VS 313 and ANEQ 313.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VS 331 Histology Credits: 4 (3-2-0)
Course Description: Analysis of animal cells, tissues, and organs emphasizing light microscopy.
Prerequisite: BZ 100 or LIFE 102.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both VS 331 and BMS 330. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

VS 333 Domestic Animal Anatomy Credits: 4 (3-3-0)
Course Description: Comparative functional anatomy of the dog, horse, and cow.
Prerequisite: BZ 110 or LIFE 102.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both VS 333 and BMS 305. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

VS 401 Human Animal Interactions Credits: 3 (3-0-0)
Course Description: Roles animals play in society, and the impact of human and animal relationships.
Prerequisite: None.
Registration Information: Completion of AUCC Category 2. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 410 Pets Forever – Supporting the Life-Long Bond Credits: 3 (1-4-0)
Course Description: Opportunity to engage with older adults and individuals with disabilities and their companion animals. Enrichment of students' experience through the opportunity to gain community service experience.
Prerequisite: HDFS 101 or PSY 100 or SOWK 110.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

VS 479 Biology and Behavior of Dogs Credits: 3 (3-0-0)
Also Offered As: BZ 479.
Course Description: Interactions of physiology, neurobiology, and genetics on behavior of domestic dogs, and how evolution and domestication influence behavioral traits.
Prerequisite: LIFE 103 or BZ 110.
Registration Information: Credit not allowed for both VS 479 and BZ 479. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 510 Cancer Biology Credits: 3 (3-0-0)
Also Offered As: ERHS 510.
Course Description: Cancer biology will address each of the hallmarks of cancer, including sustained proliferative signaling, evasion of growth suppression, invasion and metastasis, replicative immortality, angiogenesis, resisting cell death, genome instability and mutation, tumor promoting inflammation, deregulation of cellular energetics and avoidance of immune destruction. Lectures will integrate the biology behind these hallmarks with strategies for the treatment and prevention of cancer.
Prerequisite: BC 351 or BC 403, may be taken concurrently or BZ 310 or CM 501.
Registration Information: Credit not allowed for both ERHS 510 and VS 510.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 533 Epidemiology of Infectious Diseases/Zoonoses Credits: 3 (2-0-1)
Also Offered As: MIP 533.
Course Description: Epidemiologic features of infectious and parasitic diseases that have a major impact on community medicine.
Prerequisite: MIP 300.
Registration Information: Must register for lecture and recitation. Credit not allowed for both MIP 533 and VS 533.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 562 Applied Data Analysis Credits: 3 (3-0-0)
Course Description: Data management, application and interpretation of statistical analysis, and reporting of results for students in health science fields.
Prerequisite: STAT 301 or STAT 307.
Registration Information: Credit not allowed for VS 562, EDRM 606 and PBHL 560.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 570 Issues in Animal Agriculture Credits: 2 (2-0-0)
Also Offered As: AGRI 570.
Course Description: Issues that have a major impact on the direction of changes in animal agriculture.
Prerequisite: None.
Registration Information: Credit not allowed for both VS 570 and AGRI 570.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

VS 579 Animal Behavior in Captive Populations Credits: 3 (3-0-0)
Also Offered As: NSCI 579.
Course Description: How animals learn, perceive their world and behave, and how all of those intersect to alter behavior in captive settings.
Prerequisite: BZ 300.
Registration Information: Enrollment in the M.P.N.S., Zoo, Aquarium, and Shelter Management specialization can substitute for BZ 300. Credit not allowed for both VS 579 and NSCI 579.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 602 Critical Evaluation of Scientific Literature Credits: 2 (1-0-1)
Course Description: Method of evaluating scientific literature. Students present critiques of papers they have chosen.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

VS 605 Comparative Anesthesiology Credits: 2 (2-0-0)
Course Description: Techniques in anesthesia for large and small animals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 606 Comparative Anesthesiology Laboratory Credit: 1 (0-3-0)
Course Description: Techniques in anesthesia for large and small animals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in VS 605.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 612 Plastic and Reconstructive Surgery Credits: 2 (2-0-0)
Course Description: Advances in surgical patient care, surgical instrumentation, and reconstruction.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM degree or equivalent professional medicine degree.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VS 613 Plastic and Reconstructive Surgery Laboratory Credit: 1 (0-3-0)
Course Description: Advances in surgical patient care, surgical instrumentation, and reconstruction.
Prerequisite: VM 786B.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VS 626 Infertility and Genital Disease Credits: 2 (2-0-0)
Course Description: Infectious and noninfectious causes of reproductive failure in food animals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 628 Physiology and Pathophysiology Credits: 3 (3-0-0)
Course Description: Overview of the normal physiology and pathophysiology of disease states of mammalian organ systems.
Prerequisite: BMS 500 and BMS 501.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM degree or equivalent professional medicine degree can substitute for BMS 500; BMS 501.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

VS 630 Orthopedic Surgery Credits: 3 (3-0-0)
Course Description: Techniques, devices, and prosthetic materials in rehabilitating musculoskeletal problems.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 631 Orthopedic Surgery Laboratory Credit: 1 (0-3-0)
Course Description: Procedures applied to skeletal preparations and living animals.
Prerequisite: (VM 786A or VM 786B) and (VS 630, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 642 Ophthalmology Credits: 5 (4-2-0)
Course Description: Instrumentation, ocular therapeutics, and clinical ophthalmology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VS 644 Principles of Theriogenology Credits: 2 (2-0-0)
Course Description: Provide basic and practical understanding of reproduction in domestic species. Including the anatomy and physiology of males and females, gamete development, fertilization, embryonic development, parturition and early neonatal care; focusing on domestic animals. In addition to basic normal physiology, characteristic disease states and potential treatments will be discussed, as well as methods for improving reproductive capabilities, such as artificial insemination and embryo transfer.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 645 Surgery of the Eye Credits: 3 (2-3-0)
Course Description: Techniques, indications, and complications.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 648 Food Animal Production and Food Safety Credits: 2 (2-0-0)
Also Offered As: VM 648.
Course Description: Basic orientation to food animal production units, herd health concepts, and issues of food safety from preharvest through processing and distribution.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Enrollment in Food Science/Safety Graduate Interdisciplinary Studies program required. Credit not allowed for both VS 648 and VM 648.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 650 Comparative Abdominal Surgery Credits: 3 (3-0-0)
Course Description: New techniques in surgery of abdominal viscera.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 651 Comparative Abdominal Surgery Laboratory Credit: 1 (0-3-0)
Course Description: Reparative and reconstructive abdominal surgical procedures.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM degree or equivalent professional medicine degree.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 655 Echocardiography in Veterinary Medicine Credits: 3 (2-3-0)
Course Description: Technical proficiency in obtaining echocardiographic images; fundamental understanding of diagnostic criteria for common cardiac disease in dogs and cats.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM degree or equivalent professional medicine degree required. Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

VS 660 Neurology and Neurosurgery Credits: 3 (3-0-0)
Course Description: Diagnostic and surgical techniques for the nervous system.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 661 Neurology and Neurosurgery Laboratory Credit: 1 (0-2-0)
Course Description: Laboratory practice of comparative neurology (large and small animal), neurosurgical techniques and procedures.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. DVM degree or equivalent professional medicine degree required.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 665A Advanced Topics in Veterinary Cardiology: Cardiopulmonary Pathophysiology Credits: 3 (3-0-0)
Course Description: The pathobiology, advanced diagnostics, and treatment strategies for animals and humans with spontaneous cardiovascular disease.
Prerequisite: BMS 420.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 665B Advanced Topics in Veterinary Cardiology: Heart Failure and Cardiac Biomarkers Credits: 2 (2-0-0)
Course Description: Review of the pathophysiology of heart failure. Discuss the diagnostic and therapeutic approach to heart failure. Clinical trial design will be reviewed prior to summarizing recent clinical trial results in humans and dogs.
Prerequisite: BMS 420.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM degree or equivalent professional medicine degree required, or by instructor permission.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 665C Advanced Topics in Veterinary Cardiology: Invasive Catheterization & Hemodynamics Credits: 2 (2-0-0)
Course Description: Technical aspects of cardiac catheterization, focusing on pathophysiologic data that can be obtained during invasive catheterization procedures and interventional treatment options available.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 665D Advanced Topics in Veterinary Cardiology: Cardiac Electrophysiology & Arrhythmias Credits: 2 (2-0-0)
Course Description: Advanced review of cardiac electrophysiology including ion channels, action potentials, cardiac conduction, automaticity, and cellular mechanisms of arrthythmogenesis. Interpretation of electrocardiogram and cardiac arrhythmia diagnosis in animals and humans. Basic principles of treatment of cardiac interventions including electrophysiology studies and interventions.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both VS 665D and VS 680A1.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 665E Advanced Topics in Veterinary Cardiology: Cardiovascular Imaging Credits: 2 (2-0-0)
Course Description: Highlight the pathobiology, advanced diagnostics, and treatment strategies for animals with spontaneous cardiovascular disease.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM degree or equivalent professional medicine degree required, or by instructor permission.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 665F Advanced Topics in Veterinary Cardiology: Congenital Heart Disease Credits: 2 (2-0-0)
Course Description: Overview and in-depth analysis of congenital malformations of the heart and great vessels in veterinary species, with comparison to the same diseases in humans. Complex lesions are emphasized, with a focus on pathophysiology, diagnostic findings, and therapeutic interventions.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 673 Thoracic and Cardiovascular Surgery Credits: 3 (3-0-0)
Course Description: Surgical approaches to the thorax and the central and peripheral cardiovascular system.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM degree or equivalent professional medicine degree required.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 674 Thoracic and Cardiovascular Surgery Lab Credit: 1 (0-3-0)
Course Description: Surgical procedures applied to the chest, heart, and vessels.
Prerequisite: (VM 786A or VM 786B) and (VS 673, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 701 Postgraduate Medicine I Credits: Var[1-3] (0-0-0)
Course Description: Comprehensive review, update of immunology, emergency medicine, dermatology, and endocrinology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 702 Postgraduate Medicine II Credits: Var[1-3] (0-0-0)
Course Description: Comprehensive review, update of neurology, gastroenterology, and ophthalmology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 703 Postgraduate Medicine III Credits: Var[1-3] (0-0-0)
Course Description: Comprehensive review, update of oncology, cardiology, reproduction, opthamology, and radiology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 704 Postgraduate Medicine IV Credits: Var[1-3] (0-0-0)
Course Description: Comprehensive review, update of hematology, nephrology, urology, respiratory, hepatic, and pancreatic.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 716 Advanced Studies in Reproduction Credits: 2 (2-0-0)
Course Description: Biochemical and physiological basis for problems in reproduction.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 718 Cancer Biology Clinical Practicum Credits: 2 (0-0-4)
Course Description: Exposes graduate students engaged in laboratory cancer research to cancer from a clinical perspective, through VTH clinical rotations.
Prerequisite: ERHS 510 or VS 510.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

VS 732 Veterinary Sports Medicine and Rehabilitation Credit: 1 (1-0-0)
Also Offered As: VM 732.
Course Description: An introduction to the principles and practice of sports medicine and rehabilitation in veterinary medicine.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: VM 732: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program. VS 732: DVM or equivalent professional degree or consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VS 733 Advanced Veterinary Epidemiology Credits: 4 (4-0-0)
Course Description: Advanced epidemiological and statistical techniques for the design and analysis of research projects.
Prerequisite: (ERHS 532) and (ERHS 542 or ERHS 544 or STAT 511 or STAT 512 or VS 662).
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

VS 750 Clinical and Applied Pharmacology Credits: 2 (2-0-0)
Course Description: Factors involved in drug dosing and variability of drug response. Applications in veterinary and human medicine.
Prerequisite: BMS 450.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM degree or equivalent professional medicine degree can substitute for BMS 450.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

VS 760 Methods in Orthopaedic Research Credits: 3 (2-0-1)
Course Description: Methods utilized in othopaedic research will be presented by reviewing basic principles followed by examples of use in research projects.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

VS 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 792 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795A Independent Study: Small Animal Medicine Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795B Independent Study: Large Animal Medicine Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795C Independent Study: Small Animal Surgery Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795D Independent Study: Equine Surgery Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795G Independent Study: Equine Orthopedics Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795H Independent Study: Large Animal Reproduction Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795I Independent Study: Anesthesiology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795J Independent Study: Cardiology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795K Independent Study: Neurology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795L Independent Study: Dermatology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795N Independent Study: Ophthalmology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795O Independent Study: Herd Health Management Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795P Independent Study: Equine Lameness Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795S Independent Study: Epidemiology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795T Independent Study: Human-Animal Bond Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 796 Group Study-Medicine Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Master of Science in Clinical Sciences

Requirements
Effective Fall 2006

First Year		**Credits**
Approved electives[1]		9
	Total Credits	10
Second Year		
Approved electives[1]		9
	Total Credits	10
Third Year		
Approved electives[1]		9
	Total Credits	10
	Program Total Credits:	30

A minimum of 30 credits are required to complete this program.

[1] Chosen from courses relevant to the student's residency program. At least 24 credit hours must be in regular course work. Regular course work is defined as courses other than independent or group studies, thesis/dissertation credits, supervised college teaching, unique title courses offered through the Division of Continuing Education and any courses graded pass/fail. At least 16 of the credit hours earned at CSU must be in 500-level or higher courses, and at least 12 of those 16 must be regular course work.

Department of Environmental and Radiological Health Sciences

Office in Environmental Health Building, Room 122
(970) 491-7038
vetmedbiosci.colostate.edu/erhs (https://vetmedbiosci.colostate.edu/erhs)

Professor Alexander Brandl, Interim Department Head

Undergraduate

Major

- Major in Environmental Health

Minor

- Minor in Environmental Health

Graduate

Graduate Programs in Environmental and Radiological Health Sciences

The department offers graduate programs leading to Master of Science and Doctor of Philosophy degrees in Environmental Health and Radiological Health Sciences. Areas of emphasis in environmental health include epidemiology, occupational health, industrial hygiene, ergonomics, and environmental toxicology. Areas of emphasis in Radiological Health include cancer biology, cellular and molecular radio-biology, radiation oncology, radiation protection/health physics, radiochemistry, radioecology, and veterinary radiology. Students interested in graduate work should refer to the Academic Policies, Guidelines and Requirements for Graduate Students (http://csu-cvmbs.colostate.edu/Documents/erhs-graduate-student-handbook.pdf) and the Department of Environmental and Radiological Health Sciences (https://vetmedbiosci.colostate.edu/erhs).

Master's Programs

- Master of Science in Environmental Health, Plan B, Environmental Health and Safety Specialization
- Master of Science in Environmental Health, Plan A, Epidemiology Specialization
- Master of Science in Environmental Health, Plan B, Epidemiology Specialization
- Master of Science in Environmental Health, Ergonomics Specialization (No new students are being accepted into this specialization.)
- Master of Science in Environmental Health, Industrial Hygiene Specialization, Plan A
- Master of Science in Environmental Health, Industrial Hygiene Specialization, Plan B
- Master of Science in Environmental Health, Occupational Ergonomics and Safety Specialization, Plan A
- Master of Science in Radiological Health Sciences, Plan A, Health Physics Specialization
- Master of Science in Radiological Health Sciences, Plan B, Health Physics Specialization
- Master of Science in Toxicology, Plan A
- Master of Science in Toxicology, Plan B

Ph.D.

- Ph.D. in Environmental Health, Epidemiology Specialization
- Ph.D. in Environmental Health, Ergonomics Specialization (No new students are being accepted into this specialization.)
- Ph.D. in Environmental Health, Industrial Hygiene Specialization
- Ph.D. in Environmental Health, Occupational Ergonomics and Safety Specialization
- Ph.D. in Radiological Health Sciences*
- Ph.D. in Toxicology

* Please see department for program of study.

Courses
Environmental and Radiological Health Services (ERHS)

ERHS 174 Freshman Scholar Credit: 1 (1-0-0)
Course Description: Scholarship-supported exploration of biomedical research theory and practice.
Prerequisite: None.
Registration Information: Admission to CVMBS Freshman Scholar's Program required. Up to 2 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 192 Environmental Health First Year Seminar Credit: 1 (1-0-0)
Course Description: Introduction to biosciences, college life, learning skills, problem solving, and degree planning.
Prerequisite: None.
Registration Information: Freshman standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 210 Cancer Biology, Medicine, and Society Credits: 2 (2-0-0)
Course Description: A broad overview of cancer biology and cancer medicine.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 220 Environmental Health Credits: 3 (3-0-0)
Course Description: Impact of people on the physical and biological environment as well as impact of the environment on people; emphasis placed on human health.
Prerequisite: BZ 101, may be taken concurrently or BZ 104, may be taken concurrently or BZ 110, may be taken concurrently or BZ 120, may be taken concurrently or LIFE 102, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 230 Environmental Health Field Methods Credits: 3 (0-6-0)
Course Description: Field and laboratory techniques necessary for practice of environmental health.
Prerequisite: CHEM 113 with a minimum grade of C and CHEM 114 with a minimum grade of C.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ERHS 320 Environmental Health--Water Quality Credits: 3 (3-0-0)
Course Description: Identify natural and man-made contaminants that impact water quality and human health; biological, chemical, and physical treatment techniques used to protect water quality.
Prerequisite: MIP 300, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 332 Principles of Epidemiology Credits: 3 (3-0-0)
Course Description: Use of epidemiological methods in studying distribution of diseases in human populations.
Prerequisite: (STAT 301, may be taken concurrently or STAT 307, may be taken concurrently) and (MIP 300, may be taken concurrently).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 350 Principles of Occupational Safety and Health Credits: 3 (3-0-0)
Course Description: Industrial and airborne hazards, disease prevention, hazard control and evaluation.
Prerequisite: (BMS 300) and (CHEM 245 or CHEM 341) and (ERHS 230) and (PH 121 or PH 141).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 400 Radiation Safety Credits: 3 (3-0-0)
Course Description: Radiation physics, dosimetry, radiation measurement, emergencies and waste management. Essentials of radiation safety.
Prerequisite: CHEM 112 and ERHS 450 and PH 122.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 405 Fundamentals of Ergonomics Credits: 2 (2-0-0)
Course Description: Basic skills, knowledge, and abilities in ergonomics; focus on musculoskeletal injury prevention.
Prerequisite: None.
Registration Information: One college-level animal biology or anatomy/physiology or engineering design course or concurrent registration. Offered as an online course only. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 410 Environmental Health-Air and Waste Management Credits: 3 (3-0-0)
Course Description: Preventing and managing hazards from air pollution sources and handling waste; administrative management for air and waste programs.
Prerequisite: (CHEM 245, may be taken concurrently or CHEM 341, may be taken concurrently or CHEM 346, may be taken concurrently) and (ERHS 230).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 430 Human Disease and the Environment Credits: 3 (2-0-1)
Course Description: Overview of the human diseases which are associated with the environment.
Prerequisite: (BMS 300 or BMS 360) and (MIP 300) and (STAT 301 or STAT 307).
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 446 Environmental Toxicology Credits: 3 (3-0-0)
Course Description: Essentials of environmental toxicology based on problem-oriented discussions addressing environmental impacts of organic/inorganic chemicals.
Prerequisite: CHEM 245 or CHEM 343 or CHEM 346.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 448 Environmental Contaminants: Exposure and Fate Credits: 3 (3-0-0)
Course Description: Pathways of exposure and behavior of environmental contaminants. Exposure assessment in environmental health protection.
Prerequisite: (CHEM 245 or CHEM 341 or CHEM 345) and (LIFE 102).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 450 Introduction to Radiation Biology Credits: 3 (3-0-0)
Course Description: Genetic and somatic effects of radiation on cells, tissues, and the whole organism; tumor therapy; carcinogenesis; risks vs. benefits of radiation.
Prerequisite: LIFE 102.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 479 Environmental Health Practice Credit: 1 (0-0-1)
Course Description: Networking, preparation of resume and statement of qualifications for professional internship or employment.
Prerequisite: ERHS 230, may be taken concurrently.
Registration Information: Written consent of instructor. This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Assist with environmental health course teaching under guidance of faculty in classroom, laboratory or field.
Prerequisite: ERHS 220 and ERHS 230.
Restriction: Must be a: Undergraduate.
Registration Information: Sophomore standing. Written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted toward graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 487 Internship-Environmental Health Credits: Var[4-7] (0-0-0)
Course Description: Professional field practice in environmental health with a public or private sector agency.
Prerequisite: ERHS 479.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 494 Independent Study in Environmental Health Credits: Var[1-18] (0-0-0)
Course Description: Directed independent study or project under faculty guidance.
Prerequisite: ERHS 220.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 498 Research Credits: Var[1-4] (0-0-0)
Course Description: Research in environmental and radiological health sciences.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 502 Fundamentals of Toxicology Credits: 3 (3-0-0)
Course Description: Fundamental principles of toxicology; dose-response, organ targets, toxic agents.
Prerequisite: (BMS 300 or BMS 360) and (CHEM 245 or CHEM 341 or CHEM 345).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 503 Toxicology Principles Credit: 1 (1-0-0)
Course Description: Principles of toxicology for applications in industrial hygiene and environmental public health.
Prerequisite: CHEM 113 and LIFE 102.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 504 Occupational and Environmental Toxicology Credits: 2 (2-0-0)
Course Description: Toxic effects of harmful agents found in occupational and environmental settings.
Prerequisite: ERHS 446 or ERHS 502 or ERHS 503, may be taken concurrently.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 505 Epidemiologic Research Credit: 1 (1-0-0)
Course Description: Professional skills and knowledge regarding topics in the epidemiologic research process.
Prerequisite: ERHS 532, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 507A Toxicology Toolbox: Fundamentals Credit: 1 (1-0-0)
Course Description: Qualitative description of toxicant molecules relevant to their behavior in biological systems and the environment. Quantitative characterization of toxicant concentrations (dose) and how they change with time (toxicokinetics).
Prerequisite: ERHS 446, may be taken concurrently or ERHS 448, may be taken concurrently or ERHS 502, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 507B Toxicology Toolbox: Metabolism and Disposition Credit: 1 (1-0-0)
Course Description: Qualitative and quantitative description of toxicant molecules and the consequences of molecular alterations resulting from biotransformation. The role of reactive molecules in toxic effects. Quantification of toxicant behavior in biological systems.
Prerequisite: ERHS 502 or ERHS 504, may be taken concurrently or ERHS 601.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 510 Cancer Biology Credits: 3 (3-0-0)
Also Offered As: VS 510.
Course Description: Cancer biology will address each of the hallmarks of cancer, including sustained proliferative signaling, evasion of growth suppression, invasion and metastasis, replicative immortality, angiogenesis, resisting cell death, genome instability and mutation, tumor promoting inflammation, deregulation of cellular energetics and avoidance of immune destruction. Lectures will integrate the biology behind these hallmarks with strategies for the treatment and prevention of cancer.
Prerequisite: BC 351 or BC 403, may be taken concurrently or BZ 310 or CM 501.
Registration Information: Credit not allowed for both ERHS 510 and VS 510.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 515 Non-Ionizing Radiation Safety Credits: 2 (2-0-0)
Course Description: Evaluation and safe use of non-ionizing radiation sources. Calculation of safe distances for exposure and maximum permissible exposures.
Prerequisite: (CHEM 107 or CHEM 113) and (MATH 118) and (PH 122 or PH 142).
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 520 Environmental and Occupational Health Issues Credits: 3 (3-0-0)
Course Description: Issues in environmental and occupational health sciences in the context of public health and regulatory concerns.
Prerequisite: BZ 110 or CHEM 103 or CHEM 107 or CHEM 111 or ERHS 220 or LIFE 102.
Registration Information: Admission to the Master of Public Health program can be substituted for LIFE 102. Sections may be offered: Online. Credit not allowed for both ERHS 520 and PBHL 530.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 526 Industrial Hygiene Credits: 3 (3-0-0)
Course Description: Theory and application of industrial hygiene principles to management of the occupational environment.
Prerequisite: (CHEM 245 or CHEM 341 or CHEM 345) and (ERHS 520, may be taken concurrently) and (PH 110 or PH 121).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 527 Industrial Hygiene Laboratory Credit: 1 (0-3-0)
Course Description: Industrial hygiene field monitoring equipment and techniques.
Prerequisite: ERHS 526, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 528 Occupational Safety Credits: 3 (3-0-0)
Course Description: Introduction to occupational safety hazard recognition and control.
Prerequisite: ERHS 350.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 530 Radiological Physics and Dosimetry I Credits: 3 (3-0-0)
Course Description: Theory and detection of ionizing radiation; measurement and calculation of exposure and dose.
Prerequisite: (MATH 155 or MATH 160) and (PH 122).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 531 Nuclear Instruments and Measurements Credits: 2 (1-3-0)
Course Description: Instrument systems for measurements and identification of ionizing radiations.
Prerequisite: ERHS 530, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 532 Epidemiologic Methods Credits: 3 (2-0-1)
Course Description: Method of epidemiologic investigation and study design. Applications to disease control with literature examples.
Prerequisite: ERHS 307 or STAT 307.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 534 SAS and Epidemiologic Data Management Credits: 3 (3-0-0)
Course Description: Basic concepts and skills necessary for data management and analyses using SAS programming in epidemiology studies.
Prerequisite: None.
Registration Information: Graduate standing in Environmental Health.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 535 R Programming for Research Credits: 3 (2-2-0)
Course Description: In-depth instruction on data collection, data management, programming, and visualization, using data examples relevant to academic research. Taught using the statistical programming language R, but the principles will be translatable to other programming languages (e.g., Python, Matlab, SAS). Conducting reproducible research in R and how to construct custom functions and bundle these in a shareable R package.
Prerequisite: None.
Registration Information: Graduate standing. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 536 Advanced Occupational Health Credits: 3 (3-0-0)
Course Description: Advanced topics in occupational health emphasizing contemporary issues, topics, trends, and problems in the field of industrial hygiene.
Prerequisite: ERHS 446 or ERHS 526.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 538 Geographic Information Systems and Health Credits: 3 (1-3-1)
Course Description: Applications of geographic information systems (GIS) in public health. Topics include geographic theory, spatial data, cartography, data visualization, spatial analysis, geocoding, primary and secondary data acquisition, and application of GIS for epidemiologic analyses.
Prerequisite: ERHS 532.
Registration Information: Must register for lecture, lab, and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 540 Principles of Ergonomics Credits: 3 (3-0-0)
Course Description: Theory and practice of ergonomics.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 541 Ergonomics in Product and Process Design Credits: 3 (3-0-0)
Course Description: Application of ergonomics to design of products and processes with respect to health, safety, function, and quality.
Prerequisite: ERHS 540.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 542 Biostatistical Methods for Qualitative Data Credits: 3 (3-0-0)
Course Description: Statistical analysis of categorical data as obtained in epidemiology, toxicology, occupational health, and clinical sciences.
Prerequisite: STAT 301 or ERHS 307 or STAT 307.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 544 Biostatistical Methods for Quantitative Data Credits: 3 (3-0-0)
Also Offered As: STAT 544.
Course Description: Regression and analysis of variance methods applied to both observational studies and designed experiments in the biological sciences.
Prerequisite: STAT 301 or ERHS 307 or STAT 307.
Registration Information: Credit not allowed for both ERHS 544 and STAT 544.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 546 Environmental Exposure Assessment Credits: 2 (2-0-0)
Course Description: Approaches and techniques for quantitative characterization of environmental exposure to harmful agents via inhalation, ingestion, and dermal pathways.
Prerequisite: CHEM 113.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 547 Equipment and Instrumentation Credits: 3 (0-6-0)
Course Description: Sample collection, quality control, theory and application of equipment and instrumentation for analysis and confirmation of organic-inorganic chemicals.
Prerequisite: ERHS 446 or ERHS 502.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ERHS 549 Environmental Health Risk Assessment Credits: 3 (3-0-0)
Course Description: Environmental contamination and health effects of chemicals using risk assessment, management and communication approaches.
Prerequisite: ERHS 332 or ERHS 446 or ERHS 502 or ERHS 503 or ERHS 532.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 550 Principles of Radiation Biology Credits: 5 (5-0-0)
Course Description: Dose-response relationships; physical, chemical, and biological modification of radiation damage; radiation oncology; radiation genetics and oncogenesis.
Prerequisite: (BZ 310) and (ERHS 450 or ERHS 530).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 551A Radiation Biology Principles for Medicine: Principles of Radiation Biology Credits: 2 (2-0-0)
Course Description: Biological responses to radiation exposure; DNA damage and repair, cell killing and survival, carcinogenesis and genetic effects.
Prerequisite: BZ 310.
Registration Information: Credit not allowed for both ERHS 551A and ERHS 550. Offered only online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 551B Radiation Biology Principles for Medicine: Principles of Radiation Oncology Credits: 2 (2-0-0)
Course Description: Application of basic radiation biology to the clinical application of radiation therapy. Radiation sensitivity and tolerance is evaluated based on normal tissue architecture and kinetics. The mechanisms of acute and late radiation effects are elucidated. The impact of time, dose, and fractionation on tumor control and radiation effects are clarified and related to established and newer treatment modalities, including combination therapies and emerging technologies.
Prerequisite: ERHS 551A.
Registration Information: Credit not allowed for both ERHS 551B and ERHS 550. Offered only online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 551C Radiation Biology Principles for Medicine: Principles of Radiation Protection Credit: 1 (1-0-0)
Course Description: Radiation risk assessment and protection; risk versus benefit associated with environmental and medical exposures.
Prerequisite: ERHS 551B.
Registration Information: Credit not allowed for both ERHS 551C and ERHS 550. Offered only online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 555 Quantitative Methods for Radiation Safety Credits: 3 (3-0-0)
Course Description: Analytical methods used in health physics, radioecology and radiochemistry. Quantification of uncertainty in radioactive samples and dosimetry.
Prerequisite: ERHS 530, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 556 Monte Carlo Methods in Health Physics Credits: 3 (3-0-0)
Course Description: Monte Carlo methods for the assessment of complex systems or macroscopic quantities on basis of statistical nature of microscopic components.
Prerequisite: ERHS 530, may be taken concurrently.
Registration Information: Eligibility for access to government software.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 561 Radiation Public Health Credits: 2 (2-0-0)
Course Description: Aspects of radiation public health for students in health physics with emphasis on contemporary issues in radiation protection.
Prerequisite: ERHS 400 and ERHS 450 or ERHS 530 and ERHS 550, may be taken concurrently.
Registration Information: ERHS 400 with written consent of instructor or ERHS 530.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 563 Environmental Contaminant Modeling I Credits: 2 (2-0-0)
Course Description: Mathematical modeling of radionuclide and chemical transport in aquatic and terrestrial ecosystems.
Prerequisite: MATH 155.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ERHS 565 Chemical and Biological Warfare Agents Credits: 2 (2-0-0)
Course Description: Current understanding of chemical and biological agents used in asymmetric warfare.
Prerequisite: CHEM 245 or CHEM 346.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 566 Forensic Toxicology Credits: 3 (2-2-0)
Course Description: Toxic effects of commonly encountered abused substances and laboratory methods to identify and measure these.
Prerequisite: CHEM 245 or CHEM 343 or CHEM 346.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ERHS 567 Cell and Molecular Toxicology Techniques Credits: 3 (0-6-0)
Course Description: Hands-on techniques exposure to molecular toxicology.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ERHS 568 Pharmaceutical and Regulatory Toxicology Credits: 3 (3-0-0)
Course Description: Toxicology as applied in public (regulatory) and private (pharmaceutical, industrial) sectors.
Prerequisite: ERHS 502.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 569 Immunotoxicology Credits: 3 (2-0-1)
Course Description: Must register for lecture and recitation.
Prerequisite: ERHS 446 and MIP 342 or ERHS 502 or ERHS 503.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 570 Radioecology Credits: 2 (2-0-0)
Course Description: Environmental transport and exposure assessment of radioactive and other contaminants; estimating risk for human health and ecological impacts.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ERHS 595B Independent Study: Large Animal Radiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595D Independent Study: Radiation Therapy Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595E Independent Study: Radiation Physics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595F Independent Study: Dosimetry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595G Independent Study: Radiation Chemistry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595H Independent Study: Radiation Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595I Independent Study: Radiological Health Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595J Independent Study: Radiation Ecology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595K Independent Study: Microcomputer Analysis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 596C Group Study: Toxicology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 601 Metabolism and Disposition of Toxic Agents Credits: 3 (3-0-0)
Course Description: Metabolism of toxic agents and effects on their fate in the body. Covalent and non-covalent interactions with cellular targets.
Prerequisite: ERHS 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 602 Toxicological Mechanisms Credits: 3 (3-0-0)
Course Description: Role of cellular information systems in toxic mechanisms: DNA expression, signal transduction and control of cellular processes.
Prerequisite: ERHS 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 603 Toxicological Pathology Credits: 3 (3-0-0)
Course Description: Toxicological study of pharmacologic, chemical and environmental agents and resulting morphologic and cellular changes.
Prerequisite: BMS 300 or BMS 360.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 611 Cancer Genetics Credits: 2 (2-0-0)
Course Description: Role of genetic background in determining individual susceptibility to cancer.
Prerequisite: BZ 350 or MIP 450.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 630 Radiological Physics and Dosimetry II Credits: 3 (3-0-0)
Course Description: Calculations and measurement techniques for dosimetry shielding and protection from ionizing radiations.
Prerequisite: ERHS 530.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 632 Techniques in Radiation Dosimetry Credit: 1 (0-3-0)
Course Description: Techniques for determining the absorbed dose in tissue from ionizing radiations.
Prerequisite: ERHS 630, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 633 Radiation Detection Methods in Radiobiology Credit: 1 (0-3-0)
Course Description: Detection and measurement of ionizing radiation appropriate for radiobiologists.
Prerequisite: ERHS 630, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 636 Industrial Hygiene Control Methods Credits: 3 (3-0-0)
Course Description: Controlling occupational exposures to chemical agents, emphasizing local exhaust ventilation; personal protective devices.
Prerequisite: ERHS 526 and ERHS 536, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 637 Environment, Safety, and Health Management Credits: 3 (3-0-0)
Course Description: Environment, safety, and health management systems for occupational health practitioners; major environmental and DOT regulatory standards and laws.
Prerequisite: ERHS 526.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 640 Advanced Epidemiology Credits: 3 (3-0-0)
Course Description: In-depth exploration of advanced epidemiologic methods.
Prerequisite: ERHS 532.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 642 Applied Logistic Regression Credits: 3 (3-0-0)
Course Description: Basic and advanced concepts of logistic regression with focus on practical applications in epidemiology using SAS.
Prerequisite: ERHS 532 and ERHS 542.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 656 Occupational Noise Control Credits: 3 (3-0-0)
Course Description: Measurement and control of industrial or environmental noise emphasizing practical solutions.
Prerequisite: ERHS 527.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 658 Environmental/Occupational Epidemiology Credits: 3 (2-0-1)
Course Description: Epidemiologic analyses of effects of exposure to environmental and occupational health hazards.
Prerequisite: ERHS 532.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 665 Radiochemistry Credits: 3 (2-3-0)
Course Description: Radionuclide separation and measurement and radiotracer applications in physical and biological systems.
Prerequisite: (CHEM 114 and MATH 155) and (ERHS 530, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 670 Directed Readings Credits: Var[1-3] (0-0-0)
Course Description: Advanced study through supervised readings on specialized topics.
Prerequisite: ERHS 520.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 671 Experimental Radioecology Credit: 1 (0-3-0)
Course Description: Experimental techniques used in radioecological and environmental radioactivity studies.
Prerequisite: (ERHS 400 or ERHS 532) and (ERHS 570).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ERHS 675 Environmental Health Regulatory Compliance Credits: 3 (3-0-0)
Course Description: Requirements and strategies for meeting obligations under regulations and laws involved in environmental and occupational health protection.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: 15 credits of ERHS courses 500-level or above or written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 679 Occ Env Health Interdisciplinary Symposium Credits: 2 (0-0-2)
Course Description: Evaluation of occupational and environmental health issues, through multidisciplinary interactions in seminars and field visits.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in a graduate program related to occupational, environmental, or public health. May be repeated for credit. Required field trips.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ERHS 684 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Participation in environmental health course teachings under guidance of faculty in classroom, laboratory, or field.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 687 Internship Credits: Var[1-6] (0-0-0)
Course Description: Advanced study or research in environmental health with a governmental agency, private sector entity, or research facility.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 692 Seminar Credit: 1 (0-0-1)
Course Description: Professional seminar series with student interaction on weekly basis; topics presented by outside experts, faculty, or doctoral candidates.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 693A Research Seminar: Epidemiology Credit: 1 (0-0-1)
Course Description: Presentation of student research and discussion of publications from scientific literature.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 693B Research Seminar: Industrial Hygiene Credit: 1 (0-0-1)
Course Description: Presentation of student research and discussion of publications from scientific literature.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 693C Research Seminar: Toxicology Credit: 1 (0-0-1)
Course Description: Presentation of student research and discussion of publications from scientific literature.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 693D Research Seminar: Health Physics Credit: 1 (0-0-1)
Course Description: Presentation of student research and discussion of publications from scientific literature.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ERHS 695A Independent Study: Epidemiology Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in epidemiology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695B Independent Study: Occupational and Environmental Health Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in occupational and environmental health under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695C Independent Study: Toxicology Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in toxicology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695D Independent Study: Radiation Chemistry Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in radiation chemistry under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695E Independent Study: Radiation Ecology Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in radiation ecology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695F Independent Study: Cancer Biology Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in cancer biology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695G Independent Study: Health Physics Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in health physics under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695H Independent Study: Exposure Assessment Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in exposure assessment under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695I Independent Study: Small Animal Radiology Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in small animal radiology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695J Independent Study: Large Animal Radiology Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in large animal radiology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695K Independent Study: Special Techniques in Radiology Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in special techniques in radiology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695L Independent Study: Radiation Therapy Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in radiation therapy under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695M Independent Study: Computed Tomography Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in computed tomography under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695N Independent Study: Magnetic Resonance Imaging Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in magnetic resonance imaging under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695O Independent Study: Ultrasound Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in ultrasound under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695P Independent Study: Nuclear Medicine Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in nuclear medicine under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 696A Group Study: Epidemiology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: ERHS 520.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 696B Group Study: Industrial Hygiene Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: ERHS 520.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 696C Group Study: Toxicology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 696D Group Study: Health Physics Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: ERHS 530.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 698 Research Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 701 Advanced Diagnostic Imaging Modalities Credits: 4 (4-0-0)
Course Description: Interpretation/applications of advanced imaging methods including ultrasound, nuclear medicine, magnetic resonance imaging and computed tomography.
Prerequisite: VM 786A or VM 786B.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 701A Advanced Diagnostic Imaging Modalities: Small Animal Imaging Credits: 3 (3-0-0)
Course Description: Interpretation/applications of advanced imaging methods as applied to small animals including ultrasound, nuclear medicine, magnetic resonance imaging and computed tomography.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Credit allowed for only one of the following courses: ERHS 701, ERHS 701A, or ERHS 701C. Credit is allowed for both ERHS 701A and ERHS 701B.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 701B Advanced Diagnostic Imaging Modalities: Large Animal Credit: 1 (1-0-0)
Course Description: Interpretation/applications of advanced imaging methods as applied to large animals including ultrasound, nuclear medicine, magnetic resonance imaging and computed tomography.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Credit allowed for only one of the following courses: ERHS 701, ERHS 701B, or ERHS 701C. Credit is allowed for both ERHS 701A and ERHS 701B.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 701C Advanced Diagnostic Imaging Modalities: Small and Large Animal Imaging Credits: 4 (4-0-0)
Course Description: Interpretation/applications of advanced imaging methods including ultrasound, nuclear medicine, magnetic resonance imaging and computed tomography. Covers both small and large animal imaging.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ERHS 701 and ERHS 701C. Students registering for ERHS 701C may not also receive credit for either ERHS 701A and/or ERHS 701B.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 711 Advanced Radiographic Interpretation Credits: Var[1-4] (0-0-0)
Course Description: Radiographic interpretation of disease processes of all major systems in large and small animals.
Prerequisite: VM 786A or VM 786B.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 712 Physics of Diagnostic Imaging Credits: 3 (3-0-0)
Course Description: Physics of imaging for radiology, ultrasound, computerized tomography, magnetic resonance, and nuclear medicine.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM or equivalent professional veterinary medicine degree required.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 714 Radiation Therapy Physics Credits: 3 (3-0-0)
Course Description: Radiation therapy physics, photon and electron production for therapeutic use, teletherapy, brachytherapy, radiation protection and quality assurance.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM or health physics, physics, or engineering graduate student.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 721 Radiation Oncology Credits: Var[1-3] (0-0-0)
Course Description: Management of spontaneous and experimental tumors with emphasis on radiation therapy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 726 Aerosols and Environmental Health Credits: 3 (3-0-0)
Course Description: Properties and behavior of environmental and occupational aerosols emphasizing how airborne particles affect health of humans and the environment.
Prerequisite: PH 141.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 730 Principles of Flow Cytometry & Cell Sorting Credits: 2 (1-2-0)
Also Offered As: MIP 730.
Course Description: Explores the background of flow cytometry, fluorescent molecules, experimental design, Flow Cytometry data Analysis, applications, and principles of cell sorting.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. This is a partial semester course. Credit not allowed for both ERHS 730 and MIP 730.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 733 Environmental Carcinogenesis Credits: 3 (3-0-0)
Course Description: Molecular and cellular mechanisms by which environmental carcinogens exert effects.
Prerequisite: BC 403.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 751 Advanced Radiation Biology I Credits: 3 (3-0-0)
Course Description: Molecular and cellular mechanisms of radiation damage and repair; mammalian radiation genetics.
Prerequisite: ERHS 550.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 753 Advanced Radiation Biology II Credits: 3 (3-0-0)
Course Description: Perturbations in cell cycle and cell population growth kinetics by radiation; radiation effects on normal tissues; radiation oncogenesis.
Prerequisite: ERHS 550.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 765 Environmental Contaminant Modeling II Credit: 1 (0-3-0)
Course Description: Development and analysis of advanced computer models for radionuclide and chemical transport in aquatic and terrestrial ecosystems.
Prerequisite: ERHS 563 and ERHS 570.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ERHS 770 Radiation Biology Basic to Tumor Therapy Credit: 1 (0-0-1)
Course Description: Current aspects of radiation biology pertinent to improvements in radiation therapy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ERHS 784 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 786 Practicum Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: ERHS 530.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 787 Internship Credits: Var[1-6] (0-0-0)
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 792 Seminar Credit: 1 (0-0-1)
Course Description: Professional seminar series with student interaction on weekly basis; topics presented by outside experts, faculty, or doctoral candidates.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 793 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795A Independent Study: Epidemiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795B Independent Study: Occupational and Environmental Health Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795C Independent Study: Toxicology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795D Independent Study: Radiation Chemistry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795E Independent Study: Radiation Ecology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795F Independent Study: Cancer Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795G Independent Study: Health Physics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795H Independent Study: Exposure Assessment Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795I Independent Study: Small Animal Radiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795J Independent Study: Large Animal Radiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795K Independent Study: Special Techniques in Radiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795L Independent Study: Radiation Therapy Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795M Independent Study: Computed Tomography Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795N Independent Study: Magnetic Resonance Imaging Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795O Independent Study: Ultrasound Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795P Independent Study: Nuclear Medicine Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 796 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description: Doctoral-level research and preparation of dissertation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Environmental Health

Environmental Health is a branch of public health that studies how biological, chemical, and physical factors in natural and built environments impact human health and disease. Students will learn how to help prevent injuries and disease by managing environmental hazards and promoting healthier air, water, soil, homes, workplaces, and communities. The degree program is one of only 30 programs nationwide to be fully accredited by the standards of the **National Environmental Health Science and Protection Accreditation Council**, and the only such program in Colorado.

The Environmental Health degree prepares students for immediate employment in the public and private sector as well as graduate study in toxicology, epidemiology, industrial hygiene & occupational health, public health, and related biomedical and health fields. The basic science requirements for the major will meet admission requirements for accredited medical and veterinary medical schools in North America.

Students begin their studies with foundational science courses in biology, physics, general chemistry, organic chemistry, biochemistry, microbiology, physiology, calculus, and statistics, and then use these basic sciences as tools to solve environmental health problems. Students are involved in actual and simulated field projects with data gathering and analysis, characterization of environmental health problems, evaluation of alternative solutions, and presentation of results in written and oral formats. All Environmental Health students complete a professional internship for academic credit with a private sector company, public health agency, or research entity (public or private). Read about **Environmental Health student internships** (http://csu-cvmbs.colostate.edu/academics/erhs/Pages/Environmental-Health-Internships.aspx) on the department website.

Learning Outcomes

Students will:

- Effectively communicate the health consequences of actions, behaviors, or environmental degradation to the public, political community, legal experts, or the media
- Demonstrate critical thinking and problem solving abilities for environmental health issues as an individual and as a member of a problem solving team
- Integrate knowledge in social, physical, and biological sciences to evaluate environmental health issues
- Apply knowledge of scientific methods to evaluate compliance with environmental health standards and assess risks to workers and the public

Potential Occupations

Career opportunities include, but are not limited to: environmental health specialist, public health specialist, industrial hygienist, toxicologist, epidemiologist, air and water pollution specialist, hazardous and solid waste specialist, occupational safety specialist, environmental consultant, and health educator. More information on career opportunities (http://csu-cvmbs.colostate.edu/academics/erhs/Pages/Careers-Environmental-and-Radiological-Health-Science.aspx) can be found on the department website.

Requirements Effective Fall 2019

Freshman

		AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CO 150	College Composition (GT-CO2)	1A	3
ERHS 220	Environmental Health		3
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
MIP 260	The World of Parasites		3
Select a minimum of 3 credits from the following:			3-4
MATH 117	College Algebra in Context I (GT-MA1)	1B	

MATH 118	College Algebra in Context II (GT-MA1)	1B	
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	
MATH 125	Numerical Trigonometry (GT-MA1)	1B	
MATH 126	Analytic Trigonometry (GT-MA1)	1B	
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	
Arts and Humanities		3B	3
	Total Credits		28-29

Sophomore

BMS 300	Principles of Human Physiology		4
ERHS 230	Environmental Health Field Methods		3
MIP 300	General Microbiology		3
MIP 302	General Microbiology Laboratory		2
PH 121	General Physics I (GT-SC1)	3A	5
STAT 307	Introduction to Biostatistics		3
Select one group from the following:			8
Group A			
CHEM 245	Fundamentals of Organic Chemistry		
CHEM 246	Fundamentals of Organic Chemistry Laboratory		
ERHS 448 or CHEM 338	Environmental Contaminants: Exposure and Fate Environmental Chemistry		
Group B			
CHEM 341	Modern Organic Chemistry I		
CHEM 343	Modern Organic Chemistry II		
CHEM 344	Modern Organic Chemistry Laboratory		
Social and Behavioral Sciences		3C	3
	Total Credits		31

Junior

BC 351	Principles of Biochemistry		4
ERHS 320	Environmental Health--Water Quality	4A	3
ERHS 332	Principles of Epidemiology		3
ERHS 350	Principles of Occupational Safety and Health		3
ERHS 479	Environmental Health Practice	4C	1
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
Select one course from the following:			3
FTEC 400	Food Safety		
MIP 334	Food Microbiology		
Arts and Humanities		3B	3
Historical Perspectives		3D	3
	Total Credits		26

Senior

ERHS 410	Environmental Health-Air and Waste Management	4B	3
ERHS 430	Human Disease and the Environment		3
ERHS 446	Environmental Toxicology		3
ERHS 450	Introduction to Radiation Biology		3
ERHS 487	Internship-Environmental Health	4C	4
Diversity and Global Awareness		3E	3

Program Electives[1]		5
Electives[2]		10-11
	Total Credits	34-35
	Program Total Credits:	120

1 Must be related to major and approved by an ERHS key advisor.

2 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
CO 150	College Composition (GT-CO2)			1A	3
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	4
Select 0-1 credits from the following:					0-1
MATH 117	College Algebra in Context I (GT-MA1)			1B	
MATH 118	College Algebra in Context II (GT-MA1)			1B	
MATH 124	Logarithmic and Exponential Functions (GT-MA1)			1B	
MATH 125	Numerical Trigonometry (GT-MA1)			1B	
MATH 126	Analytic Trigonometry (GT-MA1)			1B	
Arts and Humanities				3B	3
	Total Credits				15-16

Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II	X			3
CHEM 114	General Chemistry Lab II	X			1
ERHS 220	Environmental Health		X		3
MIP 260	The World of Parasites				3
Select 2-4 credits from the following (not previously taken):					2-4
MATH 117	College Algebra in Context I (GT-MA1)			1B	
MATH 118	College Algebra in Context II (GT-MA1)			1B	
MATH 124	Logarithmic and Exponential Functions (GT-MA1)			1B	
MATH 125	Numerical Trigonometry (GT-MA1)			1B	
MATH 126	Analytic Trigonometry (GT-MA1)			1B	
MATH 155	Calculus for Biological Scientists I (GT-MA1)			1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)			1B	
A minimum of 3 credits of Quantitative Reasoning must be completed by the end of semester 2.		X			
	Total Credits				12-14

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
BMS 300	Principles of Human Physiology				4
ERHS 230	Environmental Health Field Methods		X		3
PH 121	General Physics I (GT-SC1)		X	3A	5
Select one group from the following:					3-5
Group A					
CHEM 245	Fundamentals of Organic Chemistry				
CHEM 246	Fundamentals of Organic Chemistry Laboratory				
Group B					
CHEM 341	Modern Organic Chemistry I	X			

ERHS 220 must be completed by end of Semester 3.		X			
	Total Credits				15-17
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
MIP 300	General Microbiology	X			3
MIP 302	General Microbiology Laboratory				2
STAT 307	Introduction to Biostatistics				3
Select the same Group (A or B) as selected Semester 3:					3-5
Group A					
ERHS 448 or CHEM 338	Environmental Contaminants: Exposure and Fate Environmental Chemistry				
Group B					
CHEM 343	Modern Organic Chemistry II	X			
CHEM 344	Modern Organic Chemistry Laboratory	X			
Social and Behavioral Sciences				3C	3
BMS 300 and ERHS 230 must be completed by the end of Semester 4.		X			
	Total Credits				14-16
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
ERHS 320	Environmental Health--Water Quality			4A	3
ERHS 350	Principles of Occupational Safety and Health				3
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
Select one course from the following:					3
FTEC 400	Food Safety				
MIP 334	Food Microbiology				
PH 121 must be completed by the end of Semester 5.		X			
	Total Credits				12
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 351	Principles of Biochemistry				4
ERHS 332	Principles of Epidemiology				3
ERHS 479	Environmental Health Practice	X		4C	1
Arts and Humanities				3B	3
Historical Perspectives				3D	3
BMS 300 and STAT 307 must be completed by the end of Semester 6.		X			
	Total Credits				14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
ERHS 446	Environmental Toxicology	X			3
ERHS 487	Internship-Environmental Health	X		4C	4
Program Electives (See Major Requirements tab)					5
Electives					5
	Total Credits				17
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
ERHS 410	Environmental Health-Air and Waste Management	X		4B	3
ERHS 430	Human Disease and the Environment	X			3
ERHS 450	Introduction to Radiation Biology	X			3
Diversity and Global Awareness		X		3E	3
Electives		X			5-6

The benchmark courses for Semester 8 are the remaining courses in the entire program of study.	X	
Total Credits		17-18
Program Total Credits:		120

Minor in Environmental Health

A minor in Environmental Health will benefit students majoring in a variety of biosciences who are interested in career options in public health, private sector environmental health and safety, sustainability, or graduate school.

Requirements Effective Fall 2017

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Required Core Courses		
ERHS 220	Environmental Health	3
ERHS 320	Environmental Health--Water Quality	3
Select one course from the following:		3
ERHS 332	Principles of Epidemiology	
ERHS 446	Environmental Toxicology	
ERHS Courses (Select 6 credits not previously taken from the following):		6
ERHS 230	Environmental Health Field Methods	
ERHS 332	Principles of Epidemiology	
ERHS 350	Principles of Occupational Safety and Health	
ERHS 405	Fundamentals of Ergonomics	
ERHS 410	Environmental Health-Air and Waste Management	
ERHS 430	Human Disease and the Environment	
ERHS 446	Environmental Toxicology	
ERHS 448	Environmental Contaminants: Exposure and Fate	
ERHS 450	Introduction to Radiation Biology	
Department Electives List (Select 6 credits not previously taken – see list below)		6
Program Total Credits:		21

Department Electives List

Code	Title	Credits
BMS 360	Fundamentals of Physiology	4
BMS 430	Endocrinology	3
BMS 460	Essentials of Pathophysiology	3
BSPM 302	Applied and General Entomology	2
BSPM 310	Understanding Pesticides	3
BSPM 462/BZ 462/ MIP 462	Parasitology and Vector Biology	5
BZ 310	Cell Biology	4
BZ 350	Molecular and General Genetics	4
CIVE 423	Groundwater Engineering	3
CIVE 425	Soil and Water Engineering	3
CIVE 437	Wastewater Treatment Facility Design	3
CIVE 438	Environmental Engr Concepts for Civil Engrs	3
CIVE 439/CBE 439	Environmental Engineering Chemical Concepts	3
CIVE 440	Nonpoint Source Pollution	3
ERHS 230	Environmental Health Field Methods	3
ERHS 332	Principles of Epidemiology	3
ERHS 350	Principles of Occupational Safety and Health	3
ERHS 405	Fundamentals of Ergonomics	2
ERHS 410	Environmental Health-Air and Waste Management	3
ERHS 430	Human Disease and the Environment	3
ERHS 446	Environmental Toxicology	3
ERHS 448	Environmental Contaminants: Exposure and Fate	3
ERHS 450	Introduction to Radiation Biology	3
HES 345	Population Health and Disease Prevention	3
MIP 315	Pathology of Human and Animal Disease	3
MIP 334	Food Microbiology	3
MIP 351	Medical Bacteriology	3
MIP 420	Medical and Molecular Virology	4
NR 319	Geospatial Applications in Natural Resources	4
NR 322	Introduction to Geographic Information Systems	4
NR 353/BZ 353	Global Change Ecology, Impacts and Mitigation	3

RS 351	Wildland Ecosystems in a Changing World	3
SOCR 455	Soil Microbiology	3
SOCR 467	Soil and Environmental Chemistry	3
WR 418	Land Use and Water Quality	3

Master of Science in Environmental Health, Plan B, Environmental Health and Safety Specialization

Please contact the Department of Environmental and Radiological Health Sciences (http://www.cvmbs.colostate.edu/erhs) for more information.

Requirements Effective Fall 2014

Code	Title	Credits
Core Courses		
ERHS 503	Toxicology Principles	1
ERHS 504	Occupational and Environmental Toxicology	2
ERHS 526	Industrial Hygiene	3
ERHS 528	Occupational Safety	3
ERHS 637	Environment, Safety, and Health Management	3
ERHS 675	Environmental Health Regulatory Compliance	3
Selected Courses		
Select at least two courses from the following: [1]		6
ERHS 400	Radiation Safety	
or ERHS 530	Radiological Physics and Dosimetry I	
ERHS 410	Environmental Health-Air and Waste Management	
ERHS 536	Advanced Occupational Health	
ERHS 540	Principles of Ergonomics	
ERHS 549	Environmental Health Risk Assessment	
Select a minimum of 11 credits from the following:		11
ATS 555	Air Pollution	
ATS 560	Air Pollution Measurement	
CIVE 547/ STAT 547	Statistics for Environmental Monitoring	
or VS 562	Applied Data Analysis	
ERHS 527	Industrial Hygiene Laboratory	
ERHS 531	Nuclear Instruments and Measurements	
ERHS 541	Ergonomics in Product and Process Design	
ERHS 546	Environmental Exposure Assessment	
ERHS 636	Industrial Hygiene Control Methods	
ERHS 656	Occupational Noise Control	
ERHS 658	Environmental/Occupational Epidemiology	
ERHS 695B	Independent Study: Occupational and Environmental Health [2]	
ERHS 726	Aerosols and Environmental Health	
Program Total Credits:		32

A minimum of 32 credits are required to complete this program.

1 Additional courses from this list may be taken to count toward the program total.

2 Students may apply a maximum of 3 credits of Independent Study toward the degree.

A comprehensive exam is required.

Master of Science in Environmental Health, Plan A, Epidemiology Specialization

Department of Environmental and Radiological Health Sciences

The field of epidemiology is defined as the study of the distribution and determinants of disease in populations, with an ultimate goal of disease prevention and control. Epidemiology is one of the core sciences of public health and serves as the foundation for the design and analysis of research studies. The Epidemiology specialization within the Environmental Health degree program offers both theoretical knowledge and applied experiences in epidemiology, with a focus on quantitative methods. The skills and knowledge gained in the program can be applied to a broad range of risk factors and diseases.

Requirements Effective Fall 2017

Code	Title	Credits
ERHS 505	Epidemiologic Research	1
ERHS 532	Epidemiologic Methods	3
ERHS 534	SAS and Epidemiologic Data Management	3
or ERHS 535	R Programming for Research	
ERHS 640	Advanced Epidemiology	3
ERHS 642	Applied Logistic Regression	3
ERHS 658	Environmental/Occupational Epidemiology	3
ERHS 693A	Research Seminar: Epidemiology	1
STAT 511A	Design and Data Analysis for Researchers I: R Software	4
or STAT 511B	Design and Data Analysis for Researchers I: SAS Software	
Electives [1]		3
ERHS 699	Thesis	6
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

1 Requires approval by graduate advisor and graduate advisory committee.

Master of Science in Environmental Health, Plan B, Epidemiology Specialization

Department of Environmental and Radiological Health Sciences

The field of epidemiology is defined as the study of the distribution and determinants of disease in populations, with an ultimate goal of disease prevention and control. Epidemiology is one of the core sciences of public health and serves as the foundation for the design and analysis of research studies. The Epidemiology specialization within the Environmental Health degree program offers both theoretical knowledge and applied experiences in epidemiology, with a focus on quantitative methods. The skills and knowledge gained in the program can be applied to a broad range of risk factors and diseases.

Requirements Effective Fall 2017

Code	Title	Credits
ERHS 505	Epidemiologic Research	1
ERHS 532	Epidemiologic Methods	3
ERHS 534	SAS and Epidemiologic Data Management	3
or ERHS 535	R Programming for Research	
ERHS 640	Advanced Epidemiology	3
ERHS 642	Applied Logistic Regression	3
ERHS 658	Environmental/Occupational Epidemiology	3
ERHS 693A	Research Seminar: Epidemiology [1]	1
ERHS 695A	Independent Study: Epidemiology [2]	6
STAT 511A	Design and Data Analysis for Researchers I: R Software	4
or STAT 511B	Design and Data Analysis for Researchers I: SAS Software	
Electives [1]		9
Program Total Credits:		36

A minimum of 36 credits are required to complete this program.

1 Requires approval by graduate advisor and graduate advisory committee.

2 Students are required to take ERHS 695A for the professional paper credits.

Master of Science in Environmental Health, Ergonomics Specialization

Department of Environmental and Radiological Health Sciences (http://www.cvmbs.colostate.edu/erhs)

No new students are being accepted into this specialization. Please see the Master of Science in Environmental Health, Occupational Ergonomics and Safety Specialization.

Requirements Effective Spring 2013

Code	Title	Credits
Environmental and Occupational Health Core Courses		
ERHS 520	Environmental and Occupational Health Issues	3
ERHS 532	Epidemiologic Methods	3
ERHS 544/STAT 544	Biostatistical Methods for Quantitative Data	3
ERHS 679	Occ Env Health Interdisciplinary Symposium	2
Ergonomics Core Courses		
ERHS 528	Occupational Safety	3
ERHS 540	Principles of Ergonomics	3
ERHS 541	Ergonomics in Product and Process Design	3
Additional Coursework		
ERHS 687	Internship [1]	3
ERHS 699	Thesis [2]	4
ERHS Department Electives [1]		3
Out-of-department Course [1]		3
Program Total Credits:		33

A minimum of 33 credits are required to complete this program.

1 Select a minimum of 3 credits.

2 Select a minimum of 4 credits.

Master of Science in Environmental Health, Plan A, Industrial Hygiene Specialization

Department of Environmental and Radiological Health Sciences

Industrial Hygiene (IH) is the science and art devoted to the anticipation, recognition, evaluation, prevention, and control of workplace contaminants and stressors that may cause sickness, injury, impaired health or impaired well-being among workers or among citizens of the community.

Requirements Effective Fall 2017

Code	Title	Credits
Core Courses		
ERHS 520	Environmental and Occupational Health Issues	3
ERHS 526	Industrial Hygiene	3
ERHS 527	Industrial Hygiene Laboratory	1
ERHS 528	Occupational Safety	3
ERHS 532	Epidemiologic Methods	3
ERHS 536	Advanced Occupational Health	3
ERHS 540	Principles of Ergonomics	3
ERHS 637	Environment, Safety, and Health Management	3
ERHS 679	Occ Env Health Interdisciplinary Symposium [1]	2
ERHS 699	Thesis	3
Out-of-Department Elective [2]		2
Statistics [3]		3
Elective Courses		3
Choose a minimum of 3 credits from the following in consultation with your advisor:		
ERHS 502	Fundamentals of Toxicology	
ERHS 503	Toxicology Principles	

ERHS 504	Occupational and Environmental Toxicology
ERHS 530	Radiological Physics and Dosimetry I
ERHS 541	Ergonomics in Product and Process Design
ERHS 547	Equipment and Instrumentation
ERHS 549	Environmental Health Risk Assessment
ERHS 550	Principles of Radiation Biology
ERHS 636	Industrial Hygiene Control Methods
ERHS 656	Occupational Noise Control
ERHS 693B	Research Seminar: Industrial Hygiene
ERHS 698	Research
ERHS 726	Aerosols and Environmental Health
PSY 692D	Seminar: Industrial/Organizational Psychology

RCR	
Responsible Conduct Research Training is required of all master's students enrolled in the program	0
Program Total Credits:	35

A minimum of 35 credits are required to complete this program.

1 MAP ERC Trainees are required to take 4 credits.

2 One additional course approved by student's committee.

3 Select three credits of statistics with approval of advisor and graduate committee.

Master of Science in Environmental Health, Plan B, Industrial Hygiene Specialization

Department of Environmental and Radiological Health Sciences

Industrial Hygiene (IH) is the science and art devoted to the anticipation, recognition, evaluation, prevention, and control of workplace contaminants and stressors that may cause sickness, injury, impaired health or impaired well-being among workers or among citizens of the community.

Requirements
Effective Fall 2017

Code	Title	Credits
Core Courses		
ERHS 520	Environmental and Occupational Health Issues	3
ERHS 526	Industrial Hygiene	3
ERHS 527	Industrial Hygiene Laboratory	1
ERHS 528	Occupational Safety	3
ERHS 532	Epidemiologic Methods	3
ERHS 536	Advanced Occupational Health	3
ERHS 540	Principles of Ergonomics	3
ERHS 637	Environment, Safety, and Health Management	3
ERHS 679	Occ Env Health Interdisciplinary Symposium [1]	2
ERHS 695B	Independent Study: Occupational and Environmental Health [2]	4
Out-of-Department Elective [3]		2-4
Statistics (select at least 3 credits) [4]		3
Elective Courses		6
Choose a minimum of 6 credits from the following in consultation with your advisor:		
ERHS 502	Fundamentals of Toxicology	
ERHS 503	Toxicology Principles	
ERHS 504	Occupational and Environmental Toxicology	
ERHS 530	Radiological Physics and Dosimetry I	
ERHS 541	Ergonomics in Product and Process Design	
ERHS 547	Equipment and Instrumentation	
ERHS 549	Environmental Health Risk Assessment	
ERHS 550	Principles of Radiation Biology	
ERHS 636	Industrial Hygiene Control Methods	
ERHS 656	Occupational Noise Control	
ERHS 687	Internship [5]	
ERHS 693B	Research Seminar: Industrial Hygiene	

ERHS 698	Research	
ERHS 726	Aerosols and Environmental Health	
PSY 692D	Seminar: Industrial/Organizational Psychology	
PSY 792D	Advanced Seminar: Industrial/Organizational Psychology	
RCR		
Responsible Conduct Research Training is required of all master's students enrolled in the program		0
Program Total Credits:		39-41

A minimum of 39 credits are required to complete this program.

1 MAP ERC Trainees are required to take 4 credits.

2 Students are required to take ERHS 695B for the professional paper requirement.

3 One additional course approved by student's committee.

4 Select three credits of statistics with approval of advisor and graduate committee.

5 Students who do not have at least one year of occupational and/or environment health professional experience must complete an internship consisting of at least 400 hours of work time. Internships must be approved by the student's advisor and graduate committee according to the program's Internship Handbook.

Master of Science in Environmental Health, Occupational Ergonomics and Safety Specialization, Plan A

The specialization in Occupational Ergonomics and Safety, Plan A, is based on a multidisciplinary group of faculty and courses aimed at enhancing the workplace in terms of safety, process and product quality, and the quality of work life. The foundation of the program is driven by the utilization of a systems approach in human-centered design and in the most current safety theories and practice. The program integrates a multidisciplinary approach from psychology, engineering, the health sciences and safety to better understand and optimize human well-being and overall system performance in the workplace.

Graduates from this master's program are typically employed as health and safety managers, ergonomic consultants, safety specialists, human factor specialists and risk analysts. Companies hiring our graduates often include manufacturing companies, consulting firms, municipalities, universities, medical device companies and insurance companies.

Requirements Effective Fall 2019

Code	Title	Credits
Core Courses		
DM 575	Human Factors in Design	3
ERHS 520	Environmental and Occupational Health Issues	3
ERHS 526	Industrial Hygiene	3
ERHS 528	Occupational Safety	3
ERHS 532	Epidemiologic Methods	3
ERHS 540	Principles of Ergonomics	3
ERHS 541	Ergonomics in Product and Process Design	3
ERHS 637	Environment, Safety, and Health Management	3
ERHS 679	Occ Env Health Interdisciplinary Symposium	2
ERHS 699	Thesis	3
PSY 692D	Seminar: Industrial/Organizational Psychology	1
PSY 792D	Advanced Seminar: Industrial/ Organizational Psychology	3
Select one course from the following:		4
STAT 511A	Design and Data Analysis for Researchers I: R Software	
STAT 511B	Design and Data Analysis for Researchers I: SAS Software	
Program Total Credits:		37

A minimum of 37 credits are required to complete this program.

Master of Science in Radiological Health Sciences, Plan A, Health Physics Specialization

Health physics is the discipline associated with using radiation for the benefit of society. This includes applying scientific as well as practical knowledge in order to obtain these benefits without unreasonable risks to humans or the environment. The profession has evolved into a necessary part of all programs that involve radiation, including anything from naturally occurring radioactivity to man-made sources of radiation. Sources of radiation range from naturally occurring radioactivity to reactors. Successful persons in health physics have broad backgrounds in physics, biology, instrumentation and have an understanding of risks and risk analysis.

Required course work is structured to provide a sound foundation in the basic skills essential to the health physics profession. Students may concentrate on specific areas of interest through a wide selection of elective courses. Formal course work is supplemented by extensive laboratory exercises, field trips and research.

The M.S. in Radiological Health Sciences, Health Physics Specialization is accredited by the Applied Sciences Accreditation Commission of ABET (https://www.abet.org).

Requirements Effective Fall 2017

Code	Title	Credits
ERHS 530	Radiological Physics and Dosimetry I	3
ERHS 531	Nuclear Instruments and Measurements	2
ERHS 550	Principles of Radiation Biology	3-5
or ERHS 450	Introduction to Radiation Biology	
ERHS 561	Radiation Public Health	2
ERHS 563	Environmental Contaminant Modeling I	2
or ERHS 570	Radioecology	
ERHS 630	Radiological Physics and Dosimetry II	3
ERHS 632	Techniques in Radiation Dosimetry	1
ERHS 665	Radiochemistry	3
ERHS 693D	Research Seminar: Health Physics	1
ERHS 786	Practicum	3
Select one of the following courses:		3-4
ERHS 544/ STAT 544	Biostatistical Methods for Quantitative Data	
ERHS 555	Quantitative Methods for Radiation Safety	
STAT 511A	Design and Data Analysis for Researchers I: R Software	
STAT 511B	Design and Data Analysis for Researchers I: SAS Software	
Select at least 3 credits from the following:		3
ERHS 446	Environmental Toxicology	
ERHS 502	Fundamentals of Toxicology	
ERHS 515	Non-Ionizing Radiation Safety	
ERHS 520	Environmental and Occupational Health Issues	
ERHS 526	Industrial Hygiene	

ERHS 527	Industrial Hygiene Laboratory	
ERHS 555	Quantitative Methods for Radiation Safety [1]	
ERHS 556	Monte Carlo Methods in Health Physics	
ERHS 563	Environmental Contaminant Modeling I [1]	
ERHS 570	Radioecology [1]	
ERHS 698	Research	
ERHS 726	Aerosols and Environmental Health	
STAT 512	Design and Data Analysis for Researchers II	
STAT 547/ CIVE 547	Statistics for Environmental Monitoring	
Thesis		
ERHS 699	Thesis	3
Program Total Credits:		32-35

[1] ERHS 555, ERHS 563 and ERHS 570 may only be used from the list if they have NOT been previously selected for the preceding requirements.

Master of Science in Radiological Health Sciences, Plan B, Health Physics Specialization

Health physics is the discipline associated with using radiation for the benefit of society. This includes applying scientific as well as practical knowledge in order to obtain these benefits without unreasonable risks to humans or the environment. The profession has evolved into a necessary part of all programs that involve radiation, including anything from naturally occurring radioactivity to man-made sources of radiation. Sources of radiation range from naturally occurring radioactivity to reactors. Successful persons in health physics have broad backgrounds in physics, biology, instrumentation and have an understanding of risks and risk analysis.

Required course work is structured to provide a sound foundation in the basic skills essential to the health physics profession. Students may concentrate on specific areas of interest through a wide selection of elective courses. Formal course work is supplemented by extensive laboratory exercises, field trips and research.

The M.S. in Radiological Health Sciences, Health Physics Specialization is accredited by the Applied Sciences Accreditation Commission of ABET.

Requirements Effective Fall 2017

Code	Title	Credits
ERHS 530	Radiological Physics and Dosimetry I	3
ERHS 531	Nuclear Instruments and Measurements	2
ERHS 550	Principles of Radiation Biology	3-5
or ERHS 450	Introduction to Radiation Biology	
ERHS 561	Radiation Public Health	2
ERHS 563	Environmental Contaminant Modeling I	2
or ERHS 570	Radioecology	
ERHS 630	Radiological Physics and Dosimetry II	3
ERHS 632	Techniques in Radiation Dosimetry	1
ERHS 665	Radiochemistry	3
ERHS 693D	Research Seminar: Health Physics	1
ERHS 786	Practicum	3
Select one of the following courses:		3-4
ERHS 544/ STAT 544	Biostatistical Methods for Quantitative Data	
ERHS 555	Quantitative Methods for Radiation Safety	
STAT 511A	Design and Data Analysis for Researchers I: R Software	
STAT 511B	Design and Data Analysis for Researchers I: SAS Software	
Select at least 3 credits from the following:		3
ERHS 446	Environmental Toxicology	
ERHS 502	Fundamentals of Toxicology	
ERHS 515	Non-Ionizing Radiation Safety	
ERHS 520	Environmental and Occupational Health Issues	
ERHS 526	Industrial Hygiene	
ERHS 527	Industrial Hygiene Laboratory	
ERHS 555	Quantitative Methods for Radiation Safety [1]	
ERHS 563	Environmental Contaminant Modeling I [1]	
ERHS 565	Chemical and Biological Warfare Agents	
ERHS 570	Radioecology [1]	
ERHS 698	Research	
ERHS 726	Aerosols and Environmental Health	
STAT 512	Design and Data Analysis for Researchers II	
STAT 547/ CIVE 547	Statistics for Environmental Monitoring	
Elective		
500-level or greater elective [2]		3
Program Total Credits:		32-35

A well-written, comprehensive, and scholarly professional paper prepared on a topic approved by the student's graduate committee that is successfully defended in an oral examination.

[1] ERHS 555, ERHS 563 and ERHS 570 may only be used from the list if they have NOT been previously selected for the preceding requirements.

[2] Elective course must be approved by the student's graduate committee.

Master of Science in Toxicology, Plan A

Toxicology is the study of the effects of chemicals and other potentially harmful agents on biological systems. The field draws upon the sciences of biology, chemistry, biochemistry, physiology, cell and molecular biology, neuroscience, and pathology. The core curriculum provides a comprehensive background in toxicology that is enhanced by elective offerings in the department and the many related basic and health science courses available at CSU.

The M.S. in Toxicology, Plan A prepares students for research careers in industry, government and academia. Graduates also find professional employment in public and private sector positions such as environmental protection, risk assessment or product safety evaluation. This program provides an excellent basis for students seeking admission to a doctoral degree program or a related field.

Requirements Effective Fall 2017

Code	Title	Credits
Core Courses		
ERHS 502	Fundamentals of Toxicology	3
ERHS 601	Metabolism and Disposition of Toxic Agents	3
ERHS 602	Toxicological Mechanisms	3
ERHS 603	Toxicological Pathology	3
ERHS 693C	Research Seminar: Toxicology	1
Toxicology Courses [1]		
Select at least 9 credits from the following:		9
ERHS 448	Environmental Contaminants: Exposure and Fate [1]	
ERHS 546	Environmental Exposure Assessment	
ERHS 547	Equipment and Instrumentation	
ERHS 549	Environmental Health Risk Assessment	
ERHS 565	Chemical and Biological Warfare Agents	
ERHS 566	Forensic Toxicology	
ERHS 567	Cell and Molecular Toxicology Techniques	
ERHS 568	Pharmaceutical and Regulatory Toxicology	
ERHS 569	Immunotoxicology	
ERHS 733	Environmental Carcinogenesis	
Other Requirements		
Electives [1,2,3]		3-5
Thesis		
ERHS 699	Thesis	3-5
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

1. A maximum of 6 credits below 500-level may be counted toward the program total.
2. Eligible courses determined by advisor and graduate committee.
3. No more than a total of 6 credits of Internship, Independent Study, Group Study, and Research courses may be included in the program.

Master of Science in Toxicology, Plan B

Toxicology is the study of the effects of chemicals and other potentially harmful agents on biological systems. The field draws upon the sciences of biology, chemistry, biochemistry, physiology, cell and molecular biology, neuroscience and pathology. The core curriculum provides a comprehensive background in toxicology that is enhanced by elective offerings in the department and the many basic and health science courses available at CSU.

The non-thesis M.S. in Toxicology, Plan B transitions graduates into MD, DVM, PharmD and other professional programs, as well as prepares students for research careers in industry, government and academia. Graduates can also find professional employment in public and private sector positions such as environmental protection, risk assessment or product safety evaluation.

Requirements Effective Fall 2017

Code	Title	Credits
Core Courses		
ERHS 502	Fundamentals of Toxicology	3
ERHS 601	Metabolism and Disposition of Toxic Agents	3
ERHS 602	Toxicological Mechanisms	3
ERHS 603	Toxicological Pathology	3
ERHS 693C	Research Seminar: Toxicology	1
Toxicology Courses [1]		
Select at least 9 credits from the following:		9
ERHS 448	Environmental Contaminants: Exposure and Fate [1]	
ERHS 546	Environmental Exposure Assessment	
ERHS 547	Equipment and Instrumentation	
ERHS 549	Environmental Health Risk Assessment	
ERHS 565	Chemical and Biological Warfare Agents	
ERHS 566	Forensic Toxicology	
ERHS 567	Cell and Molecular Toxicology Techniques	
ERHS 568	Pharmaceutical and Regulatory Toxicology	
ERHS 569	Immunotoxicology	
ERHS 733	Environmental Carcinogenesis	
Other Requirements		
Electives [1,2,3]		10
Program Total Credits:		32

A minimum of 32 credits are required to complete this program.

Successful completion of a comprehensive examination is required.

1. A maximum of 6 credits below 500-level may be counted toward the program total.
2. Eligible courses determined by advisor and graduate committee.
3. No more than a total of 6 credits of Internship, Independent Study, Group Study, and Research courses may be included in the program.

Ph.D. in Environmental Health, Epidemiology Specialization

The field of epidemiology is defined as the study of the distribution and determinants of disease in populations, with an ultimate goal of disease prevention and control. Epidemiology is one of the core sciences of public health and serves as the foundation for the design and analysis of research studies. The Epidemiology specialization within the Environmental Health degree program offers both theoretical knowledge and applied experiences in epidemiology, with a focus on quantitative

methods. The skills and knowledge gained in the program can be applied to a broad range of risk factors and diseases.

Requirements Effective Fall 2017

Code	Title	Credits
ERHS 505	Epidemiologic Research	1
ERHS 532	Epidemiologic Methods	3
ERHS 534	SAS and Epidemiologic Data Management	3
ERHS 535	R Programming for Research	3
ERHS 640	Advanced Epidemiology	3
ERHS 642	Applied Logistic Regression	3
ERHS 658	Environmental/Occupational Epidemiology	3
ERHS 693A	Research Seminar: Epidemiology	2
STAT 511A	Design and Data Analysis for Researchers I: R Software	4
or STAT 511B	Design and Data Analysis for Researchers I: SAS Software	
Electives [1]		9
ERHS 799	Dissertation [2]	1-18
Total program credits		72

A minimum of 72 credits are required.

1. Requires approval by graduate advisor and graduate advisory committee.
2. Minimum of 12 credits. Use dissertation credits to bring total program credits to 72.

Ph.D. in Environmental Health, Ergonomics Specialization

No new students are being accepted into this specialization. Please see the Ph.D. in Environmental Health, Occupational Ergonomics and Safety Specialization.

Requirements Effective Spring 2013

Code	Title	Credits
Environmental and Occupational Health Core Courses		
ERHS 520	Environmental and Occupational Health Issues	3
ERHS 532	Epidemiologic Methods	3
ERHS 544/STAT 544	Biostatistical Methods for Quantitative Data	3
ERHS 679	Occ Env Health Interdisciplinary Symposium	2
Ergonomics Core Courses		
ERHS 528	Occupational Safety	3
ERHS 536	Advanced Occupational Health	3
ERHS 540	Principles of Ergonomics	3
ERHS 541	Ergonomics in Product and Process Design	3
ERHS 542	Biostatistical Methods for Qualitative Data	3
ERHS 642	Applied Logistic Regression	3
ERHS 658	Environmental/Occupational Epidemiology	3
ERHS 687	Internship	3
ERHS 784	Supervised College Teaching	1
Additional Coursework		
ERHS 799	Dissertation	19-28
Department Course Selection		3-9
Out-of-department Courses		6-9
Program Total Credits:		72

A minimum of 72 credits are required to complete this program.

Ph.D. in Environmental Health, Industrial Hygiene Specialization

Industrial Hygiene (IH) is the science and art devoted to the anticipation, recognition, evaluation, prevention, and control of workplace contaminants and stressors that may cause sickness, injury, impaired health or impaired well-being among workers or among citizens of the community.

Requirements Effective Spring 2015

Code	Title	Credits
Core Courses		
ERHS 520	Environmental and Occupational Health Issues	3
ERHS 526	Industrial Hygiene	3
ERHS 527	Industrial Hygiene Laboratory	1
ERHS 532	Epidemiologic Methods	3
Select one from the following:		1-4
ERHS 679	Occ Env Health Interdisciplinary Symposium [1]	
ERHS 693B	Research Seminar: Industrial Hygiene [2]	
Out-of-Department Courses [3]		6
Statistics [4]		3
Elective Courses [5]		
Select a minimum of 15 credits from the following:		15
ERHS 502	Fundamentals of Toxicology	
ERHS 503	Toxicology Principles	
ERHS 504	Occupational and Environmental Toxicology	
ERHS 528	Occupational Safety	
ERHS 530	Radiological Physics and Dosimetry I	
ERHS 536	Advanced Occupational Health	
ERHS 540	Principles of Ergonomics	
ERHS 541	Ergonomics in Product and Process Design	
ERHS 547	Equipment and Instrumentation	
ERHS 549	Environmental Health Risk Assessment	
ERHS 550	Principles of Radiation Biology	
ERHS 601	Metabolism and Disposition of Toxic Agents	
ERHS 636	Industrial Hygiene Control Methods	
ERHS 637	Environment, Safety, and Health Management	

ERHS 656	Occupational Noise Control	
ERHS 658	Environmental/Occupational Epidemiology	
ERHS 726	Aerosols and Environmental Health	
ERHS 784	Supervised College Teaching	
PSY 792D	Advanced Seminar: Industrial/ Organizational Psychology	
Dissertation		
ERHS 799	Dissertation	15-20
RCR		
Responsible Conduct Research Training [6]		0
Program Total Credits:		72

A minimum of 72 credits are required to complete this program.

1 Required for MAP ERC Trainees.

2 Maximum of 4 credits allowed.

3 Minimum of 6 credits in 2 courses with approval of advisor and graduate committee.

4 Select three credits of statistics with approval of advisor and graduate committee.

5 Other ERHS 500-level or higher courses may be approved on a case by case basis by the graduate advisory committee.

6 Required of all Ph.D. students enrolled in the program.

Ph.D. in Environmental Health, Occupational Ergonomics and Safety Specialization

The Ph.D. specialization in Occupational Ergonomics and Safety is based on a multidisciplinary group of faculty and courses aimed at enhancing the workplace in terms of safety, process and product quality, and the quality of work life. The foundation of the program is driven by the utilization of a systems approach in human-centered design and in the most current safety theories and practice. The program integrates a multidisciplinary approach from psychology, engineering, the health sciences and safety to better understand and optimize human well-being and overall system performance in the workplace.

The Ph.D. program has the flexibility for students to pursue research related to ergonomics and safety from approaches in psychology, engineering, the health sciences and occupational epidemiology. Graduates from the Ph.D. program are typically employed in leadership positions in the field of occupational safety and health. Many of our doctoral level graduates are professors at universities, program managers and directors at multinational companies, researchers at private and public organizations, as well as managing consultants in industry.

Requirements Effective Fall 2019

Code	Title	Credits
Core Courses		
DM 575	Human Factors in Design	3
ERHS 520	Environmental and Occupational Health Issues	3
ERHS 526	Industrial Hygiene	3
ERHS 527	Industrial Hygiene Laboratory	1
ERHS 528	Occupational Safety	3
ERHS 532	Epidemiologic Methods	3
ERHS 540	Principles of Ergonomics	3
ERHS 541	Ergonomics in Product and Process Design	3
ERHS 637	Environment, Safety, and Health Management	3
ERHS 679	Occ Env Health Interdisciplinary Symposium	2
PSY 792D	Advanced Seminar: Industrial/ Organizational Psychology	3
Additional and Supporting Coursework		
ERHS 535	R Programming for Research	3
ERHS 536	Advanced Occupational Health	3
ERHS 642	Applied Logistic Regression	3
ERHS 784	Supervised College Teaching	2
ERHS 787	Internship	3
ERHS 795B	Independent Study: Occupational and Environmental Health	1
ERHS 799	Dissertation	12
PSY 692D	Seminar: Industrial/Organizational Psychology	1
STAT 511A	Design and Data Analysis for Researchers I: R Software	4
STAT 512	Design and Data Analysis for Researchers II	4
Select a minimum of 6 credits from the following electives:		6
ERHS 636	Industrial Hygiene Control Methods	
ERHS 640	Advanced Epidemiology	
ERHS 656	Occupational Noise Control	
ERHS 658	Environmental/Occupational Epidemiology	
HES 530	Clinical Biomechanics	
HES 531	Muscle and Joint Mechanics	
IE 517/PSY 517	Perspectives in Global Health	
PSY 600J	Advanced Psychology: Health Psychology	
PSY 600L	Advanced Psychology: Human Performance, Motor and Intellectual Capacities	
Program Total Credits:		72

A minimum of 72 credits are required to complete this program.

Ph.D. in Toxicology

Toxicology is the study of the effects of chemicals and other potentially harmful agents on biological systems. The field draws upon the sciences of biology, chemistry, biochemistry, physiology, cell and molecular biology, neuroscience, and pathology. The core curriculum provides a comprehensive background in toxicology that is enhanced by elective offerings in the department and the many related basic and health science courses available at CSU. The Ph.D. in Toxicology prepares students for research careers in industry, government and academia. The emphasis is on developing the abilities of the student to progress to a career as an independent scientist.

Requirements Effective Fall 2017

Code	Title	Credits
Core Courses		
ERHS 502	Fundamentals of Toxicology	3
ERHS 601	Metabolism and Disposition of Toxic Agents	3
ERHS 602	Toxicological Mechanisms	3
ERHS 603	Toxicological Pathology	3
ERHS 693C	Research Seminar: Toxicology	1
Other Requirements		
Toxicology Courses [1,2]		9
ERHS 448	Environmental Contaminants: Exposure and Fate [2]	
ERHS 504	Occupational and Environmental Toxicology	
ERHS 546	Environmental Exposure Assessment	
ERHS 547	Equipment and Instrumentation	
ERHS 549	Environmental Health Risk Assessment	
ERHS 565	Chemical and Biological Warfare Agents	
ERHS 566	Forensic Toxicology	
ERHS 567	Cell and Molecular Toxicology Techniques	
ERHS 568	Pharmaceutical and Regulatory Toxicology	
ERHS 569	Immunotoxicology	
ERHS 733	Environmental Carcinogenesis	
Seminar Requirement [3]		1
Electives [1,2]		6
ERHS 799	Dissertation [4]	
Program Total Credits		72

A minimum of 72 credits are required to complete this program.

1. Select courses as approved by advisor and graduate committee.
2. A maximum of 6 credits below 500-level may be counted toward the program total.
3. A minimum of 1 credit of graduate seminar determined by the advisor and graduate committee in addition to the core requirement of ERHS 693C.
4. Select enough dissertation credits to bring the program total to a minimum of 72 credits as approved by the advisor and graduate committee.

Department of Microbiology, Immunology, and Pathology

Office in Pathology Building, Room 110
(970) 491-6144
cvmbs.colostate.edu/academics/mip/ (http://csu-cvmbs.colostate.edu/academics/mip/pages/default.aspx)

Professor Gregg Dean, Department Head
Professor Mark Zabel, Associate Head for Graduate Education
Associate Professor Jennifer McLean, Associate Head for Undergraduate Education
Associate Professor Kristy Pabilonia, Associate Head for DVM and Clinical Service
Professor Jeff Wilusz, Associate Head for Research
Associate Professor Brian Geiss, Program Coordinator, Plan B Master's Degree Program

Undergraduate

Major

- Major in Microbiology

Minor

- Minor in Microbiology

Graduate

Graduate Programs in Microbiology, Immunology and Pathology

The department offers graduate programs leading to Master of Science, Doctor of Philosophy, and combined Doctor of Veterinary Medicine/Doctor of Philosophy degrees. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Microbiology, Immunology and Pathology (http://csu-cvmbs.colostate.edu/academics/mip/graduate/Pages/default.aspx).

The research programs in the department provide excellent opportunities for graduate training in fundamentals of modern investigative microbiology, immunology, and pathobiology. An emphasis is placed on a multi-disciplinary approach to research problems. Areas of research strength in the department include bacteriology, immunology, mycobacterial diseases, prion biology, vector borne infectious diseases, and virology. Please visit the Department of Microbiology (http://csu-cvmbs.colostate.edu/academics/mip/graduate/Pages/Microbiology-MS-and-PhD-Program.aspx) for more information.

Master's Programs

- Master of Science in Microbiology, Plan A*
- Master of Science in Microbiology, Plan B

Ph.D.

- Ph.D. in Microbiology*
- Ph.D. in Pathology*

* Please see department for program of study.

Courses

Microbiology, Immunology, and Pathology (MIP)

MIP 101 Introduction to Human Disease (GT-SC2) Credits: 3 (3-0-0)
Course Description: Survey of human systems and diseases.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

MIP 149 The Microbial World Credits: 3 (3-0-0)
Course Description: Importance of microbiology in daily life, with emphasis on positive and negative roles of microbes, infectious disease, and current microbiology issues.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 150 Introduction to Research Methods Credits: 3 (0-6-0)
Course Description: Undergraduate research experience highlighting fundamental skills of laboratory research while working towards the goal of novel microbial discovery.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 192 Microbiology First-Year Seminar Credits: 2 (0-0-2)
Course Description: Introduction to microbiology major and faculty; academic and career planning; information sources in biomedical sciences.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 250 Eukaryotic Microbiology Credits: 3 (3-0-0)
Course Description: Cell biology topics with emphasis on eukaryotic microbes. Topics include the central dogma of molecular biology, cell structure and function, and cell membranes as they relate to the importance of the host cell as well as parasites. Spotlight microbes will be studied that depict many eukaryotic processes important in cell biology, human health, and scientific models.
Prerequisite: CHEM 111, may be taken concurrently and LIFE 102.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 260 The World of Parasites Credits: 3 (3-0-0)
Course Description: Introduction to parasitology; evolution, ecology, epidemiology, physiology, and morphology of representative parasites of every group.
Prerequisite: (CHEM 111) and (BZ 110 or LIFE 102).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 275 Microcomputing Applications in Microbiology Credits: 2 (1-0-1)
Course Description: Network software on MS-DOS microcomputers will be used to acquire and analyze data and information that are commonly encountered in microbiology.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 298 Introductory Research Credits: Var[1-3] (0-0-0)
Course Description: Freshman/sophomore research experience in a working research environment.
Prerequisite: None.
Registration Information: Written consent of instructor required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 300 General Microbiology Credits: 3 (3-0-0)
Course Description: Structure, function, development, physiology, and molecular biology of microorganisms emphasizing bacteria.
Prerequisite: (BZ 110 or BZ 120 or LIFE 102) and (CHEM 245, may be taken concurrently or CHEM 341, may be taken concurrently or CHEM 345, may be taken concurrently).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 302 General Microbiology Laboratory Credits: 2 (0-4-0)
Course Description: Laboratory skills and techniques for isolating, characterizing, and identifying bacteria.
Prerequisite: MIP 300, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 303 General Microbiology--Honors Recitation Credit: 1 (0-0-1)
Course Description: Research and present topics related to the material presented in MIP 300.
Prerequisite: None.
Registration Information: Participation in the Honors Program required. Must have concurrent registration in MIP 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 315 Pathology of Human and Animal Disease Credits: 3 (3-0-0)
Course Description: Biological systems critical to mammalian physiology and how each is affected by metabolic, genetic, environmental, and infectious agents.
Prerequisite: BZ 110 or LIFE 102.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 334 Food Microbiology Credits: 3 (3-0-0)
Course Description: Microorganisms in production of foods, in preservation and spoilage, and in food-borne diseases. Control of microorganisms in foods.
Prerequisite: LIFE 205 or MIP 300.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 335 Food Microbiology Laboratory Credits: 2 (0-4-0)
Course Description: Laboratory skills and techniques related to the presence of microorganisms in food, production, and preservation.
Prerequisite: (LIFE 206 or MIP 302) and (MIP 334, may be taken concurrently).
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 342 Immunology Credits: 4 (3-0-1)
Course Description: Principles of immunology: components of the immune system, interactions of humoral and cellular elements, and clinical applications of basic concepts.
Prerequisite: (BZ 350 or LIFE 210 or MIP 250) and (CHEM 245, may be taken concurrently or CHEM 341, may be taken concurrently or CHEM 345, may be taken concurrently) and (MIP 300).
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 343 Immunology Laboratory Credits: 2 (0-4-0)
Course Description: Techniques used in research and clinical immunology, including diagnostic problem solving and data analysis.
Prerequisite: MIP 302 and MIP 342, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 350 Microbial Diversity Credits: 3 (3-0-0)
Course Description: Physiological, taxonomic, and phylogenic aspects of microbial diversity. Yeasts and filamentous fungi as microbial entities.
Prerequisite: MIP 300.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 351 Medical Bacteriology Credits: 3 (3-0-0)
Course Description: Bacteria which cause human and veterinary diseases; host-parasite relationships, disease mechanisms, prevention, and therapy.
Prerequisite: MIP 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 352 Medical Bacteriology Laboratory Credits: 3 (0-6-0)
Course Description: Laboratory skills and techniques necessary for identifying medically important bacteria.
Prerequisite: MIP 302 and MIP 351, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of department required. Maximum of 10 credits allowed in course. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 400A Capstone in Microbiology: Medical Microbiology Credits: 2 (2-0-0)
Course Description:
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Written consent of department required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400B Capstone in Microbiology: Biotechnology Credits: 2 (0-0-2)
Course Description:
Prerequisite: (BC 351 or BC 401) and (MIP 300).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400C Capstone in Microbiology: Immunology Credits: 2 (2-0-0)
Course Description:
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400D Capstone in Microbiology: Microbial Diversity/ Ecology Credits: 2 (2-0-0)
Course Description:
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400E Capstone in Microbiology: Microbial Genetics Credits: 2 (2-0-0)
Course Description:
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400F Capstone in Microbiology: Virology Credits: 2 (2-0-0)
Course Description:
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400G Capstone in Microbiology: Service Learning Credits: 2 (2-0-0)
Course Description:
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Written consent of department required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400H Capstone in Microbiology: Prion Biology Credits: 2 (2-0-0)
Course Description: Discussion of literature on a topic of importance to the research community in the discipline.
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Junior standing. Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400I Capstone in Microbiology: Mycobacterial Biology Credits: 2 (2-0-0)
Course Description: Discussion of literature on a topic of importance to the research community in the discipline.
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400J Capstone in Microbiology: Big Data Sets in Microbiology Credits: 2 (2-0-0)
Course Description: Discussion of literature on a topic of importance to the research community in the discipline.
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400K Capstone in Microbiology: Parasitology Credits: 2 (2-0-0)
Course Description: Discussion of literature on a topic of importance to the research community in the discipline.
Prerequisite: (MIP 260 and MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400L Capstone in Microbiology: Microbiome Biology Credits: 2 (2-0-0)
Course Description: Discussion of literature on a topic of importance to the research community in the discipline.
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400M Capstone in Microbiology: Vector Biology Credits: 2 (2-0-0)
Course Description: Discussion of literature on a topic of importance to the research community in the discipline.
Prerequisite: (MIP 342 and MIP 462) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400N Capstone in Microbiology: Environmental Sustainability & Health Science Credits: 2 (2-0-0)
Course Description: Discussion of literature on a topic of importance to the research community in the discipline.
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400O Capstone in Microbiology: Pathology of Infectious Disease Credits: 2 (2-0-0)
Course Description: Discussion of literature on a topic of importance to the research community in the discipline.
Prerequisite: (MIP 315 and MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400P Capstone in Microbiology: Veterinary Microbiology Credits: 2 (2-0-0)
Course Description: Discussion of literature on a topic of importance to the research community in the discipline.
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400Q Capstone in Microbiology: One Health Credits: 2 (2-0-0)
Course Description: Discussion of literature on a topic of importance to the research community in the discipline.
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400R Capstone in Microbiology: Food Microbiology Credits: 2 (2-0-0)
Course Description: Discussion of literature on a topic of importance to the research community in the discipline.
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400S Capstone in Microbiology: Biofilm Biology Credits: 2 (2-0-0)
Course Description: Discussion of literature on a topic of importance to the research community in the discipline.
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 401 Laboratory Research Methods in Microbiology Credits: 4 (0-6-1)
Course Description: Hands-on experience in laboratory research methods for students working individually on a project which stems from a larger research project of a faculty member's laboratory. All students will work in the same facility equipped with appropriate equipment and supplies to conduct the student research project.
Prerequisite: MIP 150 and MIP 300 and MIP 302.
Restriction: Must be a: Undergraduate.
Registration Information: Sophomore standing. Must register for laboratory and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 420 Medical and Molecular Virology Credits: 4 (4-0-0)
Course Description: Principles of animal virology: structure, classification, assay, diagnosis, control, replication, genetics, host-parasite relationships.
Prerequisite: (MIP 342) and (BC 351, may be taken concurrently or BC 401, may be taken concurrently).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 425 Virology and Cell Culture Laboratory Credits: 2 (0-4-0)
Course Description: Isolation and characterization of viruses. Viral diagnostic and cell culture techniques.
Prerequisite: MIP 302 and MIP 420, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 432 Microbial Ecology Credits: 3 (2-0-1)
Also Offered As: ESS 432.
Course Description: Principles of microorganism interactions with their living and non-living environments; implications for the environment, plants, and animals.
Prerequisite: MIP 300.
Registration Information: Must register for lecture and recitation. Credit not allowed for both ESS 432 and MIP 432.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 433 Microbial Ecology Laboratory Credit: 1 (0-3-0)
Also Offered As: ESS 433.
Course Description: Experimental microbial ecology; the design, conduct and interpretation of experiments that illustrate basic principles of microbial ecology.
Prerequisite: MIP 300.
Registration Information: Must be taken concurrently with ESS 432 or MIP 432. Credit not allowed for both ESS 433 and MIP 433.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 436 Industrial Microbiology Credits: 4 (2-4-0)
Course Description: Use of microorganisms for producing commercially valuable products.
Prerequisite: LIFE 206 or MIP 302.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 443 Microbial Physiology Credits: 4 (3-0-1)
Course Description: Structure, function of bacterial constituents; comparison with other organisms. Bacterial growth, energy production, biosynthesis.
Prerequisite: (MIP 300) and (BC 351 or BC 401).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 450 Microbial Genetics Credits: 3 (3-0-0)
Course Description: Principles of genetics at molecular level; mutation, recombination, complementation, suppression, control of gene expression, and recombinant DNA.
Prerequisite: (MIP 300) and (BC 351, may be taken concurrently or BC 401, may be taken concurrently).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 462 Parasitology and Vector Biology Credits: 5 (3-4-0)
Also Offered As: BSPM 462 and BZ 462.
Course Description: Protozoa, helminthes, and insects and related arthropods of medical importance; systematics, epidemiology, host damage and control.
Prerequisite: (BZ 110 or LIFE 103) and (MIP 302 or LIFE 206 or BZ 212).
Registration Information: Credit allowed for only one of the following: MIP 462, BSPM 462, BZ 462. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 492 Senior Professional Development Seminar Credits: 2 (1-0-1)
Course Description:
Prerequisite: MIP 342.
Registration Information: Microbiology majors only. Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: MIP 300.
Registration Information: Written consent of department required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 496 Group Study Credits: Var[1-3] (0-0-0)
Course Description: Faculty-supervised investigation of areas of special interest in microbiology, virology, microbial physiology, or microbial genetics.
Prerequisite: None.
Registration Information: Written consent of instructor required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 498 Research Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: MIP 302.
Registration Information: Written consent of instructor required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 520 Fundamentals of Prion Biology Credit: 1 (1-0-0)
Course Description: Current state of prion research, future research directions, and the relationship of prion disease with other disease systems. Critical reading and synthesis of the literature, with an emphasis on writing skills.
Prerequisite: (BC 351 or MIP 342) and (MIP 300).
Registration Information: Junior standing. Credit not allowed for both MIP 520 and MIP 581A3.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 525 Flow Cytometry for Immunology Credit: 1 (1-0-0)
Course Description: Understand and interpret flow cytometry principles. Background of flow cytometry, experimental design, applications, and brief explanation of cell sorting.
Prerequisite: MIP 342 or MIP 651.
Registration Information: Senior standing. This is a partial semester course. Credit not allowed for both MIP 525 and MIP 581A4.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 530 Advanced Molecular Virology Credits: 4 (3-0-1)
Course Description: Virus-host interactions at the molecular and cellular level.
Prerequisite: (BC 351 or BC 401) and (BC 463 or MIP 450).
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 533 Epidemiology of Infectious Diseases/Zoonoses Credits: 3 (2-0-1)
Also Offered As: VS 533.
Course Description: Epidemiologic features of infectious and parasitic diseases that have a major impact on community medicine.
Prerequisite: MIP 300.
Registration Information: Credit not allowed for both MIP 533 and VS 533. Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 540 Biosafety in Research Laboratories Credits: 2 (2-0-0)
Course Description: Practical applications of biosafety principles, including lab practices and regulatory aspects of research involving infectious microorganisms and rDNA.
Prerequisite: MIP 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 543 RNA Biology Credits: 3 (3-0-0)
Course Description: Gene expression and regulation that occurs at the level of RNA (e.g., splicing, stability, export, translation, RNAi, etc.).
Prerequisite: BC 351, may be taken concurrently or BC 401, may be taken concurrently.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 545 Microbial Metagenomics/Genomics Data Analysis Credits: 2 (2-0-0)
Course Description: Microbiomes, microbes and their genetic material present in a host/environment, are linked to risk of disease in humans, animals, and plants. Metagenomics, including 16S rRNA community survey methods and shotgun metagenomics, use high throughput sequencing technology to provide insight into the composition and potential function of microbiomes. Hands-on experience with using bioinformatics and statistical tools necessary to process and analyze the resulting large datasets.
Prerequisite: None.
Registration Information: Senior standing. This is a partial semester course. Credit not allowed for both MIP 545 and MIP 581A2.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 550 Microbial and Molecular Genetics Laboratory Credits: 4 (2-6-0)
Course Description: Use of both in vivo genetics and in vitro molecular techniques to study gene structure, function, and regulation in bacteria.
Prerequisite: MIP 302 and MIP 450.
Registration Information: Written consent of department required. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

MIP 555 Principles and Mechanisms of Disease Credits: 3 (3-0-0)
Course Description: Principles of disease processes; emphasis on reactivity of the diseased cell, tissue, organ, or organism.
Prerequisite: BMS 300.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 563 Biology of Disease Vectors Credits: 3 (3-0-0)
Course Description: Vector physiology and genomics, new strategies in vector control, and vector/host interactions.
Prerequisite: MIP 462 or BSPM 462 or BZ 462.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 565 Next Generation Sequencing Platform/Libraries Credit: 1 (0-2-0)
Also Offered As: BZ 565.
Course Description: Theoretical and experimental aspects of next generation sequencing experiments with a focus on the Illumina platform. Students will create and sequence metagenomic and 16S rDNA libraries from soil samples and unknown bacterial cultures.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Credit allowed for only one of the following: BZ 565, CM 581A2, or MIP 565.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 570 Functional Genomics Credits: 3 (2-2-0)
Course Description: State-of-the-art genomic tools with applications to studies of pathogenesis and pathophysiology of infectious diseases.
Prerequisite: MIP 300 and MIP 302 and MIP 443 and MIP 450.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 576 Bioinformatics Credits: 3 (3-0-0)
Also Offered As: BSPM 576.
Course Description: Technical computing across platforms using bioinformatics tools in molecular analysis.
Prerequisite: BC 463 or BZ 310 or BZ 350 or CM 501 or CS 155 or ERHS 332 or MIP 275 or MIP 300 or MIP 450 or STAT 307.
Registration Information: Credit not allowed for both MIP 576 and BSPM 576.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 577 Computer Analysis in Population Genetics Credits: 2 (0-4-0)
Also Offered As: BZ 577.
Course Description: Computational and statistical techniques and practical exercises in discrete and quantitative genetics.
Prerequisite: MIP 578, may be taken concurrently or BZ 578.
Registration Information: Credit not allowed for both MIP 577 and BZ 577.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 578 Genetics of Natural Populations Credits: 4 (3-0-1)
Also Offered As: BZ 578.
Course Description: Theoretical and empirical aspects of the genetics of natural populations; current molecular techniques and statistical analysis.
Prerequisite: (BZ 350 or LIFE 201A or LIFE 201B or SOCR 330) and (STAT 201 or STAT 301 or STAT 307 or ERHS 307).
Registration Information: Must register for lecture and recitation. Credit not allowed for both MIP 578 and BZ 578.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 611 Advanced Microbiological Research Methods Credits: 4 (2-0-2)
Course Description: In-depth presentation of the ever-growing arsenal of techniques needed to be an effective experimental microbiologist/molecular biologist.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online. Enrollment in the face-to-face offering of the course requires admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 612 Applied Immunology Credits: 3 (3-0-0)
Course Description: Application of classic and modern principles in immunology currently being used in the medical, biotechnology and basic research fields.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online. Enrollment in the face-to-face offering of the course requires admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 613 Applied Microbiology and Virology Credits: 4 (4-0-0)
Course Description: Application of bacteria, fungi and viruses in translational research, from drug and vaccine development to the generation of clean energy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online. Enrollment in the face-to-face offering of the course requires admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 614 Medical Microbiology Credits: 3 (3-0-0)
Course Description: In-depth examination of the pathogenic mechanisms of medically important bacteria, fungi, parasites and viruses.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online. Enrollment in the face-to-face offering of the course requires admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 615 Ophthalmic Pathology Credit: 1 (1-0-0)
Course Description: Background in normal ocular histology as well as pathologic changes in the eye, taught through a combination of lectures and class discussions.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 616 Modern Molecular Biology for Microbiologists Credits: 4 (3-0-1)
Course Description: Develop a working knowledge in the theory and applications of modern molecular biology to applied and translational research uses in microbiology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B program. Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 617 Principles of Biodefense/Emerging Pathogens Credits: 3 (3-0-0)
Course Description: In-depth analysis of the physiology, biology and epidemiology of biodefense agents and emerging pathogens.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 618 MIP Masters Seminar Series Credit: 1 (0-0-1)
Course Description: Foster the development of MIP master's students by improving communication skills and discussion of cutting edge research.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B program. May be taken twice for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 619 MIP Masters Topics Credits: 2 (1-0-1)
Course Description: Foster the development of MIP master's students by improving communication skills and discussion of cutting edge research.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B program. May be taken twice for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 624 Advanced Topics in Microbial Ecology Credits: 2 (1-0-1)
Course Description: Recent conceptual developments in microbial ecology, emphasizing theoretical aspects of microbial ecology, particularly in an evolutionary context.
Prerequisite: (MIP 300) and (ESS 432 or MIP 432).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 628 Immunity to Infection Credits: 3 (3-0-0)
Course Description: How microorganisms have evolved to counteract the immune system and how the immune system has evolved to resist microbes.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 630 Advances in Microbial Physiology Credits: 3 (3-0-0)
Course Description: Contemporary developments in bacterial structure, function, metabolism, and genetics.
Prerequisite: MIP 443.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 636 Mechanisms of Viral Infection and Disease Credits: 4 (3-0-1)
Course Description: Cytopathic mechanisms, pathogenetic events in viral diseases; host response and antiviral immunity; cancer induction by DNA and RNA viruses.
Prerequisite: MIP 420 or MIP 530.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 643 Grant Writing for Microbiology/Pathology Credit: 1 (1-0-0)
Course Description: To effectively communicate ideas, goals and approaches in a scientific grant proposal.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in an MIP graduate program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 651 Immunobiology Credits: 3 (3-0-0)
Course Description: Structure, function, regulation of immunoglobulins and the immune system. Cellular immunity including transplantation and cancer.
Prerequisite: MIP 342.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 654 Research Policies and Regulations Credit: 1 (1-0-0)
Course Description: Reviews CSU and federal policies, rules, and regulations on integrity, use of humans and animals, authorship, data, genetics, etc., using case studies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 666 Writing Scientific Manuscripts Credits: 3 (0-0-3)
Course Description: Writing biological science manuscripts for publication.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 670 Molecular Immunology and Immunogenetics Credits: 3 (3-0-0)
Course Description: Molecular basis and genetics of immune response. Biochemistry of immunologically mediated diseases.
Prerequisite: MIP 651.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 675 Advanced Bioanalytic Pathology Credits: 2 (2-0-0)
Course Description: Laboratory medicine for post-graduate veterinarians and professional veterinary medical students.
Prerequisite: VM 724.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor or DVM degree required.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in an MIP graduate program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in an MIP graduate program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 700 Topics in Microbiology Credit: 1 (1-0-0)
Course Description: Current literature in bacteriology, virology, genetics, and immunology.
Prerequisite: MIP 300.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 720 Methods of Carbohydrate Analysis Credits: 2 (1-3-0)
Course Description: Structural analysis of complex carbohydrates using gas chromatography, mass spectrometry, and nuclear magnetic resonance.
Prerequisite: CHEM 346.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MIP 730 Principles of Flow Cytometry & Cell Sorting Credits: 2 (1-2-0)
Also Offered As: ERHS 730.
Course Description: Explores the background of flow cytometry, fluorescent molecules, experimental design, Flow Cytometry data Analysis, applications, and principles of cell sorting.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. This is a partial semester course. Credit not allowed for both ERHS 730 and MIP 730.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 740 Microbial and Molecular Genetics Credits: 3 (2-0-1)
Course Description: Molecular biology and genetics of prokaryotic and eukaryotic cells and their viruses; strategies for genetic manipulation.
Prerequisite: MIP 450.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 760 Mechanisms of Bacterial Pathogenesis Credits: 3 (2-0-1)
Course Description: Mechanisms of bacterium-host interaction at molecular and cellular levels in pathogenesis of bacterial disease.
Prerequisite: BC 351 and MIP 342.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 765 Comparative Neuropathology Credits: 2 (1-2-0)
Course Description: Spontaneous diseases of nervous system of domesticated, laboratory, and wild animals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 766 Cytopathology--Clinical Pathology Credit: 1 (0-0-1)
Course Description: Discussion of cytology cases that are diagnostically challenging, medically interesting, or classic case examples. Discussions and microscopic reviews of the cases will be led by a clinical pathologist.
Prerequisite: MIP 786A and MIP 786B and MIP 786C.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MIP 767 Advanced General Pathology Credits: 3 (3-0-0)
Course Description: In-depth, detailed study of general pathology and molecular mechanisms of disease. Help prepare students in the Anatomic and/or Clinical Pathology Residency prepare for the ACVP Board examination. Enhance the pathology knowledge and skills of Professional Veterinary Medicine students and graduate students in related disciplines.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 768 Advanced Clinical Pathology Credits: 2 (2-0-0)
Course Description: In-depth clinical pathology (cytology, hematology, and biochemistry) for post-professional students in CVMBS residency and/or graduate degree programs.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both MIP 768 and MIP 781A2.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 778 Pathobiology of Laboratory Animals Credits: 3 (3-0-0)
Course Description: Unique natural biology and diseases of laboratory animal species emphasizing clinical, diagnostic, morphologic and clinical pathologic features.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 779 Laboratory Animal Pathology Rotation Credit: 1 (1-0-0)
Course Description: Using case material compiled from submissions to the Laboratory Animal Resources necropsy service, the VTH Diagnostic services, the Armed Forces Institute of Pathology, and other resources, analyze selected slides demonstrating histologic pathology in laboratory animals. Prepare a description of the slide, provide a diagnosis and a brief summary of the pathogenesis.
Prerequisite: MIP 778.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both MIP 779 and MIP 780A1.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of department required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 786A Practicum: Comparative Gross and Histologic Pathology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Post-DVM graduate students only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 786B Practicum: Surgical Pathology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Post-DVM graduate students only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 786C Practicum: Clinical Pathology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Post-DVM graduate students only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 786D Practicum: Comparative Medicine Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Post-DVM graduate students only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MIP 792A Seminar: Research/Graduate Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: M.S. and Ph.D. candidates only. Maximum of 3 credits allowed per subtopic.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 792B Seminar: Research/Faculty Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: M.S. and Ph.D. candidates only. Maximum of 3 credits allowed per subtopic.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 792C Seminar: Microscopic and Bioanalytic Pathology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: M.S. and Ph.D. candidates only. Maximum of 3 credits allowed per subtopic.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 792D Seminar: Anatomic Pathology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: M.S. and Ph.D. candidates only. Maximum of 3 credits allowed per subtopic.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 792E Seminar: Clinical Pathology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: M.S. and Ph.D. candidates only. Maximum of 3 credits allowed per subtopic.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of department required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 796 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Ph.D. candidates only. Maximum of 3 credits allowed per subtopic.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Ph.D. candidates only. Maximum of 3 credits allowed per subtopic.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Microbiology

Students who want to apply their science knowledge in a career focused on infectious disease (including diagnostics), human/animal health, biotechnology, or the well-being and safety of our environment or food and beverage supply would do well to consider a major in microbiology. Microbiology is a diverse field that involves applying cutting-edge knowledge to critical problems.

You might find microbiologists:

- performing technical and diagnostic work in research laboratories, hospitals and clinics,
- directing product development at a company creating products related to human health, or
- focusing on emerging pathogens as part of a government effort to stem bioterrorism.

Microbiologists are also essential to the food and beverage industry, where they play an essential role in quality control related to the production of beer, wine, cheese, bread and yogurt. The biotechnology industry also relies on genetically engineered microorganisms as a means for removing toxic wastes and spills from the environment.

Laboratory research is an important part of the major, and is offered to our students in a number of different ways. Classroom laboratories give every student the foundation to move into advanced laboratories focusing on bacteriology, immunology, virology, parasitology, prion diseases, and genetics. Our department is home to dozens of working laboratories where students collaborate with some of the best scientists in the world. From tuberculosis, HIV, and leprosy to vector-borne illnesses and illness transmitted from animals to humans, there is ample opportunity to graduate having gained extensive research experience that translates into opportunities for immediate employment, as well as admission to graduate and professional programs. Graduates with a career interest in diagnostics often seek admission to clinical laboratory schools, which provide a very intense year of additional training, culminating in the ASCP board of certification examination. This career path is an essential part of health care in clinics and hospitals across the country.

Students who aim for professional school find that the microbiology major includes everything needed to be a competitive applicant. With coursework in microbiology, biology, anatomy and physiology, chemistry, biochemistry, physics, math, and statistics, microbiology majors have a competitive advantage when applying to veterinary, medical, physician's assistant, dental, and optometry programs, especially given the hands-on research opportunities that are offered both inside and outside of the classroom.

If you have an investigative mindset, a solid science foundation, and a willingness to think outside of the box, microbiology would be an excellent fit. If you are intrigued by topics as diverse as the microbiome,

bioengineering, prions or computational biology, we offer a great major. If you want to work in vaccine development, pharmaceuticals or human/animal health; if you want to work with food and beverages that involve microbes--you will love microbiology! If you are interested in the work of the CDC or FDA; if you are intrigued at the thought of a career focused on bioterrorism or disease outbreaks here and abroad, microbiology would be a wonderful step towards that goal. Career opportunities will continue to grow because microbiology is at the center of complex issues facing our world today, as well as at the forefront of incredible innovation and development. Microbiologists contribute to the health and well-being of our world and those we care about.

For more information please visit the Department of Microbiology (http://csu-cvmbs.colostate.edu/academics/mip/undergraduate/Pages/default.aspx).

Requirements Effective Fall 2018

Freshman

		AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CO 150	College Composition (GT-CO2)	1A	3
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
MIP 250	Eukaryotic Microbiology		3
MIP 260	The World of Parasites		3
Select a minimum of 3 credits from the following:		1B	3-4
MATH 118	College Algebra in Context II (GT-MA1)	1B	
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	
MATH 125	Numerical Trigonometry (GT-MA1)	1B	
MATH 126	Analytic Trigonometry (GT-MA1)	1B	
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	
Microbiology Elective (See list below)			2
Elective			3
	Total Credits		30-31

Sophomore

BC 351	Principles of Biochemistry		4
MIP 300	General Microbiology		3
MIP 302	General Microbiology Laboratory		2
MIP 342	Immunology		4
Select one group from the following:			5-8
Group A			
CHEM 245	Fundamentals of Organic Chemistry		
CHEM 246	Fundamentals of Organic Chemistry Laboratory		
Group B			
CHEM 341	Modern Organic Chemistry I		
CHEM 343[1]	Modern Organic Chemistry II		
CHEM 344	Modern Organic Chemistry Laboratory		
Microbiology Electives (See list below)			2-5
Historical Perspectives		3D	3
Social and Behavioral Sciences		3C	3
Elective			2
	Total Credits		31

Junior

Select one course from the following:			5

PH 121	General Physics I (GT-SC1)	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	
Select one course from the following:			3-4
MIP 443	Microbial Physiology		
MIP 450	Microbial Genetics		
Microbiology Electives (See list below)			7
Advanced Writing		2	3
Arts and Humanities		3B	3
Global and Cultural Awareness		3E	3
Electives			5
	Total Credits		29-30

Senior

MIP 351	Medical Bacteriology	4B	3
MIP 420	Medical and Molecular Virology	4A	4
MIP 492	Senior Professional Development Seminar		2
Select one course from the following:			2-3
MIP 400A	Capstone in Microbiology: Medical Microbiology	4C	
MIP 400B	Capstone in Microbiology: Biotechnology	4C	
MIP 400C	Capstone in Microbiology: Immunology	4C	
MIP 400D	Capstone in Microbiology: Microbial Diversity/Ecology	4C	
MIP 400E	Capstone in Microbiology: Microbial Genetics	4C	
MIP 400F	Capstone in Microbiology: Virology	4C	
MIP 400G	Capstone in Microbiology: Service Learning	4C	
MIP 498	Research	4C	
Select one course from the following:			3
STAT 301	Introduction to Statistical Methods		
STAT 307	Introduction to Biostatistics		
Microbiology Electives (See list below)			8
Arts and Humanities		3B	3
Electives[2]			2-5
	Total Credits		28-30
	Program Total Credits:		120

Microbiology Electives

Code	Title	Credits
Select a minimum of 22 credits from the following not taken elsewhere in the program. CHEM 343 may count as a Microbiology Elective for students who select organic chemistry Group B in the Sophomore year.		
A minimum of two laboratory courses MUST be selected from the following:		
MIP 150	Introduction to Research Methods	
MIP 335	Food Microbiology Laboratory	
MIP 343	Immunology Laboratory	
MIP 352	Medical Bacteriology Laboratory	
MIP 425	Virology and Cell Culture Laboratory	
MIP 433	Microbial Ecology Laboratory	
MIP 462/ BSPM 462/BZ 462	Parasitology and Vector Biology	
MIP 550	Microbial and Molecular Genetics Laboratory	

A maximum of two unique courses, maximum of 6 credits, may be selected from the following:

MIP 298	Introductory Research	
MIP 384	Supervised College Teaching	
MIP 495	Independent Study	
MIP 498	Research	
ANEQ 460	Meat Safety	2
BC 404	Comprehensive Biochemistry Laboratory	2
BC 463	Molecular Genetics	3
BMS 300	Principles of Human Physiology	4
BMS 301	Human Gross Anatomy	5
BMS 305	Domestic Animal Gross Anatomy	4
BMS 325	Cellular Neurobiology	3
BMS 401	Laboratory Research in Biomedical Sciences	4
BMS 450	Pharmacology	3
BSPM 302	Applied and General Entomology	2
BZ 220	Introduction to Evolution	3
BZ 310	Cell Biology	4

BZ 333	Introductory Mycology	4
BZ 346	Population and Evolutionary Genetics	3
BZ 350	Molecular and General Genetics	4
BZ 360	Bioinformatics and Genomics	3
BZ 418	Ecology of Infectious Diseases	4
BZ 577/MIP 577	Computer Analysis in Population Genetics	2
BZ 578/MIP 578	Genetics of Natural Populations	4
CHEM 334	Quantitative Analysis Laboratory	1
CHEM 335	Introduction to Analytical Chemistry	3
CHEM 343	Modern Organic Chemistry II [1]	3
ERHS 210	Cancer Biology, Medicine, and Society	2
ERHS 320	Environmental Health--Water Quality	3
ERHS 332	Principles of Epidemiology	3
ERHS 502	Fundamentals of Toxicology	3
ERHS 567	Cell and Molecular Toxicology Techniques	3
FTEC 360	Brewing Processes	3
FTEC 460	Brewing Science II	3
FTEC 574	Current Issues in Food Safety	2
HORT 477	Enology-History and Winemaking	3
LIFE 103	Biology of Organisms-Animals and Plants	4
LIFE 201B	Introductory Genetics: Molecular/ Immunological/Developmental (GT-SC2)	3
LIFE 203	Introductory Genetics Laboratory	2
LIFE 210	Introductory Eukaryotic Cell Biology	3
LIFE 211	Introductory Cell Biology Honors Recitation	1
LIFE 212	Introductory Cell Biology Laboratory	2
LIFE 320	Ecology	3
MATH 155	Calculus for Biological Scientists I (GT-MA1)	4
MATH 160	Calculus for Physical Scientists I (GT-MA1)	4
MIP 192	Microbiology First-Year Seminar	2
MIP 275	Microcomputing Applications in Microbiology	2
MIP 303	General Microbiology--Honors Recitation	1
MIP 315	Pathology of Human and Animal Disease	3
MIP 334	Food Microbiology	3
MIP 350	Microbial Diversity	3
MIP 400A	Capstone in Microbiology: Medical Microbiology	2
MIP 400B	Capstone in Microbiology: Biotechnology	2
MIP 400C	Capstone in Microbiology: Immunology	2
MIP 400D	Capstone in Microbiology: Microbial Diversity/Ecology	2
MIP 400E	Capstone in Microbiology: Microbial Genetics	2
MIP 400F	Capstone in Microbiology: Virology	2
MIP 400G	Capstone in Microbiology: Service Learning	2
MIP 432	Microbial Ecology	3
MIP 436	Industrial Microbiology	4
MIP 443	Microbial Physiology	4
MIP 450	Microbial Genetics	3
MIP 496	Group Study	1-3
MIP 530	Advanced Molecular Virology	4
MIP 540	Biosafety in Research Laboratories	2
MIP 555	Principles and Mechanisms of Disease	3
MIP 563	Biology of Disease Vectors	3
MIP 570	Functional Genomics	3
PH 122	General Physics II (GT-SC1)	5
SOCR 330	Principles of Genetics	3
SOCR 455	Soil Microbiology	3
SOCR 456	Soil Microbiology Laboratory	1
VS 331	Histology	4
VS 333	Domestic Animal Anatomy	4

1 CHEM 343 may count as a Microbiology Elective for students who select organic chemistry Group B in the Sophomore year.

2 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

To prepare for first semester: The curriculum for the Microbiology major assumes students enter college prepared to take MATH 124. Entering students who are not prepared to take MATH 124 will need to prerequisite requirements in the first semester. Those requirements are listed as benchmark courses in Freshman Semester 1 below. LIFE 102 requires high school chemistry as a prerequisite; CHEM 111 requires Algebra II as a prerequisite (this prerequisite is met by having Algebra II by test credit, transfer credit, or placement out of MATH 117 and MATH 118 on Math Placement Exam).

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	4
MIP 250	Eukaryotic Microbiology	X			3
Select 0-1 credits from the following:					0-1
MATH 118	College Algebra in Context II (GT-MA1)			1B	
MATH 124	Logarithmic and Exponential Functions (GT-MA1)		X	1B	
MATH 125	Numerical Trigonometry (GT-MA1)			1B	
MATH 126	Analytic Trigonometry (GT-MA1)			1B	
Microbiology Electives (See list on Requirements Tab)					2

MATH 124 must be completed by the end of Semester 1, if necessary.		X			
	Total Credits				14-15
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II	X			3
CHEM 114	General Chemistry Lab II	X			1
CO 150	College Composition (GT-CO2)		X	1A	3
MIP 260	The World of Parasites	X			3
Select 2-4 credits from the following:					2-4
MATH 124	Logarithmic and Exponential Functions (GT-MA1)			1B	
MATH 125	Numerical Trigonometry (GT-MA1)			1B	
MATH 126	Analytic Trigonometry (GT-MA1)			1B	
MATH 155	Calculus for Biological Scientists I (GT-MA1)			1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)			1B	
Elective					3
CO 150 must be completed by the end of semester 2.		X			
3-4 credits of MATH must be completed by the end of semester 2.		X			
MATH 125 must be completed by the end of semester 2.		X			
	Total Credits				15-17
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
MIP 300	General Microbiology	X			3
MIP 302	General Microbiology Laboratory	X			2
Select one group from the following:					5
Group A					
CHEM 245	Fundamentals of Organic Chemistry	X			
CHEM 246	Fundamentals of Organic Chemistry Laboratory	X			
Group B					
CHEM 341	Modern Organic Chemistry I				
Microbiology Elective – 2 credits					
Social and Behavioral Sciences				3C	3
Elective					2
	Total Credits				15
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
BC 351	Principles of Biochemistry		X		4
MIP 342	Immunology	X			4
Select the same Group (A or B) as selected Semester 3:					5
Group A:					
Microbiology Electives – 5 credits					
Group B:					
CHEM 343	Modern Organic Chemistry II				
CHEM 344	Modern Organic Chemistry Laboratory				
Historical Perspectives				3D	3
	Total Credits				16
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
Select MIP 450 Semester 5 if MIP 443 will not be taken Semester 6:					0-3
MIP 450	Microbial Genetics				
Select one course from the following:					5
PH 121	General Physics I (GT-SC1)	X	X	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)	X		3A	
Microbiology Elective (See list on Requirements Tab)					0-3
Arts and Humanitites				3B	3

Global and Cultural Awareness				3E	3
Elective					2
	Total Credits				16
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Select MIP 443 Semester 6 if MIP 450 was not taken Semester 5:					0-4
MIP 443	Microbial Physiology				
Microbiology Electives (See list on Requirements Tab)					4-7
Advanced Writing				2	3
Elective					3
Select MIP 450 (Fall) or MIP 443 (Spring) by end of semester 6.		X			
	Total Credits				13-14
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
MIP 420	Medical and Molecular Virology	X		4A	4
MIP 492	Senior Professional Development Seminar				2
Select one AUCC 4C course from the following:		X		4C	2-3
MIP 400A	Capstone in Microbiology: Medical Microbiology			4C	
MIP 400B	Capstone in Microbiology: Biotechnology			4C	
MIP 400C	Capstone in Microbiology: Immunology			4C	
MIP 400D	Capstone in Microbiology: Microbial Diversity/Ecology			4C	
MIP 400E	Capstone in Microbiology: Microbial Genetics			4C	
MIP 400F	Capstone in Microbiology: Virology			4C	
MIP 400G	Capstone in Microbiology: Service Learning			4C	
MIP 498	Research			4C	
Select one course from the following:					3
STAT 301	Introduction to Statistical Methods				
STAT 307	Introduction to Biostatistics				
Microbiology Elective (See list on Requirements Tab)					3
	Total Credits				14-15
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
MIP 351	Medical Bacteriology	X		4B	3
Arts and Humanities		X		3B	3
Microbiology Electives (See list on Requirements Tab)		X			5
Electives		X			2-5
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				13-16
	Program Total Credits:				120

Minor in Microbiology

A minor in Microbiology will be of considerable benefit to students majoring in biological science, natural science, food science, biochemistry, some fields of engineering, and other science-related fields.

Requirements Effective Fall 2018

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Code	Title	Credits
Core Courses		
MIP 300	General Microbiology	3
MIP 302	General Microbiology Laboratory	2
MIP 342	Immunology	4
Selected Courses (select a minimum of 12 credits from the following lists)		
Select at least one from the following:		3-4
MIP 351	Medical Bacteriology	
MIP 420	Medical and Molecular Virology	
Select at least one from the following:		3-4
MIP 443	Microbial Physiology	
MIP 450	Microbial Genetics	

Select 4-6 credits not taken above, including one laboratory course, from the following:		4-6
MIP 250	Eukaryotic Microbiology	
MIP 260	The World of Parasites	
MIP 334	Food Microbiology	
MIP 350	Microbial Diversity	
MIP 351	Medical Bacteriology	
MIP 420	Medical and Molecular Virology	
MIP 425	Virology and Cell Culture Laboratory	
MIP 432/ESS 432	Microbial Ecology	
MIP 436	Industrial Microbiology	
MIP 443	Microbial Physiology	
MIP 450	Microbial Genetics	
MIP 462/BZ 462/ BSPM 462	Parasitology and Vector Biology	
MIP 498	Research	
Program Total Credits:		21

Master of Science in Microbiology, Plan B

The non-thesis Master of Science in Microbiology, Plan B is designed to strengthen the scientific academic portfolio of those seeking professional degrees and provide differentiating preparation for those seeking careers in industry. Students will work side-by-side one of the leading microbiology and immunology departments in the nation as they develop professional knowledge and skills.

With the growth of biotechnology and the increase in technology and specialization in applied microbiological sciences, there is a significant regional and national need for additional educational opportunities for individuals wishing to pursue a career in these industries. In addition, many students wish to pursue additional post-baccalaureate studies due to a variety of interests such as improved preparation for professional (medical, veterinary, DO, etc.) schools or Ph.D. programs. The Department of Microbiology, Immunology & Pathology's M.S. in Microbiology, Plan B provides an excellent opportunity to meet these needs. As a recognized world leader in infectious disease basic and translational research with over $144 million in active extramurally funded research programs – including a good variety of translational efforts that interface with industrial partners, the MIP department is uniquely positioned in our region to effectively provide this training.

Goals of the Master of Science in Microbiology, Plan B

The overall goal of the program is to give each student a competitive advantage for their future career in industry or their admission into professional school. To develop this advantage the program leverages your undergraduate education and training in life science and provides the advanced knowledge and skills required through:

1. A rigorous curriculum designed to provide cutting-edge knowledge in both theoretical and applied aspects of microbiology, virology, immunology and molecular biology.
2. A strong emphasis on aspects of the discipline that will be useful in real world employment scenarios.
3. A well-rounded curriculum that includes the development of vital professional skills such as verbal and written communication, responsible conduct of research, and biosafety.
4. Active communication with regional and national representatives from the pharmaceutical, biotech, government and public health sectors to ensure that the program's curriculum remains pertinent and effective.
5. A high level of communication in the program to facilitate active mentoring, networking and career discussions, and access to take full advantage of the cutting-edge facilities and expertise available in the department.

Requirements Effective Fall 2013

Code	Title	Credits
MIP 540	Biosafety in Research Laboratories	2
MIP 611	Advanced Microbiological Research Methods	4
MIP 612	Applied Immunology	3
MIP 613	Applied Microbiology and Virology	4
MIP 614	Medical Microbiology	3
MIP 616	Modern Molecular Biology for Microbiologists	4
MIP 617	Principles of Biodefense/Emerging Pathogens	3
MIP 618	MIP Masters Seminar Series [1]	2
MIP 619	MIP Masters Topics [2]	4
MIP 654	Research Policies and Regulations	1
Program Total Credits:		30

A minimum of 30 credits are required to complete this program.

[1] Students must take MIP 618 twice for 1 credit each time, Fall and Spring semesters, for a program total of 2 credits.

[2] Students must take MIP 619 twice for 2 credits each time, Fall and Spring semesters, for a program total of 4 credits.

A scholarly paper is required for this degree.

A minimum of 24 credits must be earned at CSU.

GRADUATE AND PROFESSIONAL BULLETIN

The *Graduate and Professional Bulletin* is designed to provide post baccalaureate students and prospective students with the information which is most essential. It is not a comprehensive source.

A complete listing of graduate programs and degrees may be found by visiting the Graduate School (http://graduateschool.colostate.edu/prospective-students/degrees.aspx).

The policies and procedures in the Graduate and Professional Bulletin apply to all graduate students, except for Doctor of Veterinary Medicine (DVM) students. The policies and procedures for DVM students are found at the DVM Student Resource Page (http://csu-cvmbs.colostate.edu/dvm-program/Pages/dvm-student-resources.aspx).

CSU reserves the right at any time, without notice, to change, modify, or cancel any course, program, procedure, policy, financial requirement, or disciplinary arrangement set forth in this catalog whenever, in its sole discretion, it determines such action to be appropriate. Furthermore, CSU will not be responsible for any failure to present or complete any course or program or to perform any other activity, function, or obligation mentioned in this catalog. Since changes may occur at any time, students must check the relevant website (as noted throughout this catalog). Changes can be found on the Catalog Updates page.

CSU Student Conduct Code

The Student Conduct Code (https://resolutioncenter.colostate.edu/student-conduct-code) exists to notify students, faculty, and staff of the specific expectations Colorado State University holds related to student behavior and the rights and responsibilities that accompany being a student and participating in student clubs or organizations.

Functions and Organization of the Graduate School

The purpose of the Graduate School is to promote high quality education and specialized training and to further the scholarly research and creative artistry with which such education is intimately linked. The advanced study necessary for graduate degrees requires the discovery of new knowledge, the original application or adaptation of existing knowledge, or esthetic contribution to the culture. Accordingly, graduate students perform research or do artistic work. Similarly, the faculty who are responsible for graduate education are themselves researchers or artists whose responsibilities include the transmission of their own creative skills and abilities to their students. The graduate educational mission of CSU and the research/artistic mission of CSU complement and reinforce each other and go forward in mutual interdependence.

Through the offering of the best graduate education available, CSU seeks to provide the skills and training necessary to a rapidly changing society and also to provide the basis for individual gratification and fulfillment on the part of its graduates.

Graduate degrees are awarded by CSU as an overall institution. Accordingly, CSU has specified that certain academic practices and procedures shall apply to all graduate degrees regardless of the departments and colleges in which study is undertaken. As is the case in most quality universities, some consistency of requirements has been found desirable. The Graduate School is the unit which applies and administers these requirements.

This activity involves several discrete kinds of functions. First, the Graduate School monitors all students' progress through the entire graduate career, from sending out preliminary information on admissions to graduation. It maintains student records on application, admission, credits earned, formal programs of study, academic standing, progress toward the degree, and graduation. Additionally, it provides a regular flow of information to students and faculty regarding these practices so that the necessary steps can be taken as easily and conveniently as possible.

The Graduate School maintains an active liaison with students both on matters of overall interest and at the level of individual concerns. The former typically involves close contact with the Graduate Student Council, the campus-wide organization of graduate students, or its officers. The latter centers around matters which particular students raise as specific single cases.

The Graduate School collects and maintains information on the condition of the graduate educational mission of CSU. It concerns itself with institution-wide policies and practices that may affect this condition and will implement particular arrangements or make recommendations to the Faculty Council as appropriate.

Formal student involvement in the Graduate School proceeds through the Graduate Student Council. The Student Council consists of one student representative and one alternate from each department offering programs leading to advanced degrees. The Council elects its own officers and nominates graduate students for memberships on Faculty Council and Graduate School committees.

Admissions Requirements and Procedures

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Integrated Degree Program and Integrated Degree Programs Plus Admissions
Sequential Degree Programs

CSU's graduate admissions program is designed to foster excellence in scholarship and promote diversity within the student population while assuring equal opportunity to all applicants.

The ultimate criterion for admission is applicant potential for attaining an advanced degree at CSU. However, the resources of CSU are limited and not all applicants who possess this potential can be admitted. Thus, selection is made taking into account a range of factors: past academic performance as indicated by transcripts of formal collegiate work, degrees completed, standardized examination scores (for example, the Graduate Record Examination or Graduate Management Admission Test), geographic residence, leadership qualities, recommendations

from qualified references, economic status, ethnic origin, and racial background.

CSU does not set quotas for people possessing particular ethnic, gender, or racial characteristics. However, the vitality of CSU and the quality of the educational experience to be enjoyed by all students depend in part on the existence of a diverse student population. Thus, CSU actively seeks applicants from many backgrounds and with diverse characteristics. The institution is committed to a truly heterogeneous University community.

Application: U.S. Citizens or Permanent Residents

Students apply online (http://gradadmissions.colostate.edu/apply). In addition to the online application, a non-refundable application fee must be electronically submitted.

The on-line application will be electronically submitted to the Office of Admissions and then forwarded to the appropriate academic departments. With this system, most documents are uploaded directly by the applicant. Regarding letters of recommendation, recommenders will be notified and prompted to provide a recommendation letter through the online system. The letter of recommendation will be automatically processed and submitted to the student's online file.

The following must be sent directly to the Office of Admissions at Colorado State University, 1062 Campus Delivery, Fort Collins, CO 80523-1062.

1. One official transcript of all collegiate work completed post-high school. Additionally separate transcripts are not required for study abroad credits if the GPA and credits are recorded on the transcript of the university that sponsored the study abroad experience. CSU transcripts are not required. Training course transcripts from branches of the U.S. military that show credit received with neither grades nor degrees awarded are exempt from the transcript requirement.
2. Test scores such as GRE or GMAT, if required by department, should be submitted with institution code 4075.
3. Any other materials that individual departments or programs may require of applicants.
4. Regardless of citizenship, applicants may be required to demonstrate proof of English language proficiency, if they do not have a degree from an institution where the primary language of instruction is English.

General deadlines for the receipt of complete applications are as follows: Fall Semester, April 1; Spring Semester, September 1; Summer Term, January 1. Please submit the on-line application and all supporting documents by the appropriate date. Note that individual departments may have earlier deadlines for certain programs. Please consult appropriate sections of this Bulletin or a department contact person. Applications completed later than these published deadlines may be considered depending on space and resources available. Late applications that cannot be considered will be updated by the Office of Admissions to a later semester or term. Except for Integrated Degree Program (IDP) Admissions, applications cannot be accepted more than fifteen months in advance of the term in which study is to begin.

Students who wish to be considered for fellowships, assistantships, or other forms of merit- or competency-based financial support may be subject to earlier deadlines. See Application for Financial Support.

The application fee is not refundable even if the application is withdrawn or admission denied, nor is it applied to tuition and fees if the applicant subsequently enrolls. The non-refundable application fee must be received by the Office of Admissions. Your application cannot be submitted until the fee is received.

Only persons with bachelor's degrees from colleges or universities accredited by one of the major regional accrediting agencies are eligible to apply. Degrees from schools which do not possess overall, institutional accreditation or which have only specialized accreditation cannot be accepted. This policy does not apply to admission for combined degree programs (CDPs, see Sequential Degree Programs), however, CDP students must earn their bachelor's degrees prior to, or concurrent with, the award of their graduate degrees.

An undergraduate grade point average of 3.000 (A = 4.000) is required by CSU regulation for admission.

The various departments may have requirements in addition to or more stringent than those of CSU. Higher undergraduate grade point averages may be required, specific GRE minimum scores may be specified, or GRE advanced tests may be required, for example. Once again, applicants are strongly urged to contact the department in which they intend to study.

CSU may waive its 3.000 minimum undergraduate grade point average requirement under unusual circumstances or if the applicant is applying through Track II Admissions (see below). Applicants must present strong countervailing evidence that successful completion of a degree program is likely. Examples of the kinds of evidence that might be considered are high scores on the GRE aptitude test, high scores on the GRE advanced test, excellent letters of recommendation, relevant professional experience, and other indicators of exceptional motivation and performance. A positive recommendation by the department is required in such cases. Some departments may waive their specific requirements under similarly unusual and compelling circumstances. However, they are not required to do so and many cannot, due to space and resource considerations.

If the minimum GPA requirement is waived and the applicant is accepted by the Graduate School, the applicant will be provisionally admitted and placed immediately on academic probation. The student must achieve a term GPA of 3.000, averaged across all coursework that is traditionally graded (A through F), in the first semester, or the student will be dismissed from the Graduate School. This policy applies to all provisionally admitted graduate students.

Meeting the minimum CSU or department standards does not entitle an applicant to admission. Meeting such standards only insures consideration of the application. Since CSU cannot accommodate all who meet the minimum standards, it reserves the right to select individuals for admission on the basis of merit in such a way as to promote the best interests of CSU and the society as a whole and to maximize the potential for individual accomplishment.

Decisions made by the Graduate School to deny admission are final and not subject to appeal by the applicant.

Persons not seeking advanced degrees may be recommended for admission as non-degree students if space permits and if they meet the academic admission requirements. Advanced course work, research

experience, teacher recertification, and specialized training are among the objectives of students requesting admission in this category.

Students who have not been admitted to graduate study but who take courses on some other basis have no assurance that such courses will be acceptable in a degree program. Credits taken prior to admission to Graduate School may be allowed, but acceptance of any courses in a graduate degree program is at the discretion of the student's graduate committee and the Graduate School and will not be calculated in the student's GPA.

Courses taken by CSU *undergraduates* may, under certain circumstances, be subsequently credited toward graduate degrees at CSU. *Undergraduates* who enroll in 500-level courses which are not applied toward the bachelor's degree may request that an exclusion statement be placed on their academic records for no more than 9 credits. Students cannot exclude any courses below the 500 level under this policy. *Courses at the 600 level are automatically excluded from use for an undergraduate degree.*

A written request for exclusion must be filed with the Degree and Transfer Evaluation Unit of the Registrar's Office, Centennial Hall, Room 100, no later than the end of the schedule change period of the term in which the excluded course is taken, or for Integrated Degree Program (IDP) students, excluded courses must appear on the formal program of study (GS form 6) filed during the first semester after Graduate School admission.

Permission to exclude courses from the bachelor's degree does not assure acceptance of this credit toward a graduate degree program. Both departmental and Graduate School approval is required at the time of filing the formal program of study.

Those with bachelor's or advanced degrees who desire to complete requirements for certification as teacher, administrator, counselor, reading specialist, or vocational certification must contact the School of Education. Individuals seeking professional certification in other areas must contact the departments concerned.

The submission of any false information or fraudulent documents in connection with the application process is grounds for rejection of the application or dismissal from the Graduate School regardless of the nature of other credentials.

Track II Admissions

Track II admissions are available only to individuals who have at least five years of appropriate professional experience following the award of a baccalaureate degree and whose undergraduate GPA is below 3.000.

The on-line application will be electronically submitted to the Office of Admissions and then forwarded to the appropriate academic departments. In addition to the on-line application and a non-refundable application fee that must be submitted, the following must be sent directly to the department in which the student plans to study (refer to the addresses in the Directory for Department and Program Contact Persons (http://graduateschool.colostate.edu/programs)).

1. One official transcript of all collegiate work completed (CSU transcripts are not required). Training course transcripts from branches of the U.S. military that show credit received with neither grades nor degrees awarded are exempt from the transcript requirement.
2. Three letters of recommendation written by individuals in at least two of the following categories:
   a. Applicant's previous or current college/university instructors.
   b. Applicant's previous or current, immediate professional supervisors.
   c. Observers, other than supervisors, who can verify the specific impact of the applicant's professional or intellectual expertise. Letters from friends, relatives, or character witnesses will be considered only supplemental to the three required references.
3. A written "statement of purpose" that contains:
   a. A summary of long-term professional or personal goals.
   b. A statement regarding the applicant's educational goals.
   c. A statement indicating how this learning will contribute to the applicant's long-term goals.
   d. A list of factors that led the applicant to consider CSU for graduate study.
4. A completed resume that contains the following:
   a. Record of all collegiate work, including names of institutions, periods of attendance, and degrees earned.
   b. Record of all professional employment including dates of service (including military).
   c. List of any special skills or competencies (including certifications or licensures).
   d. List of publications, exhibitions, prizes, awards, or other recognitions.
   e. List of service activities (including community and charitable).

Plan C

Applicants to Plan C master's programs should consult department requirements for submission of standardized test scores.

Application: International Students

Application procedures are similar to those for U.S. citizens or permanent resident students. Refer to U.S. Citizens or Permanent Residents information for instructions.

The following materials must be sent directly to the Office of Admissions at Colorado State University, 1062 Campus Delivery, Fort Collins, CO 80523-1062.

1. An official transcript of all collegiate work completed along with a certified translation into English.
2. Scores on the Test of English as a Foreign Language (TOEFL), International English Language Testing System (IELTS), or Pearson Test of English (PTE) Academic. Test scores should be submitted with institution code 4075. Integrated Degree Program (IDP) Admissions are not required to take the TOEFL, IELTS exam or the PTE Academic exam.

a. When the CSU graduate degree program is taught in the student's native language, the TOEFL, IELTS, or the PTE Academic requirement will be waived.

b. Students are exempted from the TOEFL, IELTS, or PTE Academic requirement if the official language of their country is English or if they have recently earned a degree at an American university.

Required items for Immigration Document Insurance

These items are not required for the application review process, but will be required if officially admitted. The following materials must be sent directly to the department in which the applicant plans to study (see Programs and Degrees webpage (http://graduateschool.colostate.edu/programs) for the mailing address).

1. Certified proof of financial support – Graduate Student Certification for Issuance of Immigration Document (GS3F form) and supporting financial documents.
2. Passport copy

Departmental requirements for additional materials such as standardized tests (e.g. GRE or GMAT) are the same as for U.S. students. Regulations regarding deadlines and application fees are likewise the same as for U.S. students.

Information on application deadlines and application fees is contained in the U.S. Citizens or Permanent Residents section.

The U.S. Bureau of Citizenship and Immigration Services requires CSU to have proof of financial support before immigration documentation can be issued. Immigration documentation is needed to obtain a visa. All international students and their accompanying dependents are required to maintain adequate health insurance during their stay at CSU.

Only persons with degrees equivalent to U.S. bachelor's degrees are qualified to apply for admission except for Integrated Degree Program (IDP) applicants described above. Further, it is a CSU regulation that international applicants should be among the top students in their classes.

CSU requires that proficiency in English language be demonstrated either by the TOEFL, IELTS, or PTE Academic tests prior to admissions. The minimum TOEFL score for admission without condition is 80 for the (internet-based exam). Contact the Graduate School for guidance on interpreting paper-based exam scores. The minimum IELTS score for admission without condition is 6.5. The minimum PTE Academic Score for admission without condition is 58. Official scores, taken within two years prior to admission, must be submitted directly from the testing agency.

To be considered for conditional admission, a student must have a minimum TOEFL score of 50 on the internet based test, a minimum IELTS score of 5.5 or PTE scores from 40-57. After receiving conditional admission, the student must satisfactorily complete the INTO CSU Academic English Program. Enrollment in regular CSU academic courses is at the discretion of the INTO CSU Academic English Program. Approval of both the department and the Dean of the Graduate School is necessary for such conditional admission.

Generally, however, applicants should achieve satisfactory TOEFL, IELTS or PTE Academic scores before arriving on the CSU campus.

The individual departments may have requirements or standards in addition to or more stringent than those of CSU. Students must contact the department in which they intend to study for additional information. Consult the Department Head or Program Contact Persons for the proper addresses.

The paragraphs in the preceding section on U.S. Citizens or Permanent Residents on academic requirements, how students are selected for admission, non-degree study, previous undergraduate work at Colorado State, certification, and the consequences of presenting any materials that are not genuine, also apply to international students.

Language Requirements

English is the language of instruction at CSU. Adequate knowledge of that language is expected. The various departments generally evaluate students in this regard, and they may require students to secure remedial instruction if necessary.

Students whose native language is not English must demonstrate capability through the TOEFL examinations or other means (see above).

Some departments may require a knowledge of one or more foreign languages for advanced degrees. For information the student should contact the department.

Application Deadline Dates for Graduate School and Financial Support

Term	Applying to Graduate School Only	Applying to Graduate School and Financial Support
Fall	April 1st	February 15th
Spring	September 1st	July 15th
Summer	January 1st	November 15th

Personal Identifier/Social Security Number

The personal identifier for all CSU students is the CSUID. The CSUID is a nine-digit unique numeric identifier that begins with the digit 8 and is assigned by the ARIES student information system. The Social Security number (SSN) is no longer used at CSU as a personal identifier.

All students are requested to submit a Social Security number (SSN) at the time of admission or before initial enrollment at CSU. The Social Security number is maintained as a secure data element in the student information system and is not accessible as directory information or to unauthorized persons. International students are encouraged to file for a Social Security number although they are not eligible for Social Security benefits. Students' disclosure of the social security number is required for financial aid purposes, employment, and state and federal reports required by law.

The Social Security number is released to agencies or individuals outside CSU only at the request of the student or in accordance with federal and state requirements in regard to financial aid awards; Internal Revenue Service for student employee salary reporting and 1098T/1098E reporting; and State Controller's debt collection procedure. CSU has strict policies protecting and prohibiting the use of SSN and uses every reasonable effort to hide and protect SSN.

Readmission

If there is an interruption in successive semester-to-semester on-campus resident instruction registration, enrollment will lapse and you will need to reapply. File GS Form 1B to apply for readmission at least two months prior to the term that you plan to return. A check or money order for $150.00 must accompany the GS Form 1B.

Please note that registration through Continuing Education (CSU Online), Guest Registration, Alternate Site, or an off-campus instruction mode (including Distance Degree) does not constitute readmission.

The GS Form 1B (http://graduateschool.colostate.edu/documents/GS1B.pdf) is available online.

Transfer of Graduate Credit from Other Institutions

Credit may be transferred to a graduate program at CSU with the approval of advisor, committee, and Graduate School. There is no right to transfer credits; each case is assessed individually and accepted or rejected on its merits. The number of credits that may be transferred is limited. See requirements for the number of credits that may be earned at CSU after admission to the Graduate School under the descriptions of the various degree programs and in Credit Requirements section.

Individual credits used to fulfill requirements for previously earned degrees are not accepted in transfer.

Requests to transfer graduate credit earned at another university must be accompanied by official transcripts. Courses accepted for transfer must be at the equivalent level of CSU's regular courses at the 500 level or above. Arrangements for transfer of credit are made when the program of study is submitted (see Program of Study). In general, credits transferred must be part of a graduate curriculum. However, credits that are part of a post baccalaureate professional curriculum in Medicine, Veterinary Medicine, Dentistry, Pharmacy, Law, or Divinity may be so transferred if they address the intellectual bases of a graduate discipline.

Credits earned at institutions not accredited by one of the major regional accrediting agencies are not acceptable for transfer; except that a CSU academic department may petition the Graduate School to have graduate level credits earned from a foreign institution accepted as transfer credit. Grades in courses accepted for transfer will not be included in calculation of the grade point average. No course will be accepted for transfer with a grade less than B.

CSU may establish bilateral cooperative agreements with other institutions within the Colorado State University System (CSU-Pueblo (http://www.csupueblo.edu/Pages/default.aspx) and CSU-Global (https://csuglobal.edu)) that permit transfer to CSU of up to half of the total required credits for a specific master's degree.

Procedures

1. Any bilateral agreement must be formal, proposed by an academic department, signed by the Provost/Academic Vice-President, and approved by the Committee on Scholarship, Research and Graduate Education (COSRGE). It must refer to a particular named master's degree now offered by CSU.
2. Courses offered for transfer under these arrangements must be:
   a. The exact equivalents of particular courses at CSU and so certified by the Faculty Council Curriculum Committee.
   b. Taught by persons who are Faculty or Affiliate Faculty of CSU.
3. Persons who seek to avail themselves of such transfer privileges must be admitted to graduate school at CSU. No more than nine credits offered for transfer may be earned prior to such admission. This means that students must apply for and secure admission well in advance of actual transfer to CSU.
4. Persons who transfer credits under such a bilateral agreement may also transfer credits under the normal procedures as described in this Bulletin. Such transfers may not exceed six credits and the total number of transferred credits, under bilateral agreement and normal procedure combined, may not exceed half the total required for the master's program.
5. Credits submitted or transferred under such special agreements must be earned by a person enrolled as either a graduate student or a post baccalaureate student at the cooperating institution. Credits earned prior to the award of a bachelor's degree or those used to fulfill requirements for a previously earned degree are not accepted.
6. Additional regulations and restrictions as described in this Bulletin under the section Transfer of Graduate Credit from Other Institutions also apply to bilateral agreement transfers.

Credit for Graduate Courses Taken at CSU Prior to Admission to a Graduate Program

Certain CSU courses taken after receipt of a bachelor's degree but prior to formal admission to a graduate program may contribute to graduate degree requirements (see Credit Requirements for the degree pursuing). Grades earned in such courses will not be included in the calculation of grade point averages. No such courses will be accepted, however, unless a grade of B or better has been earned.

Students of Veterinary Medicine

A student in the College of Veterinary Medicine and Biomedical Sciences who holds a bachelor's degree and who meets the requirements for admission to the Graduate School may pursue work concurrently toward the degrees of Doctor of Veterinary Medicine and Master of Science if approved in advance by the Dean of the College of Veterinary Medicine and Biomedical Sciences and the Dean of the Graduate School. Credits applied on one degree may not be used in meeting requirements for the other. Refer to the Doctor of Veterinary Medicine program (http://csu-cvmbs.colostate.edu/dvm-program/Pages/default.aspx) or the Graduate School (http://www.graduateschool.colostate.edu) for more information.

Integrated Degree Program and Integrated Degree Programs Plus Admissions

Exceptional undergraduate students may be recruited to integrated bachelor's/master's or bachelor's/doctoral degree programs (IDPs). An IDP partners an undergraduate and graduate program within or between departments, programs, or SAUs in the same or differing colleges. The graduate degree will be awarded *after or concurrently* with the award of the Baccalaureate degree. There are two types of IDPs:

1. The IDP is for undergraduate programs that have a 120 degree credit requirement;
2. The IDP+ is for undergraduate programs that have a 121, or more, degree credit requirement.

Undergraduates enrolled in a bachelor's degree program at CSU may apply for admission to the appropriate IDP program if they meet the following criteria students must:

1. Complete at least 90 credits of course work toward their first bachelor's degree.
   a. Students enrolled in IDP+ programs may double count one through nine 500-level credits toward both their bachelor's/ master's or their bachelor's/ PhD degrees when the credit requirements for the undergraduate degree programs range respectively between 121 through 129 credits, or more. For example, a maximum of 5 credits could be double counted for a 125- credit degree and a maximum of 9 credits could be double counted for a degree program with 129 or more credits. (This process is managed by the Registrar's Office; the maximum number of credits that may be double counted is 9.)

   b. Students enrolled in an IDP may not double count credits. However, prior to earning 120 credits, these students may enroll for a maximum of nine credits of graduate-level course work that may be applied toward the graduate degree, provided such course work is not used to meet bachelor's degree requirements. As undergraduates, students pay the undergraduate tuition rate for these credits. (This process is managed by the Registrar's Office.)
2. Complete or enroll in 9 credits of upper division level courses required or listed within their majors by their senior year.
3. Maintain a cumulative GPA of 3.000 or above.

In addition to the on-line application and the application processing fee, students applying for admission to either IDP program must send the following materials directly to the department in which they plan to study:

1. Three letters of recommendation written by individuals in each of the following categories:
   a. Applicant's undergraduate advisor.
   b. Applicant's instructor in at least one course within his or her major who is not his or her advisor.
   c. Applicant's instructor in a course outside of his or her major field of study.
2. A written "statement of purpose" that contains:
   a. A summary of long-term professional or personal goals.
   b. A statement regarding the applicant's educational goals.
   c. A statement indicating how participating in the Track III degree program will contribute to the applicant's long-term goals.
3. A completed resume that contains the following:
   a. Record of all professional employment including dates of service (including military).
   b. List of any special skills or competencies (including certifications or licensures).
   c. List of publications, exhibitions, prizes, awards, or other recognitions.
   d. List of service activities (including community and charitable).

To be eligible to offer an IDP or IDP+, a specific program must submit, and have approved by the Graduate School, a one-time Memorandum of Understanding (MOU) providing the following information and agreements. Contact the Graduate School for the MOU format.

1. List participating undergraduate and graduate program codes.
2. All students recommended will have a GPA of 3.0 or higher.
3. 21 credits must be earned after admission to the Graduate School for a master's degree and 62 credits for a PhD.
4. Students will be advised of the following:
   a. The semester after the students have earned 120 or more credits at the undergraduate level the student will be switched to graduate standing and will begin paying graduate tuition and fees. They will lose all undergraduate institutional and scholarship aid such as Pell, COF and Boettcher awards.[1]
   b. Their Undergraduate Degree Plans (DARS) will no longer track degree completion in a comprehensive manner, so the student and advisor will need to work with their designated Degree Analysts in the Registrar's Office to ensure timely and accurate graduation from the bachelor's degrees.
5. Students must file their programs of study (GS form 6) by the end of the second week of the first semester after Graduate School admission.
6. Students who are dismissed or drop out from the Graduate School, and who are still in good standing within their undergraduate programs, will be permitted to complete their undergraduate degrees. Students will be required to make contact with the Graduate School for the next steps to reactivate their undergraduate status. To support undergraduate degree conferral for students who do not complete the IDP/IDP+, departments must submit an explicit plan for undergraduates showing how they will allow students to graduate if they have completed: 1) All non-elective courses required for that undergraduate degree, and 2) The minimum number of undergraduate credits required by the undergraduate degree program. These credits may consist of both graduate and undergraduate coursework. The graduation process may require additional paperwork with the Registrar's Office.
7. Students must complete applications for graduation (GS25) from the Graduate School either concurrently with, or subsequent to, completing the bachelor's degrees.

[1] Departments offering IDP programs with unique requirements, incentives or other elements in addition to, or instead of, those stated above must request approval from the Graduate School for the specific terms they wish to address. The final terms of the agreement will be stipulated in an MOU between the Graduate School and the Department.

Sequential Degree Programs

Sequential degree programs (SDPs) partner an undergraduate and a graduate program within or between departments, programs, or SAUs in the same or differing colleges. The graduate degree will be awarded only *after* the award of the Baccalaureate degree. Undergraduate students complete a SDP application created by the partnering undergraduate and graduate programs. The timing of the application and its requirements are defined by the partnering programs and include minimum requirements related to criteria such as GRE, recommendations, and research experience. The minimum GPA acceptable for entrance into a SDP is 3.00. Students may be contingently admitted into the SDP at any point the partnering programs of the SDP so choose. Students must complete the Graduate School application and the application fee. Final admission to the SDP is conferred when the students meet the minimum SDP and Graduate School admissions criteria upon completion of their bachelors' degrees. To be eligible to offer a SDP, a specific program must submit, and have approved by the Graduate School, a one-time Memorandum of Understanding (MOU)[1]. The minimum requirements for contingent graduate admission into the SDP must be included in the MOU.

Undergraduate students in SDPs may enroll for a maximum of nine credits of graduate-level course work that may be applied toward the graduate degree, provided such course work is not used to meet bachelor's degree requirements. As undergraduates, students pay the undergraduate tuition rate for these credits. (This process is managed by the Registrar's Office.)

[1] Departments offering SDP programs with unique requirements, incentives or other elements in addition to, or instead of, those stated above must request approval from the Graduate School for the specific terms they wish to address. The final terms of the agreement will be stipulated in an MOU between the Graduate School and the Department.

Graduate Study

Requirements for All Graduate Degrees
Evaluation of Graduate Students and Graduate School Appeals Procedure
Master's Degrees
Doctoral Degree
Graduate Certificates
Graduate Specializations
Graduate Thesis and Dissertation
Graduation Procedures
Inter-University Graduate Programs

The earning of a graduate degree is a wide-ranging, challenging intellectual experience. It certainly involves mastery of important subject matter. It may require the possession of knowledge in addition to that acquired through course work and also the ability to creatively synthesize and interpret that knowledge. Further, research or artistic projects are often an integral part of graduate study as may be field responsibilities or service obligations. Since graduate work extends beyond completion of course work in several ways, it is often the case that some form of culminating event, be it comprehensive examination, thesis, or other undertaking is part of the degree program.

Requirements for All Graduate Degrees

The Advisory System
Program of Study
Scholastic Standards
Diagnostic Examination
Final Examinations
Time Limit
Continuous Registration
Graduate Enrollment Requirement
Posthumous Degree

The graduate experience, involving as many dimensions as it does, requires careful and comprehensive planning. This planning is done by the student, the advisor, and the graduate committee. Of course, it should take place early in the graduate career. The necessity for planning underlies the advisory system, the limitation on the number of credits that may be transferred, and requirements that certain amounts of the work in any degree program must be completed at CSU after admission to the Graduate School. These are all explained below.

Comprehensive planning assures that the greatest possible benefit will be gained from graduate study. Depending on discipline, career objectives, and particular curricular needs, unique study plans may be arranged for students on an individual basis.

Just as the scope of activities involved in earning a graduate degree is extensive and complex, so is the necessary evaluation of student performance. Students must not only demonstrate the ability to earn satisfactory grades in their courses, but must also show that they possess those more elaborate abilities and skills essential to the various academic and professional fields. The advisor and graduate committee have the primary responsibility for assessing these broader dimensions of student progress.

The requirements set forward in this section are those of CSU as a whole. However, the various programs may have additional requirements not listed here. These requirements must also be met in completing a degree. Please consult the department for appropriate information. See the Areas of Study within the Graduate Degrees (http://graduateschool.colostate.edu/programs) section in the Graduate School website.

Summary of Procedures for the Master's and Doctor of Philosophy Degrees

NOTE: Each semester the Graduate School publishes a schedule of deadlines. Deadlines are available on the Graduate School website. Students should consult this schedule whenever they approach important steps in their careers.

Step	Due Date
1. Application for admission (online)	Six months before first registration
2. Diagnostic examination when required	Before first registration
3. Appointment of advisor	Before first registration
4. Selection of graduate committee	Before the time of fourth regular semester registration
5. Filing of program of study (GS Form 6)	Before the time of fourth regular semester registration
6. Preliminary examination (Ph.D. only)	Two terms prior to final examination
7. Report of preliminary examination (GS Form 16) - (Ph.D. only)	Within two working days after results are known
8. Changes in committee (GS Form 9A)	When change is made
9. Application for Graduation (GS Form 25)	Refer to published deadlines from the Graduate School Website
9a. Reapplication for Graduation (online)	Failure to graduate requires Reapplication for Graduation (online) for the next time term for which you are applying
10. Submit thesis to committee	Two weeks prior to examination
11. Final examination	Refer to published deadlines from the Graduate School Website
12. Report of final examination (GS Form 24)	Within two working days after results are known; refer to published deadlines from the Graduate School website
13. Submit a signed Thesis/Dissertation Submission From to the Graduate School and Submit the Survey of Earned Doctorates (Ph.D. only) prior to submitting the electronic thesis/dissertation	Refer to published deadlines from the Graduate School website.
14. Submit the thesis/dissertation electronically	Refer to published deadlines from the Graduate School website
15. Graduation	Ceremony information is available from the Graduate School website

Forms (http://graduateschool.colostate.edu/current-students/forms) are available online.

The Advisory System

Since thoughtful planning is vital to a graduate student career, a comprehensive arrangement for advising has been established. Each student is initially assigned a faculty member as advisor by the head of the department in which the major is pursued.

A permanent advisor will be selected from among departmental faculty once initial entry to the program has been completed. (The temporary advisor may assume this role if appropriate.)

The advisor is the chief source of advice in the planning process. This individual works closely with the student throughout the graduate career on all matters related to the degree program.

A close, cordial, and professional relationship is therefore of the utmost importance. Both student and advisor should work at achieving mutual understanding and respect.

Except for those pursuing Plan C master's degrees, each student has an individual graduate advisory committee. Members of the committee should be chosen on the basis of the student's interests, the student's experience with faculty members, and the advisor's knowledge and expertise. The makeup of a graduate committee must be approved by the department head and, of course, agreed to by the potential members themselves. It is well for the student to assume the responsibility of securing these approvals and agreements.

The purpose of the committee is to make available to the student a broad range of knowledge and expertise. It aids in general advising of the student and assists in planning the major elements of the program. The committee also evaluates student progress throughout the graduate career. It may provide assessments at various stages and it administers the final examination. The committee is not responsible for reminding students of published deadlines nor for monitoring procedural details. The student should manage such matters independently.

The committee must consist of at least three faculty members for a master's degree program and at least four for a doctoral degree program. The members are as follows:

1. The advisor who serves as chairperson of the committee and who must hold academic faculty rank as a professor, associate professor, or assistant professor of any appointment type within the department or program granting the degree;
2. One or more additional members from the department;
3. Any non-departmental faculty member who may be appropriate; and
4. One member from an outside department who, appointed by the Dean of the Graduate School, represents the Graduate School. The outside committee member appointed by the Dean of the Graduate School must hold a tenured, tenure-track, contract, continuing, transitional, joint, or emeritus/emerita faculty appointment at CSU. The outside member should serve as an impartial external evaluator on the committee, ensuring quality of scholarship and fairness in process.
5. Non-CSU employees may obtain faculty affiliate appointments in an academic department in order to be eligible to serve on graduate committees. They may also be appointed to such committees through a nomination process that is reviewed and approved by CoSRGE (Faculty Council Committee on Scholarship, Research, and Graduate Education).

Please contact the Human Resource staff member of the appropriate department to determine the appointment designation of a potential committee member.

Due to the interdisciplinary nature of some scholarship at CSU, conflicts of interest in advisory committees between members or between the student and one or more members may not be avoidable. When a conflict of interest exists, a written report must be submitted by the chair of the advisory committee to the Dean of the Graduate School that includes: 1) the names of those involved in the conflict of interest, 2) the nature of the conflict of interest, 3) a plan to manage the conflict of interest. Failure to disclose a conflict of interest is a violation of CSU Policy (Faculty and Staff Manual: D.7.7. (https://facultycouncil.colostate.edu/faculty-manual-section-d/#D77), Appendix 2, Appendix 6 (https://facultycouncil.colostate.edu/media/sites/43/2018/03/2017-appendix-7-addition.pdf)). Individuals who are not academic faculty but who have special expertise may serve on committees in addition to the prescribed members, but may not vote regarding examination results.

Plan C master's students are required to have an advisor but not a committee.

The advisor is identified and the committee is appointed through filing a GS Form 6 (http://graduateschool.colostate.edu/policies-and-procedures/forms/#GS6) with the Graduate School. It is the student's responsibility to identify an advisor and a committee, all of whom are willing and qualified to serve. The student's department chair or designee will use his/her best efforts to facilitate selection of the committee and subsequent changes therein. With notification, temporary replacement of a member may be arranged. A member, including the advisor, may resign from the committee in accordance with any applicable provisions in the student's departmental code. In such cases, the affected student and his or her department chair will be notified promptly by the departing member. It is then the student's responsibility to obtain a replacement. Any permanent changes are recorded through the filing of GS Form 9A (http://graduateschool.colostate.edu/policies-and-procedures/forms/#GS9A) with the Graduate School.

Persons who are not academic faculty (as defined in the Academic Faculty and Administrative Professional Manual (http://facultycouncil.colostate.edu/faculty-manual)) of CSU may be appointed full voting members of graduate student advisory committees in the following manner. A person may be nominated for membership on a specific student's committee. This is accomplished by submission of the following materials to the department head: 1) a resume, 2) relevant supporting material, 3) a statement from the nominated individual that indicates whether or not there is a conflict of interest with any of the committee members or student. If there is a conflict of interest, the chair of the advisory committee must submit a written plan to manage the conflict of interest. If, using procedures and criteria outlined in the departmental code, the department head judges the appointment appropriate, they shall forward a recommendation and all materials to the Dean of the Graduate School. The Dean of the Graduate School shall bring the nomination to the appropriate Faculty Council Committee, which shall act on the nomination.

A person so approved shall be eligible to serve on the committee for the duration of the student's work toward the degree. The Graduate School shall maintain a roster of such appointments. Although approval is granted with respect to a particular student's committee, such members may serve on other student committees in the same department with

additional departmental approval provided that such service shall not extend beyond five years of the original appointment.

Such non-faculty appointments are subject to the following restrictions.

1. Such an appointee may not serve as an outside member of graduate committees.
2. Service may not be as the sole advisor of the student.
3. The appointee must have a degree equivalent to that sought by the student and must not be a student at CSU.
4. No more than one such person may serve on any graduate student's committee.
5. The person appointed should be an addition to the minimum number now required on graduate committees and not a replacement for required faculty. The advisor may invite others to participate in the examination in a nonvoting, advisory capacity.

Program of Study

Each student must prepare a Program of Study, a document which lists all courses taken in pursuit of the degree. This is the formal statement of what is done to achieve the degree, the summary of all academic planning. The advisor and the committee are heavily involved in the development of the Program of Study. The Program of Study must be filed with the Graduate School before the time of the fourth regular semester registration. Students who fail to meet this requirement may be denied subsequent registration. For Integrated Degree Program (IDP) Admission students, program of study forms (GS Form 6 (http://graduateschool.colostate.edu/policies-and-procedures/forms/#GS6)) must be filed by the end of the second week of the students' first semester after admission to Graduate School. Courses listed and approved on this form for graduate requirements will be automatically excluded from the undergraduate degree program of the student. The Graduate School reviews each program of study (GS Form 6 (http://graduateschool.colostate.edu/policies-and-procedures/forms/#GS6)) and determines whether the program of study conforms to University policy. That is, an early graduation check is performed. Problems are reported to students so that they can be corrected at an early date.

While it is important to plan the Program of Study early in the graduate career, it is not necessarily permanently fixed. Plans may develop and change. Modifications must be formally recorded, however, and the advisor, department head, and the Graduate School must approve. Courses which have been taken and for which a grade has been received (A through F, I, S or U) may not be removed from the Program of Study. Changes in program of study or committee membership should be made with extreme care since no additional comprehensive checks are made until the time of graduation.

The Program of Study is submitted on GS Form 6; any changes are recorded on GS Form 25 (http://graduateschool.colostate.edu/policies-and-procedures/forms/#GS25), Application for Graduation.

Scholastic Standards

To meet the requirements for graduation and to remain in good academic standing, a student must demonstrate acceptable performance in course work after being admitted to a graduate program. This requires a cumulative 3.000 grade point average (GPA) in each of the following GPA categories:

1. Overall course GPA, defined as the GPA calculated from all regular and non-regular courses graded traditionally (A through F).
   - Regular courses with course numbers less than X82.
   - Non-regular courses with numbers X82 to X99.
2. Regular course GPA, defined as the GPA calculated from all regular courses graded traditionally.
3. Program of Study overall GPA, defined as the GPA calculated from all traditionally graded regular and non-regular courses listed on the approved program of study.
4. Program of Study regular GPA, defined as the GPA calculated from all traditionally graded regular courses listed on the approved program of study.

A minimum GPA of 3.000 in categories 1 and 2 are required to remain in good academic standing. For graduation, a minimum GPA of 3.000 is required in all four categories.

Separate GPAs are calculated based on courses taken as a master's or doctoral student. For example, changing from a master's degree to a doctoral degree, or vice versa, will create separate GPAs based on grades received in coursework taken at each degree level.

In addition, good academic standing requires *satisfactory* progress in the overall graduate program. Students' individual graduate advisory committees may render judgments as to whether satisfactory progress is being made toward the degree, taking into account all aspects of academic performance and promise, not necessarily coursework alone. A positive judgment is required to remain in good academic standing.

Failure to maintain good academic standing due to a cumulative grade point average less than 3.00 results in being placed on academic probation. (New regularly admitted students will not be placed on probation until they have completed 12 regular credits or two semesters of graduate work, whichever comes first. However, students who were provisionally admitted after waiver of the minimum GPA requirement for admission are placed on probation their first semester, regardless of the number of credits taken their first semester.) The probationary period extends for one semester beyond the one in which this status is acquired. During this probationary period, the student must register for traditionally graded courses that affect the grade point average. With permission of the student's advisory committee, the student may register for continuous registration instead of traditionally graded courses. Continuous registration may be used to extend the probationary period for a maximum of two semesters, after which traditionally graded courses must be taken. Students on probation are subject to dismissal by the academic department or the Dean of the Graduate School at the end of the probationary semester unless good academic standing has been regained. This requires adequate improvement in cumulative grade point averages (3.000) and/or satisfactory progress as determined by the student's graduate advisory committee. Students not making satisfactory progress due to their grade point average are encouraged to contact their advisors and/or advisory committees in order to set up a meeting to create a progress plan. Integrated Degree Program (IDP) students in combined bachelor's/master's degree programs who have accumulated at least 120 credit hours of course work and who fail to maintain a 3.000 GPA in their graduate course work including any courses listed on their GS 6 Form will be placed on probation by the Graduate School and will have one semester in which to improve their cumulative grade point averages to no less than 3.000 in their graduate course work. Failure to bring the cumulative graduate GPA to at least 3.000 will result in dismissal from the Graduate School with no re-enrollment permitted prior to completion of the bachelor's degree. IDP students who are

dismissed from the Graduate School, and who are still in good standing within their undergraduate programs, will be permitted to complete their undergraduate degrees. These students can petition the Registrar to reinstate courses to be applied toward their undergraduate degrees.

When a student's graduate advisory committee or an appropriate departmental graduate committee finds that a student is not making satisfactory progress toward the degree due to factors other than grade point average, and that satisfactory progress cannot be anticipated, a plan should be created and the following steps should be taken.

1. Inform the student of the concerns, create a progress plan with the student, develop a timeline and inform the student of the potential consequences (dismissal) if the progress is not satisfactory.
2. The committee should keep in contact with the student to give feedback during the progress plan timeline and document such contacts and their outcomes.
3. At the end of the timeline, if progress is not adequate, the committee may recommend dismissal from the program. The recommendation goes to the Department Head and the Dean of the Graduate School and should include documentation on the steps taken with justification for this action.

The recommendation must be referred to the Department Head for approval and the Dean of the Graduate School for final action. The student may appeal such an immediate dismissal through the existing Graduate School appeals procedure. Departments which invoke this process must have published guidelines explaining the performance indicators which lead to immediate dismissals.

Grades of C or higher must be earned in all required courses on a Program of Study. D grades may be accepted in background courses, but such courses must be included in the computation of the cumulative grade point average. Graduate students may take 100 and 200 level courses for general enlightenment or to satisfy a background requirement. These course are not to be included in the student's program of study, and grades earned in such courses will not be considered in computing the graduate grade point averages described above. Once admitted to a graduate program, grades earned in courses 300 level and above will be considered in computing the graduate GPA. Standards and requirements for off-campus graduate study are the same as those standards and requirements on campus. The academic department head has the basic responsibility for the implementation of this policy. Note that only courses with a grade of B or better may be accepted as transfer courses and such courses are not included in the student's calculation of grade point averages.

For thesis, dissertation, research, and independent study graduate courses, the number of student credit hours earned will be determined using a base rate of 48 hours of student effort per credit hour. The faculty advisor, or other department official, shall estimate the total number of hours of student effort required over the length of the semester. This effort shall include consultation with the advisor, as well as library, laboratory, field, or studio work. The total number of hours shall be divided by 48 and the resultant quotient (rounded off to a whole number) shall define the number of credits to be awarded.

Diagnostic Examination

A diagnostic examination is administered by a number of departments before the first registration to determine the areas in which there may be inadequate preparation. Results from the diagnostic examination are used in planning remedial course work when needed and in preparing the Program of Study (GS Form 6 (http://graduateschool.colostate.edu/policies-and-procedures/forms/#GS6)).

Final Examinations

Each candidate for a degree, except for Plan C master's students, must pass a final examination which must be held by the published deadlines of the student's graduating term. The examining committee is normally the student's graduate committee with the advisor serving as chairperson. If a department chooses to administer a common examination to its Plan B master's candidates, a departmental examining committee may serve this function. Plans and arrangements for a common final examination for Plan B candidates must be on file with the Graduate School in advance of the examining date.

Voting at all final oral examinations shall be limited to the members of the student's committee, and a majority vote is necessary to pass the examination. A tie vote is interpreted as failure to pass the examination. Committee members who are not academic faculty do not have a vote on the final examination.

Providing the committee approves, a candidate who fails the final examination may be reexamined once and, for the reexamination, may be required to complete further work. The reexamination must be held no later than 12 months after the first examination. The examination must not be held earlier than two months after the first examination unless the student agrees to a shorter time period. Failure to pass the second exam results in dismissal from the Graduate School.

The student is responsible for taking the Report of Final Examination (GS Form 24 (http://graduateschool.colostate.edu/policies-and-procedures/forms/#GS24)) to the examination and returning it, completed and signed, to the Graduate School Office within two working days after results are known; this must be by the published deadline of the student's graduating term.

Participation in oral examinations by the student and/or one or more members of the examining committee may be via electronic link so long as all are participating simultaneously and all committee members and the student have agreed to this in advance.

Time Limit

There is a ten-year time limit for completion of the master's or doctoral degrees.

Courses to be applied toward fulfilling the requirements for the master's and doctoral degrees, including any which may have been transferred from another institution, must have been registered for and completed within the ten years immediately preceding the date of completion of requirements for the degrees.

Continuous Registration

All students admitted to a graduate program at CSU are required to be continuously registered in the fall and spring semester throughout their degree programs. This policy applies from the time of first enrollment through the graduation term. Students may fulfill this requirement by registering for any graduate credit- bearing course (regular or non-regular). As an alternative, students may opt for a Continuous Registration (CR) status. Registration for CR status is accomplished in the same way as registration for courses. Section ID numbers appear in the class schedule under the CR subject code. Students registering for CR will be assessed a fee for each semester of CR registration. Students who register for CR on or after the first day of the term will be charged a

Late Registration Fee. Students must be either enrolled for at least one credit or must register for CR during the term (fall, spring, summer) they complete their degree requirements.

Students enrolled in CR have access to library services and campus computing services; they pay a mandatory University Technology Fee. CR students may also choose to purchase CSU student health insurance and/or access the CSU Health Network for a fee.

The maximum number of CR semesters a student may enroll in during their degree program is ten (10). When a student is in their first (1st), fourth (4th) and eighth (8th) semesters of CR, the student's advisory committee is required to review the student's progress and intentions related to degree completion, with input from the student. Upon completion of the review, a report that provides a student plan which includes academic expectations and an accompanying timeline for satisfactory progress for the degree will be forwarded to the department head/chair and student. A registration hold will be placed on a student with more than 10 semesters of CR unless the student's department head has submitted the student's progression plan and a petition to the Dean of the Graduate School to extend the number of CR semesters to a specific number beyond 10.

Students may register for CR for the following reasons:

1. They do not require the use of University resources (other than those listed above), but are actively working on their degree requirements. Students who are utilizing CSU facilities to conduct their research must not enroll in CR; instead, they must enroll in the appropriate number of research, thesis or dissertation credits. See Curricular Policies and Procedures Handbook, Appendix D, for information regarding faculty contact time needed to generate credit hours: http://curriculum.colostate.edu or
2. They will not be working on their degree requirements, but will be leaving the University for professional or personal reasons (e.g., mission service, medical or parental leave, work) or an official assignment for CSU.

Subject to the established time limits for the earning of graduate degrees and the various academic requirements, CR registrants need not apply for readmission should they wish to take additional graduate courses. Such students are ensured a place in their graduate programs as long as they remain in good academic standing. However, students who do not register will need to apply for readmission for their next semester of enrollment.

The availability of the CR option shall not supersede any other registration requirements to which students may be subject at the University, Department, or Program level. For example, the credit bearing registration requirement for graduate assistantships applies to all students appointed to these positions. Similarly, some units may adopt more stringent CR policies than that expressed here.

Graduate Enrollment Requirement

Graduate degree candidates must be either enrolled for at least one credit or must register for CR during the term (fall, spring, or summer) they will complete their degree requirements.

Posthumous Degree

In exceptional circumstances, the Board of Governors of Colorado State University may award degrees posthumously (http://catalog.colostate.edu/general-catalog/academic-standards/graduation/#undergraduatedegrees).

Evaluation of Graduate Students and Graduate School Appeals Procedure

Evaluation of Graduate Students
Graduate School Appeals Procedure

Evaluation of Graduate Students

Graduate students are students, apprentices to the professions, and, when they hold an assistantship or other paid position, student employees. Each of these roles has its own rights and responsibilities. Graduate students are responsible for knowing any special expectations and requirements of their department and program. They are expected to remain in good academic standing by making satisfactory progress toward the degree (see Scholastic Standards) and must at all times have an advisor. In the event that an advisor resigns from that position, it is the student's responsibility to obtain a replacement.

Department codes shall designate a system for periodic evaluation of progress toward completion of the degree. The student and the advisor share responsibility for scheduling evaluations. Results of such evaluations will be sent to the department head and to the graduate student being evaluated.

Students judged to be making unsatisfactory progress toward a degree or whose work is not of the quality expected by the student's advisor and/or graduate committee may be recommended for academic probation or immediate dismissal from the graduate program (see Scholastic Standards) and/or termination of assistantship. The Dean of the Graduate School will be informed in writing of all students who are making unsatisfactory progress. Copies of the letter shall be sent to the graduate student and also shall be maintained in a departmental file.

Prior to taking actions on academic probation for reasons of unsatisfactory progress toward a degree other than insufficient grade point average, termination of an assistantship for reasons of unsatisfactory performance, or dismissal from the graduate program, an informal conference shall be held among the student, the advisor, and the department head for the purpose of discussing the student's performance and giving the student an opportunity to respond. The student will be provided reasonable notice of the issues to be covered in advance of the conference. In cases where grounds may exist for termination of an assistantship prior to the end of the stated employment period and for reasons of unsatisfactory performance, the supervisor(s) shall participate in the informal conference.

Graduate students have the right to appeal certain academic decisions, before any action is taken, as described under Graduate School Appeals Procedure. Appeals of grades and academic integrity decisions must utilize appropriate procedures described in the General Catalog. Students alleging termination of assistantships or dismissal from the graduate program on grounds of unlawful discrimination are advised to consult with the Office of Equal Opportunity. (For information on the "at will" employment status of graduate assistants, see Assistantships.).

Graduate School Appeals Procedure

Graduate students may appeal decisions concerning unsatisfactory performance on graduate preliminary or final examinations (see this section), academic probation for reasons of unsatisfactory progress

toward the degree other than insufficient grade point average, termination of or election to void an assistantship for reasons set forth in the terms and conditions applicable to graduate assistant appointments, or dismissal from the graduate program for academic reasons to the Dean of the Graduate School. Grading decisions in courses are subject to appeal according to the University's policy on Appeals of Grading Decisions, as set forth in the Academic Faculty and Administrative Professional Staff Manual (http://facultycouncil.colostate.edu/faculty-manual).

A student has a total of 35 working days to make a formal appeal to the Dean of the Graduate School from the date when an appealable decision has been made that is of concern to the student. Prior to submitting an appeal to the Dean of the Graduate School, the student should discuss the decision with the academic officer(s) whose actions are challenged in an informal attempt to resolve concerns. (Academic officers may include the student's advisor, graduate committee, department head, supervisor, etc.) If the matter is not resolved to the student's satisfaction, the student may initiate a formal appeal by submitting the matter in writing to the Dean of the Graduate School. In the written appeal:

1. the student must clearly identify the actions being challenged,
2. the rationale for the challenge
3. the person(s) against whom the complaint is made, and
4. the redress sought.

If an appeal is not filed within 35 working days following the adverse recommendation or decision, then this recommendation or decision will become final. If an appeal is filed within 35 working days, then the decision regarding the appeal is final. The original adverse recommendation or decision being appealed by the student remains in effect until the appeal is final.

The Dean of the Graduate School shall implement the appeal procedures below, keeping records of the case. A review panel, composed of two faculty members with degrees at the level being pursued by the student appellant or higher and one graduate student pursuing a degree at that level or above, will be appointed. One faculty member will be appointed by the Dean of the Graduate School and another faculty member will be appointed by the dean of the college in which the student appellant's program is located. These appointees will be from departments other than that of the student appellant, but they should be from related disciplines so they are reasonably familiar with the standard procedures in that department. In the event that either the Dean of the Graduate School or the dean is a principal in the case, the Provost will appoint appropriate faculty members. The Graduate Student Council will provide a list of graduate students pursuing graduate degrees who are willing to serve on review panels from which the Dean of the Graduate School will appoint a student who is from a different department than the student appellant, but who should be from a related discipline. In the event that the Dean of the Graduate School is a principal in the case, the Provost will appoint the student member.

The Review Panel will consider the case in detail. It must review any written record of the case. It must afford the student appellant an opportunity to appear in person before it and consider any relevant written materials the student may wish to bring to its attention. The panel will hear from the academic officer(s) whose action is being appealed and may confer with other involved parties. It shall evaluate any other information it deems important to its deliberations. Written summaries of the deliberations will be kept. To overcome the presumption of good faith in the performance judgment by the advisor, supervisor, and/or graduate committee, an appeal must demonstrate that the evaluation was based upon matters that are inappropriate or irrelevant to academic performance and applicable professional standards and that consideration of those matters was the deciding factor in the evaluation. If the panel finds in favor of the student by a majority vote, it will make appropriate recommendations to the Dean of the Graduate School, such as reassignment to another advisor and/or graduate committee, administration of another examination, or alternative assistantship assignment. The Dean of the Graduate School and the dean of the college involved shall jointly review the case, giving due consideration to the panel's report and recommendations. Following consultation with the Provost, as appropriate, the Dean of the Graduate School shall make the final decision of CSU. In the event where the Dean of the Graduate School is a principal in the case, the duties of the Dean of the Graduate School, with respect to this case, shall be transferred to the Provost. In the event that the decision recommends termination of an assistantship due to unavailability of funds or other conditions beyond CSU's control or due to a lack of performance of assigned duties and functions as set forth in the terms and conditions applicable to graduate assistant appointments, the termination must be approved by the Board of Governors, or the President, as its delegated representative.

Other appeal or reporting processes available to students are included below.

1. Students may appeal disciplinary issues, subject to the University Discipline Process, through the Student Resolution Center. (https://resolutioncenter.colostate.edu)
2. Students may file a complaint regarding what a person may believe to be an act of discrimination or harassment, based on race/ethnicity, eg, color, religion, national origin, or ancestry, sex gender, disability, veteran status, genetic information, sexual orientation, or gender identity or expression to the Office of Equal Opportunity (http://oeo.colostate.edu).
3. Procedures to report observed, suspected, or apparent Research Misconduct can be accessed through Research Integrity and Compliance Review Office (https://vpr.colostate.edu/ricro).

Master's Degrees

Master's Degrees
Master of Fine Arts Degree

CSU offers a variety of master's degrees. The features and requirements of these degrees are summarized in the Programs A-Z section of the Catalog.

Master's Degrees

An important distinction is made between Plan A and Plan B, Plan C, and the Professional Science Master's. The former, Plan A option, requires the preparation of a thesis. The thesis is typically a written formal document which addresses, in an original fashion, some important concern of the discipline. A thesis involves significant independent work. A certain number of credits are allowed for the preparation of the thesis. The Plan B degree does not require a thesis; instead, either a scholarly paper, exam, portfolio, or similar project is required.

Plan C master's degree options are distinguished in two ways. First generally, only course work is required. No thesis, project, or final examination is required; however, some specific programs may require an internship, practicum, or other experience consistent with expressed goals of the program, as approved by the University Curriculum Committee. Second, Plan C options are designed for professional

degrees; thus, this option is not available in the M.A. or M.S. Further, within any given department, Plan C degrees may not bear the same title as those with Plan A or Plan B options. Please note, however, that not every professional degree need offer the Plan C option.

The Professional Science Master's (PSM) degree option (30 credit minimum) is designed to meet the following curriculum requirements: 1) a majority of credits must be earned in advanced science, technology, engineering, math and/or computational sciences courses over the two year program; 2) there must be a professional skills component: and 3) a capstone activity based on an experiential component, that includes a field placement course (e.g. internship, practicum, affiliation, field work) must be a part of the curriculum. No thesis, project, or final examination is required. The PSM is to provide managers for organizations that provide technology-based outcomes in public, private, government, or non-profit sectors. PSMs must conform to the nationally accepted academic criteria for the PSM curriculum as determined by the Commission on Affiliation of PSM Programs (https://www.professionalsciencemasters.org) (formerly named PSM National Office) (psmoffice@sciencemasters.com).

An active advisory board composed of individuals from industry, business, government, non-profit organizations, and CSU faculty is required; advisory board members serve to provide advice on the program curriculum, assist with student projects and placement, and interact individually with students. To be recognized as a PSM degree, programs must first be approved by the Commission on Affiliation of PSM Programs, and subsequently approved and routed through the paths required by the CSU Faculty Council, Curricular Policies and Procedures Handbook. PSM specializations are listed in the Graduate and Professional Bulletin.

Credit Requirements (Master's Degrees)

The minimum number of required credits for all master's degrees is 30. However, individual departments may have credit requirements in excess of the minimum university requirement. For example, terminal professional degrees may have a minimum credit requirement that exceeds 60. The number of 500-level or above credits earned for master's degrees varies: a minimum of 50% for Plans A and B, and 21 or a minimum of 50% whichever is more for Plan C's and Professional Science Master's degrees. Additionally, at least 12 of the 500-level or more credits must be in regular courses for all master's degrees. Other courses may be at the 300- or 400-level or may be in courses not defined as regular. A minimum of 24 credits must be earned at CSU, 21 of which must be earned after admission to the Graduate School. Plan C master's and Professional Science Master's programs may not include independent study, research, or supervised college teaching credits toward the degree unless one or more of these are required by the program, as approved by the University Curriculum Committee. Additionally, Plan C master's may not include internship or practicum credits toward the degree unless one or both are required by the program, as approved by the University Curriculum Committee. Credits earned in pursuit of one master's degree may not be used for a second except in those cases where an M.A. degree is applied to the M.F.A. (see section on Master of Fine Arts Degree).

Final Examination (Master's Degrees)

Master's Plan A and Plan B students are required to complete and pass a final examination/defense. At the discretion of the committee, the final examination may be oral or written, or both. At least one week before the final examination the advisor must inform the student and the committee member of the nature and scope of the examination.

Master of Fine Arts Degree

This is a terminal degree for practicing professionals in the visual or literary arts. In general, it requires at least three years of full time study beyond the baccalaureate or at least one year of full time study beyond the Master of Arts degree.

This degree requires the preparation of a major artistic work. This work, whether in the form of a product of the visual arts, a performance, or a written manuscript, must

1. demonstrate a level of creativity sufficient to establish the student as a member of the appropriate artistic community, and
2. stand in its own right as a significant aesthetic or literary contribution. This work is presented as an M.F.A. thesis.

Credit Requirements (Master of Fine Arts Degree)

Total credit requirements vary from 48 to 60 according to the department in which the degree is earned. Further, individual departments may have requirements in excess of CSU minimums laid out in the Catalog. The number of 500-level or above credits earned for the Master of Fine Arts must be a minimum of 50%; of that number, 12 must be in regular courses. Other courses may be at the 300- or 400-level or may be in courses not defined as regular. In general, a minimum of 32 credits must be earned at CSU, 21 of which must be earned after formal admission to the Graduate School.

However, if a previously completed Master of Arts degree is submitted in partial fulfillment of the requirements, up to 30 credits may be accepted toward the program. If this option is used, no additional transfer credits may be accepted. In this case, a minimum of 18 credits must be earned after formal admission to the M.F.A. program.

Final Examination (Master of Fine Arts Degree)

A final examination is required for the Plan A degree. The final examination may be oral or written or both. At least one week before the final examination, the adviser must inform the student and the committee members of the nature and scope of the examination.

Doctoral Degree

The doctoral degree is the highest academic degree offered by CSU. Those who earn it must demonstrate significant intellectual achievement, scholarly ability, and breadth of knowledge. The nature of the degree program will vary greatly depending on the type of doctoral degree and discipline involved. There are two types of doctoral degrees that may be earned, the doctor of philosophy (Ph.D.) and the professional doctorate (P.D.). There are several important distinctions between the Ph.D. and the P.D. The defining characteristics of each are as follows:

1. The Ph.D. and the P.D. degrees are distinguishable from each other based on the courses comprising the programs' curricula, student learning outcomes, and measures of student success. The New Degree Program Proposal must address these components as part of the

Provost's and the University Curriculum Committee's review process for such proposals.

2. For the Ph.D., the scholarly, scientific, and creative outcomes are expected to contribute to the knowledge base of the field. Extensive original research or creative activity relevant to the discipline is required. The preparation of a dissertation that presents the results of sustained research or investigation of an important intellectual problem is mandatory.

3. For the P.D., the experiential, scientific, and creative outcomes are expected to contribute to the highest level of professional skills and the application of such skills and knowledge in the profession and its practice. Applied or clinical research or extensive advanced experience relevant to the profession is required. The preparation of a dissertation that presents the results of an applied project relevant to the profession is mandatory for non-accredited programs; programs accredited through a national organization may require other capstone experiences or a dissertation.

Credit Requirements (Ph.D., P.D.)

A minimum of 72 semester credits beyond the baccalaureate is required for both the Ph.D and the P.D.

For students who submit a master's degree in partial fulfillment of these requirements: A master's degree from an accredited college or university may be accepted for a maximum of 30 credits. In addition, up to ten credits in courses earned after the date on which the master's degree was awarded may be accepted in transfer if approved by the student's advisory committee, the department, and the Graduate School (http://www.graduateschool.colostate.edu). A minimum of 32 credits must be earned at CSU after admission to a doctoral program. At least 21 credits beyond the master's degree must be earned in courses numbered 500 or above.

For students enrolled in a continuous master's/doctoral program at CSU: All courses taken during the master's program may be applied to the doctoral degree, even if the total master's degree credits exceed 30. These courses must be specified on the doctoral program of study and approved by the student's advisory committee, the doctoral department, and the Graduate School. Continuous programs are those in which the student is admitted to the doctoral program and formally registers the Fall or Spring semester immediately following receipt of the master's degree. All other prescribed credit requirements of the master's and doctoral degrees remain in effect in such cases.

For students who do not submit a master's degree in partial fulfillment of these requirements: Up to ten credits earned at an accredited college or university may be accepted for transfer if approved by the student's advisory committee, the department, and the Graduate School. A minimum of 62 credits must be earned at CSU after admission to a doctoral program. At least 37 credits beyond the bachelor's degree must be earned in courses numbered 500 or above

A professional post baccalaureate degree in Medicine, Veterinary Medicine, Dentistry, Pharmacy, Law, or Divinity may be accepted for a maximum of 30 credits. The institution granting such a degree must be certified by one of the major regional accrediting agencies. Students contemplating this option may be required to pass an equivalency examination to assure that they possess levels of knowledge and skill generally expected of master's degree holders.

P.D. Requirements

Requirements for a P.D. may vary based on the presence or absence of an accreditation process. P.D. programs that are accredited through a national organization will identify curricular content, process, and outcome requirements for the degree to meet the accreditation standards. These curricular requirements may take precedence over Graduate School requirements; however, the minimum number of credits and their level are Graduate School requirements regardless of accreditation standards. P.D. programs that are not accredited must conform to Graduate School requirements.

Departments or Special Academic Units with a P.D. program must form an active advisory board composed of CSU faculty and individuals from outside of CSU who are leaders in the discipline from applied settings. Advisory board members serve to provide advice on the program curriculum, assist with student projects and placements, and interact individually with students.

The Graduate School requires the following P.D. program components:

1. Programs that do not require relevant work experience for admission must include a significant experiential component within the curriculum.

2. Curricula must include a minimum of 18 credits of course work at the 500 level or above that reflect professionalism and applied or translational knowledge and fulfill the learning objectives of the programs. The 18 credits of coursework must meet the following criteria:

a. A minimum of 6 credits is included within each of the two categories (professionalism, applied or translational knowledge),

b. at least 9 credits must be regular coursework, and

c. up to 9 credits may be non-regular coursework. (Scholastic Standards (http://catalog.colostate.edu/general-catalog/graduate-bulletin/graduate-study/procedures-requirements-all-degrees/#scholastic-standards)).

3. The preparation of a dissertation is required for non-accredited programs. The dissertation is a formal written document which presents the results of an applied or clinical research project on an issue relevant to the profession and practice. The dissertation must represent an independent intellectual achievement and must make a meaningful contribution to the creation, use, and improvement of knowledge in the context of a profession and practice. Students typically earn a number of research credits while completing the work which underlies the dissertation.

4. At least one graduate committee member must have or have had a substantial and relevant employment record in an applied setting and meet the Graduate School requirements for membership (Graduate Advisor and Committee Makeup (http://graduateschool.colostate.edu/policies-and-procedures/advisor-committee)). The committee chair must submit to the dean of the Graduate School a request for approval of the individual that includes proof of the Advisory Committee's endorsement of the individual and a description of the individual's substantial and relevant employment record in an applied setting.

Ph.D. Requirements

The preparation of a dissertation is required. The dissertation is a formal written document which presents the results of sustained research or investigation on an important intellectual problem. The dissertation

must represent independent intellectual achievement and must make a meaningful contribution to the knowledge, accumulated wisdom, or culture of the field in which it is written. Students typically earn a number of research credits while completing the work which underlies the dissertation.

When programs within the same department that have both a Ph.D. and a non-accredited P.D., Ph.D. students in the department offering the P.D. may enroll in one or more of the 18 P.D. credits that meet the professionalism and applied/translational knowledge requirement. However, these credits may NOT count toward the 72 credits beyond the baccalaureate required for the Ph.D.; they will be in addition to that number. Credits earned in P.D. specific courses cannot be part of the program of study for any Ph.D. student.

Doctoral Residency Requirement (Ph.D., P.D.)

There is no CSU residency requirement for doctoral degree programs; however, such requirements may exist at the department level. Students should check with their departments about such policies. Whether or not a residency requirement exists, registration policies as outlined above must be followed.

Doctoral Preliminary Examination (Ph.D., P.D.)

A preliminary examination shall be administered at least two terms before the final examination to determine whether the student is qualified to continue toward the doctorate. The usual procedure is to have written examinations in the field of specialization and supporting areas followed by an oral examination. In order to assure full information to all concerned (student, major professor, all committee members, department head, Graduate School), the intention to hold a doctoral Preliminary Examination is to be publicized two weeks in advance by the advisor. The student is responsible for obtaining the Report of Preliminary Examination (GS Form 16 (http://graduateschool.colostate.edu/current-students/forms/#GS16)) from the Graduate School and returning it, appropriately completed, after the conclusion of the examination.

Providing the committee approves, a candidate who fails the preliminary examination may be reexamined once and, for the reexamination, may be required to complete further work. The reexamination must be held not later than 12 months after the first examination. The examination must not be held earlier than two months after the first examination unless the student agrees to a shorter time period. Failure to pass the second exam results in dismissal from the Graduate School.

Participation in oral examinations by the student and/or one or more members of the examining committee may be via electronic link so long as all are participating simultaneously and all committee members and the student have agreed to this in advance.

Doctoral Candidacy (Ph.D., P.D.)

Doctoral students at CSU are considered to achieve “candidacy” for the degree upon passage of preliminary examinations. Candidates generally retain that status through the completion of the degree. However, candidacy is lost if

1. the student is placed on probation due to insufficient grade point average;
2. the student’s graduate advisory committee finds that insufficient progress is being made toward the degree; or
3. the student is dismissed for academic or disciplinary reasons.

The students who lose candidacy may regain it, when appropriate, through the established procedures for improving grade point average, demonstrating satisfactory progress, or achieving readmission.

Doctoral Final Examination (Ph.D., P.D.)

At least one month before the final examination, the advisor will inform the student and the committee members of the nature and scope of the examination. Normally, the final examination will cover primarily the dissertation, but additional subject matter, specified by the committee at the time of the preliminary examination, may also be covered. Dissertation defenses are open to all members of the CSU community and the public at large. In order to assure timely notification across the entire campus, advisors should announce this information to the CSU community and public at large at least two weeks in advance. Advisors may publicize the defense through CSU’s electronic announcement and message delivery system. The chairperson of the committee shall have the prerogative to decide whether those in attendance (outside of the committee) should be allowed to ask questions of the candidate during an oral examination.

Graduate Specializations

Within graduate degree programs, certain well-defined “specializations” may be offered. A Graduate Specialization is a formal Faculty Council approved program with a defined curriculum addressing a specialty within one of the graduate degree programs. Specializations are automatically listed on transcripts. Please visit the Graduate School website (http://graduateschool.colostate.edu/?s=specializations) for a listing of degrees and available specializations.

Graduate Certificates

Graduate Certificate Program

Graduate Certificates are optional and are offered by certain departments, special academic units (SAUs), or colleges. A Graduate Certificate consists of a minimum of 9 specified credits and not more than 15 credits. All of the credits must be coursework at the graduate level (500- to 700-level). A student must earn a cumulative GPA of 3.000 or better and a minimum of a “C” in the courses required in the Graduate Certificate. All coursework must be traditionally graded.

A Graduate Certificate may include courses from one or more academic units or special academic units. For certificates involving courses from two or more units, the coordinating department is indicated in the List of Graduate Certificates.

Guest and degree-seeking students with bachelor’s degrees are eligible to apply to participate in the Graduate Certificate Program. Students must apply for admission into the program and for the conferral of the certificate. Students must be enrolled at CSU to receive and complete the certificate requirements. Graduate certificates by title are noted on the student’s academic record (transcript). For degree seeking students this is at the time of degree conferral. The certificate title is not on the diploma. See the Graduate School website (http://

www.graduateschool.colostate.edu/prospective-students/degrees.aspx) for details.

Graduate Thesis and Dissertation

Although a thesis or dissertation is planned and executed with the advice and supervision of the advisor and committee, the student must assume primary responsibility both in terms of the content of the document and in terms of its format and presentation.

Graduate students may be responsible for all or part of the expense of their thesis/dissertation research. This expense is highly variable depending on the discipline, the research topic, and the availability of support from funded projects, sponsored programs, or academic departments.

Theses and dissertations submitted for graduate degrees must be completed in the English language. In circumstances in which scholarship would be enhanced if these documents are completed in a foreign language, this must be approved by the student's committee and the Chair/Head of the program. In such cases, an English translation of the title and abstract must be included in the document.

The candidate must submit to the Graduate School the Thesis/Dissertation Submission Form and submit their thesis/dissertation electronically by the published deadline date listed on the Graduate School website. Students should consult these deadlines whenever they approach important steps in their careers. Suggestions for preparation of the manuscript may be found in the Thesis and Dissertation Formatting Guide (http://graduateschool.colostate.edu/for-current-students/completing-your-degree/thesis-dissertation).

Students have the right to disseminate the findings of their theses and dissertations more broadly than is accomplished by archiving and microfilming. Prompt publication of important results is clearly in the best interests of the academic community and society as a whole. Students are therefore encouraged to bring such results to the manuscript submission stage within one year of the award of the degree.

Master's theses and doctoral dissertations are electronically archived by the Libraries and ProQuest/UMI. General information on copyrights, publication, and embargos may be found in the Thesis and Dissertation Formatting Guide (http://graduateschool.colostate.edu/for-current-students/completing-your-degree/thesis-dissertation). As a public institution, CSU exposes bibliographic information about theses and dissertations on the Internet for purposes of discovery and retrieval. One of the functions of CSU is the generation and dissemination of contributions of knowledge and culture. The fundamental purpose of theses and dissertations is to make such contributions openly available for public benefit.

Graduation Procedures

Application for Graduation

A graduate student must apply for graduation by submitting to the Graduate School Office an Application for Graduation (GS Form 25). (Deadlines are available on the Graduate School website (http://graduateschool.colostate.edu/policies-and-procedures/deadline-dates).) For students in combined bachelor's/master's degree programs (Integrated Degree Program (IDP) Admissions), an application for graduation from the Graduate School must be either contemporaneous or subsequent to filing an application for receiving the bachelor's degree. Students must be registered during the semester they complete their degree requirements as specified under Graduate Enrollment Requirement above.

Clearance for Graduation

Departmental requirements (i.e., language requirement, preparation of required papers for publication, return of keys and equipment, cleaning up office and laboratory areas) and discrepancies in grades for graduation term must be completed by the end of the term.

Failure to meet all requirements during the term requested on GS Form 25 will necessitate reapplication for graduation (online). Diplomas will be mailed approximately six to eight weeks after the end of the graduation term to the mailing address on file with CSU.

Inter-University Graduate Programs

Colorado Exchange Program
Collaborative Degree Program

Colorado Exchange Program

Colorado State University, in cooperation with the Colorado School of Mines, the University of Northern Colorado, and the University of Colorado, provides tuition-free instruction for graduate students through a reciprocal agreement. The following conditions must be met to qualify for the program:

1. The graduate student is registered and paying full tuition and fees at the home institution.
2. The course requested is part of a regular load – *not an overload*.
3. The student is pursuing a program leading to an advanced degree. All courses requested must be required for the degree program or a prerequisite for one of the required courses.
4. The course is not offered on the student's own campus when that student can take advantage of it.
5. The request is presented prior to the registration for the semester the term course is to be taken.
6. The request is presented any term except graduation semester.
7. A separate request form is completed for each course taken.
8. Space is available.

Tuition and fees for such registrations will be assessed as though the courses were taken on the CSU campus. Credits so earned may count toward fulfillment of degree requirements within the limits set by the student's department, graduate committee, and the Graduate School. Credits earned at Colorado institutions in cooperative programs approved by the Graduate School at CSU may not exceed 49 percent of the total credits presented for an advanced degree. Credits used to fulfill degree requirements at one of the other institutions may not be used to fulfill requirements at CSU.

Additional information and registration forms are available in the Office of the Registrar (http://registrar.colostate.edu).

Collaborative Degree Program

A collaborative degree is one that partners a CSU graduate program with a similar graduate program at an international university in order to allow students to transfer credits between the two programs and earn a degree at CSU. Both CSU and international students must earn a minimum of 60% of the degree

credits at CSU and the remaining credits at the international university in either a master's or PhD degree.

The coursework for the degree program offered at the collaborating university must meet CSU standards. The courses accepted for transfer from the collaborating university to the CSU program must be equivalent in credit and content. These courses must be listed, evaluated and approved by the CSU department offering the degree; these courses must provide similar content and student learning outcomes and be reflected in the course syllabi as such. The coursework/syllabi that will be transferred from the collaborating university must be translated into English by the collaborating university for evaluation purposes.

International universities, colleges, or degree granting institutions must be invited to participate in a Collaborative Degree Program by a CSU program department. Such institutions must be accredited by a major regional accrediting agency in order to be eligible to participate in a Collaborative Degree Program. An agreement must be signed between CSU and the collaborating university that specifies the conditions of the agreement such as admission and pathway requirements, number of students eligible to participate, insurance, travel, enrollment, and other administrative issues. Collaborative degree students must meet all Graduate School admission and degree requirements. (See the Graduate School website (http://graduateschool.colostate.edu) for more details.) The agreement must be reviewed and approved by the following individuals from CSU: Dean, Department Head, and Program Director of the program wishing to create a Collaborative Degree Program; Legal Counsel; International Programs; Provost; Graduate School; individuals from the international university that have the authority to sign in support of the Collaborative Degree Program on behalf of the collaborating university. When a student is completing a master's thesis or doctoral dissertation an additional agreement/Cotutelle must also be completed and signed by the relevant parties that specifies the co-direction of the work and other pedagogical and publication-related issues. When students meet the requirements for the Collaborative Degree Program, CSU independently confers the degree. The collaborating university may also independently confer a degree. A review process to monitor the quality and outcomes of the Collaborative Degree Program will be established by the department. Data will be reported to the College Dean and Graduate School or as stipulated in the review process.

Graduate Assistantships

Assistantships
Graduate Assistantship-Terms and Conditions of Appointment
Termination of Graduate Assistants

Assistantships

Assistantship awards offer a stipend to the student in return for certain specified services to CSU. The stipend is treated as income (subject to withholding taxes) and both CSU and the student agree to a formal appointment when an assistantship is arranged. Both the amount of the stipend and the extent of time commitment vary from case to case and are set forth in the appointment.

Performance of the assistantship duties provides the student with valuable experience which contributes to professional and career development. Most graduate student support at CSU and many other American universities is in the form of assistantships.

Teaching assistantships involve payment for services related to undergraduate instruction. Some form of experience, skill, or aptitude is necessary for appointment. The duties typically involve grading papers, compiling biographies, monitoring laboratories, conducting discussion sections, or teaching an entire class. Some of these duties require that teaching assistants be able to communicate effectively in English. Usually, teaching assistant duties are confined to beginning-level undergraduate classes.

Departments will conduct the ASCSU course survey for each teaching assistant who is the instructor of record for a course. For teaching assistants who are not the instructor of record but with significant undergraduate teaching contact, departments will ensure that an appropriate survey is completed. These surveys and records of other student feedback will be maintained as part of the department's information base and made available to faculty and administration for future assessment of the policy's effectiveness.

Teaching assistants required to take the TOEFL, IELTS, or the PTE Academic for admission will also be evaluated for their ability to communicate orally in English by their departments. The evaluation will occur prior to pedagogical exposure in the undergraduate classroom using a mechanism that is commensurate with the teaching expectations for their positions. A committee, appointed by the department, shall offer evaluative feedback to potential teaching assistants and determine whether they are capable of teaching in the program. This evaluation shall become part of the student's file. Departments will use the results of both the oral evaluation and course surveys, when available, in determining whether a teaching assistant communicates effectively in English. Teaching assistants unable to communicate effectively in English will be given assistance to help them become more proficient before being reevaluated and assigned responsibilities for classroom instruction.

Teaching assistantships are funded by the state of Colorado as part of the resident instruction budget. Teaching assistantships include payment of tuition on behalf of the student as an added benefit.

Research assistantships are basically similar to teaching assistantships except that recipients are given basic research assignments. The precise nature of the duties will vary depending on the nature of the discipline, the particular projects under way in the department, and the interests and skills of the students. Often the work required is related to the student's course work; in some instances it may directly contribute to thesis, dissertation, or other degree requirements. Generally, research assistantship work is an important part of the process of becoming an active participant in the discipline.

Research assistantships are typically funded through external research grants obtained by members of the faculty. A research assistantship contract may provide for payment of tuition, but this is not necessarily the case.

Residence hall, counseling, and athletic assistantships may be available. Residence hall assistantships sometimes include room, board, and tuition in addition to stipends. Write the Office of Housing and Dining Services (http://housing.colostate.edu/contact-us) for residence hall assistantships.

Graduate Assistantship - Terms and Conditions of Appointment

The following terms and conditions apply to all graduate students being appointed as Graduate Assistants. The Graduate Assistant Appointment and Certification Form generated by the academic department should be signed only after reading the terms and conditions set forth below and

those noted on the Graduate Assistant Appointment and Certification Form.

All appointments of a student (the "Student") as a Graduate Assistant (the "Appointment") by Colorado State University (the "University") are effective on the date set forth beside the student's signature on the Graduate Assistant Appointment and Certification Form, subject to final approval ("Final Approval") by the Board of Governors of the Colorado State University System or the individual to whom the Board has delegated such authority (its "delegated representative").

The stipend payable to a Graduate Assistant, as specified on a Graduate Assistant Appointment and Certification Form, is offered in return for services and shall be deemed taxable compensation. Tuition remission, if specified on a Graduate Assistant Appointment and Certification Form, is provided in the form of financial aid, independently of the stipend, as a qualified tuition reduction given for educational purposes under Section 117 of the Internal Revenue Code.

A Graduate Assistant may be appointed as a Support Assistant, a Teaching Assistant, or a Research Assistant, or some combination thereof, as specified on a Graduate Assistant Appointment and Certification Form. Support Assistants provide administrative services; they are typically located in non-academic units like Housing or Athletics, but may be found in any office. Teaching Assistants help in the provision of educational services to undergraduates. Responsibilities may range from grading papers through leading discussions or lab sessions to complete independent teaching of a class. Research Assistants typically work with a professor on a project of importance to scholarship. The particular nature of Student's duties will be specified in writing, to the Student by the student's advisor or a departmental representative.

Full-time graduate students should not be appointed to more than a half-time assistantship or hold a sum of part-time assistantships greater than half-time. A half-time assistantship (.5 FTE) usually involves an average of about 20 hours of service per week of a nominal 40 hour workweek. Stipends will vary by department and by the duties assigned as well as the skills, competencies, and experience exhibited by the student. However, the stipend for half-time assistants must be paid no less than the Graduate School's officially established minimum monthly amount. Contact the Graduate School for information on the amount of this minimum for any given year. A quarter-time assistantship (.25 FTE) usually involves an average of about 10 hours of service per week of a nominal 40 hour workweek. Those with such assignments, must be paid a minimum of half of this amount. Any other level of appointment (e.g. less than 25% or between 26% and 49%) must be paid at least the prorated established minimum stipend. The level of appointment, amount of stipend and any tuition remission for each Graduate Assistant shall be as set forth on the Graduate Assistant Appointment and Certification Form.

Signature of the Graduate Assistant Appointment and Certification Form by the Student and Final Approval by the Board of Governors of the Colorado State University System or its delegated representative shall constitute a legally binding employment agreement (the "Agreement") between the University and Student. Such Agreement shall be subject to the following terms and conditions::

1. Appointment as a Graduate Assistant is expressly conditioned upon:
   a. Student securing admission to a graduate degree program and the Graduate School, and registering for and completing at least one (1) on-campus credit during each fall and spring semester, and such credits as the appointing department may require each summer term during which the appointment is in effect.
   b. Student's conformance to each of the following: maintaining good academic standing at Colorado State University; maintaining at least a 3.0 grade point average in each of the various categories (regular courses and overall) specified in the Scholastic Standards section of the Graduate and Professional Bulletin after having attained 12 credits of regular coursework or two semesters of graduate work, whichever comes first; not being placed on academic probation; and for non-native speakers of English, taking and obtaining a satisfactory score on prescribed language competency tests.
   c. Continued association with and enrollment in an academic department and the absence of suspension, dismissal, expulsion, or withdrawal from the University, Graduate School, or department.
   d. Student's performance of assigned duties and functions in a timely and competent fashion.
   e. A routine background check, if applicable, is completed and reviewed in compliance with the Colorado State University policy regarding background checks.

   Conditions A through D above shall be deemed conditions precedent which must be met by the Student in order to remain eligible for appointment as a Graduate Assistant. Failure to meet conditions A through D above shall render the appointment voidable at the option of the University, which option may be exercised by discontinuing payment of the stipend. Failure to meet the condition set forth in E above may result in termination of the Appointment, subject to Paragraph 5 below. Termination of or election to void the Appointment shall terminate the stipend payable thereunder, although such action shall not result in forfeiture of the tuition remission for the semester in which it occurs.
2. The University and the Student understand and agree that the stipend portion of an Assistantship is not a scholarship award; rather it is an appointment which involves the performance of services in return for reasonable compensation in the form of stipend. Tuition remission may also be provided in the form of financial aid, independently of the stipend, as a qualified tuition reduction given for educational purposes under Section 117 of the Internal Revenue Code.
3. The term of appointment as a Graduate Assistant and the stipend and tuition remission amounts specified in a Graduate Assistant appointment and Certification Form may reflect the anticipated continuation of the appointment for more than one academic semester, which is set forth as an administrative convenience only. Notwithstanding any such provisions, the term of appointment as a Graduate Assistant and Student's right to receive the stipend and tuition remission during any succeeding academic semester is not guaranteed by the University and no offer of future appointment shall be implied.
4. The University (or the appointing department) reserves the right to terminate the Appointment because of unavailability of funds or other conditions beyond its control upon thirty days written notice to Student, said notice effective when posted in a U.S. Mail Depository with sufficient postage attached thereto. Termination of the appointment shall terminate the stipend payable thereunder, although termination shall not result in forfeiture of the tuition remission for the semester in which such termination occurs.
5. Pursuant to State Statute C.R.S. 24-19-104, all Graduate Assistants are "employees at will" and their employment may be terminated by either party at any time, for any reason or no reason. Termination

of at-will employees does not generally require pre-termination due process. However, except for non- renewals of employment following the end of a stated employment period or election to void an appointment due to failure of conditions A through D under Paragraph 1 above, the Provost/Academic Vice President must review and approve any recommendations concerning the termination of a Graduate Assistant Appointment, including a determination, based on advice from the Office of the General Counsel, as to whether any pre-termination due process is appropriate under the circumstances. Approval of the Board of Governors of the Colorado State University System or its delegated representative is required prior to any final action on such terminations. The provisions of this section shall not be interpreted to authorize the termination of any Graduate Assistant for any reason that is contrary to applicable federal, state, or local law. Termination of or an election to void an Assistantship shall be subject to appeal in accordance with the Graduate Appeals Procedure set forth in the Graduate and Professional Bulletin.

6. Payments will be made on the last work day of the month. All payments will be deposited directly in a bank or forwarded to the address indicated on the Earnings Disposition/Address Form. Students must report to their major department to complete the necessary forms.
7. Benefits: Between semesters Graduate Assistants usually concentrate on their research and associated library work. To the extent that the supervising faculty member and department head concur, Graduate Assistants may use such periods for leave. Graduate Assistants are covered by the University's liability insurance and by Workmen's Compensation. Student health insurance coverage for Graduate Assistants is available at additional cost to the student through the CSU Health Network.
8. The Colorado Uniform Jury Selection and Service Act applied to persons appointed as Graduate Assistants and they must be excused for jury service as required by thereunder.
9. A Graduate Assistant may be required to participate in a retirement program depending on the number of credit hours for which he or she is enrolled and the number of hours of work required. Contribution to such a retirement program shall follow the University's rules and regulations currently in effect for such enrollment. More detailed information concerning participation in the student retirement plan is available from the Student Employment Services Office.
10. The appointment period specified on the Graduate Assistant Appointment and Certification Form may be renewed by the Department by generating a new Graduate Assistant Appointment and Certification Form requiring Student signature.
11. Increases in the amount of the stipend from that originally indicated on the Graduate Assistant Appointment and Certification Form will not require Student signature.
12. Changes other than those noted on #11 (e.g., type of assistantship, level of service, decrease in stipend, or tuition payment arrangements) require the drawing of a new Graduate Assistant Appointment and Certification Form for student signature.

Termination of Graduate Assistants

Pursuant to State Statute, C.R.S. 24-19-104, all graduate assistants are "employees at will." Their employment is subject to such administrative termination procedures as may be appropriate under the circumstances of each case. Advisors and/or department heads must consult with the Dean of the Graduate School prior to taking any actions concerning terminations of assistantships before the end of the stated employment period. Except for non-renewals of employment following the end of stated employment periods or election to void an appointment as set forth in the terms and conditions applicable to graduate assistant appointments, the Provost/Academic Vice President must review and endorse any recommendation concerning the termination of graduate assistants. Approval of the President or Provost/Academic Vice President as the delegated representatives of the Board of Governors is required for any final action on such terminations. Stipends payable under graduate assistantships shall be terminated upon discontinuance of association with the appointing department, dismissal, placement on academic probation, or withdrawal from CSU. Such actions will not cause forfeiture of the tuition remission for the semester in which such action occurs. The provisions of this section shall not be interpreted to authorize the termination of any graduate assistant for any reason that is contrary to applicable federal, state, or local law.

Termination of an assistantship shall be subject to appeal in accordance with the Graduate Appeals Procedure.

Financial Support

Merit or Competency-Based Financial Support
Application for Financial Support
Financial Aid
Types and Amounts of Aid
Credit Requirements
Satisfactory Academic Progress Standards
Fellowships and Traineeships
Income Taxes
Veteran's Benefits
Sponsored Students
Student Employment
Awards from Outside Agencies

There are two broad categories of financial support available to graduate students. The first is awarded on the basis of academic merit or the possession of competencies that permit the performance of specific services. The second is based on demonstrated student financial need.

Merit or Competency-Based Financial Support

Awards are generally arranged or initiated at the level of the academic department. Students should contact the department head on all matters relating to them.

Application for Financial Support

Deadlines

Most merit- or competency-based financial support is awarded on an academic year basis beginning in the Fall Semester. The primary deadline for receipt of complete applications for such support is February 15. Persons who wish to be considered should submit an application for admission. This will ensure consideration for all types of support that might be available. The first review and award cycle will begin immediately after February 15.

However, applications completed later than this date will be considered as availability of funds permits. Some departmentally-based awards, particularly in the form of research assistantships and teaching assistantships, may be awarded on a later schedule. Also, ad hoc funding opportunities may become available at various times throughout the year.

Applicants who intend to begin their studies in the Spring Semester or Summer term should submit application for admission (http://www.graduateschool.colostate.edu/prospective-students/apply) and application for financial support by the appropriate primary deadline date, July 15 or November 15 respectively. Again, this will ensure consideration for all types of support that might be available. Applications completed later than these dates may be considered for any appropriate departmentally-based or ad hoc awards.

Some forms of financial support applications may require other specification as indicated below.

Financial Aid

Application Requirements

1. Be admitted to the graduate school in a regular program of study.
2. Complete a Free Application for Federal Student Aid (https://fafsa.ed.gov) (FAFSA). This will require your Federal Student Aid (FSA) ID Username and Password. If you have not created an FSA ID, you will be prompted to do so on the FAFSA website.
   a. Applicants should prepare their most recent federal income tax return before completing the FAFSA. For priority consideration the FAFSA should be submitted to the federal processor by March 1.

Address/Phone/Fax

The Office of Financial Aid (https://financialaid.colostate.edu)
Division of Enrollment and Access
Centennial Hall Colorado State University
Fort Collins, CO 80523-1065
Email: financialaid@colostate.edu

Phone: (970) 491-6321

Fax: (970) 491-5010
https://financialaid.colostate.edu/

Types and Amounts of Aid

Title	Amounts per year	Availability of funds
Federal Direct Stafford Loan		
Subsidized Loan	Not available for Graduate Students	N/A
Unsubsidized Loan	Not to exceed $20,500 per school year	Unlimited
Supplemental Unsubsidized Loan (Veterinary medical students only)	Up to $20,000 per school year	Unlimited
Health Professions Loan (Veterinary medical students only)	Up to $10,000	Limited
Federal Work-Study	Up to $3,000	Limited
Colorado Graduate Grant	$3000	Limited

Graduate fellowships and graduate teaching and research assistantships are offered through the departments.

Funding

All financial aid, other than Federal Direct Loans, is awarded to the neediest students until funds have been exhausted. Federal Direct Loans are awarded on an ongoing basis.

Website

Please visit the Office of Financial Aid (https://financialaid.colostate.edu) website for information on applying for financial aid, types of financial aid, costs, paying your bill, residency requirements, scholarship searches, how to contact us, etc.

Credit Requirements

Graduate students must be enrolled in at least five (5) credits to receive Federal Direct Loans. A financial aid award is based on full-time enrollment (9 credit hours); if a student is enrolled part-time, financial aid may be reduced and/or delayed. A student registered for Continuous Registration is not eligible to receive financial aid and is also not eligible for a loan deferment.

Satisfactory Academic Progress Standards

Students applying for and/or receiving financial aid are expected to maintain satisfactory academic progress. Failure to perform at established levels may result in students becoming ineligible for financial aid. Students' total number of credits are also evaluated, and students may not exceed established credit limits. Additionally, if a student receives all "F", "U", and/or "W" grades, they will be required to verify the last date of attendance and may be required to return up to 50% of the financial aid received. Copies of the complete policy (https://financialaid.colostate.edu/financial-aid-guide) are available online and in the Financial Aid Guide.

Fellowships and Traineeships

All fellowship awards are based on merit and are highly competitive.

These forms of support involve outright awards to cover educational expenses and may in some cases cover tuition, fees, and other direct expenses. They do not require any service on the part of the student. Several programs funded by a variety of private and public sources may be available at any given time. Graduate fellowship awards are available. These awards are designed to be part of a full support package and hence are usually supplementary to an assistantship appointment. Departments nominate promising candidates for these awards in response to a call in the fall of each year. Fellowships are given in recognition of academic excellence, student contribution to any of the goals of the CSU strategic plan (e.g., undergraduate instruction, diversity), and departmental quality.

The Martin Luther King, Jr. Graduate Scholarship provides support each year for a graduate student at CSU. It is awarded on the basis of academic excellence and contributions to the enhancement of individuals from ethnically diverse populations.

Income taxes

Assistantship stipends are considered payment for services rendered and are thus subject to regular income taxation. Appropriate amounts are withheld from stipend checks as per Internal Revenue Service Requirements.

Tuition payments made on behalf of graduate assistants may be considered "qualified tuition reductions," not subject to income taxation. However, this is explicitly dependent upon the proper execution of the formal contract described above.

Fellowship awards are considered taxable income. However, tuition and certain other direct educational expenditures may be excluded. Most fellowship holders will incur some tax liability. CSU will not deduct from fellowship checks to cover this liability; paying the taxes is a matter of individual responsibility. Fellowship holders should be aware of this additional liability in planning their financial affairs.

Veteran's Education Benefits

The Registrar's Office assists the Department of Veterans' Affairs (VA) in providing certification for the following education benefits:

Under Title 38, U.S. Code

- Chapter 30 (Montgomery G.I. Bill)
- Chapter 31 (Vocational Rehabilitation)
- Chapter 32 (Post-Viet Nam Era)
- Chapter 33 (Post-9/11 G.I. Bill)
- Chapter 35 (Dependents Educational Assistance)

Under Title 10, U.S. Code

- Chapter 1606 (Selected Reserve/National Guard Members)
- Chapter 1607 REAP (Reserve Education Assistance Program)

In addition, the Office of Military & Veteran Benefits will advise and assist students in:

- Meeting residency requirements under the Veterans Choice Act of 2014, Colorado's GI Promise or the Yellow Ribbon Program
- Requesting and obtaining Joint Service Transcripts
- Obtaining additional campus services

Students eligible for any of these benefits must contact the Office of Military and Veteran Benefits (http://registrar.colostate.edu/military-veterans-benefits/benefits-contact-information) in the Registrar's Office prior to the expected date of enrollment. Applicants should apply to CSU in a degree-seeking major or for teacher licensure before applying for veterans' education benefits.

A description of the services (http://veteransresources.colostate.edu) CSU provides may be found online. Regulations governing receipt of veteran's education benefits, Standards of Progress, and other policies (http://registrar.colostate.edu/military-veterans-benefits) are also available online.

Sponsored Students

Sponsored students are those whose tuition, fees, or expenses are paid by an employer government agency or other sponsoring agency. Many international students, as well as some from the U.S. fall under this category. In those cases where sponsors provide direct support for students' research activities, special custodial accounts must be established. Additional fees are associated with this service. Specific information on these accounts is provided to each student at the time of admission and additional advice may be obtained from the Graduate School, or in the case of international students, from the Office of International Programs, to the attention of the International Sponsored Student Coordinator, International Student and Scholar Services (ISSS).

Student Employment

Office in Centennial Hall
(970) 491-5714

Employment opportunities available include the Work-Study Program, on-campus departmental positions, and community part-time employment. Refer to the Student Employment Services (http://ses.colostate.edu) website for more details.

Awards from Outside Agencies

Many foundations and government agencies offer awards for particular purposes. Often, individual interested students must initiate application procedures. The Graduate School provides information on the use of a computerized process to locate graduate funding. Information on Fulbright and Rotary Scholarships is available from the Office of International Programs. Information for Marshall or Rhodes grants can be obtained through the Honors Program.

Tuition, Fees, and Expenses

Graduate Students (Except Professional Veterinary Medical Students)
Graduate Charges for Technology/Term
Veterinary Medical Students Enrolled in Professional Course Registering for 9-24 Credits
Special Fees
Paying Your Bill
Conditions that Affect the Assessment of Charges
Additional Academic Expenditures
Personal Expenses
"In-State Residency" for Tuition Classification Purposes

Authority to set tuition rates is vested in the governing boards of Colorado's state institutions of higher education. The tuition rates which apply to any succeeding fiscal year will not be known until June of each year. The Board of Governors of the CSU System, therefore, reserves the right to change tuition and fee schedules and related policies, including the time, date, and method for payment, at any time.

By registering for a course, a student acknowledges legal and financial responsibility for any and all tuition and fees assessed as a result of registration. Students must follow, and are financially responsible for, formal add/drop and withdrawal procedures at CSU. Non-attendance does not relieve a student of financial responsibility. A student whose account becomes delinquent will be held responsible for paying any late payment charges, collection agency fees up to 40% of the debt, and all costs and expenses including reasonable attorney fees that CSU incurs in its collection efforts. CSU will not register a student, release a diploma or proof of degree, nor provide official transcripts to any current or former student who has past due financial obligations to CSU.

Graduate Students (Except Professional Veterinary Medical Students)

Resident and Non Resident fees can be found on the Tuition & Fees (https://financialaid.colostate.edu/base-tuition) website.

Approved WICHE Programs

Out-of-state residents enrolled in WICHE's WRGP Program in Animal Reproduction and Biotechnology (M.S., Ph.D.), Construction Management

(M.S.), Education and Human Resource Studies (Ph.D.), Master of Agriculture in Integrated Resource Management, Political Science in Environmental Politics and Policy (Ph.D.), Radiation Protection (M.S., Ph.D.), Social Work, Rural and Changing Communities (M.S.W.), and Technical Communication (M.S.) pay Colorado resident tuition.

Graduate Charges for Technology/Term

Fees can be found on the Tuition & Fees (https://financialaid.colostate.edu/base-tuition) website.

Veterinary Medicine Students Enrolled in Professional Course Registering for 9-24 Credits

Senior veterinary students are assessed tuition on a credit basis for each semester since their class schedules vary during the three-semester period. Fees (https://financialaid.colostate.edu/base-tuition) for senior veterinary students are assessed over three semesters in equal payments. The University Technology Fee is also assessed to seniors for summer term.

Special Fees

In addition to the regular charges which all students are assessed, other fees may be applicable at certain times or for certain groups of students pursuing particular activities.

Continuous registration fee	$150.00 per semester
Admission application fee	$50.00
Late registration fee	$50.00
Transcript fee per copy	Refer to http://registrar.colostate.edu/transcript-orders
Course Fees	Certain courses carry a special fee which is assessed at the time of registration. The costs vary and are determined annually. The current fees for each course can be found at https://financialaid.colostate.edu/base-tuition/. The fees are for the use of materials or other specific expenditures necessary for the conduct of instruction.
International and Scholar Services	The International Student and Scholar Services administrative charge is $125 each semester. Charges are subject to change.

Nonrefundable Fees [1]

Admission application fee	
New and transfer students	$50.00
Guest students	$25.00
Colorado Supplemental Application fee for admission to the Doctor of Veterinary Medicine program	$80.00
Enrollment Deposit and Admission Confirmation (new and transfer students)	$300.00
New Student Enrollment Charge	
New Students	$268.50
Transfer Students	$220.50
Composition Directed Self-Placement Survey	$12.00
Mathematics Placement Examination	$15.00
Credit Established by Challenge Examination per credit attempted	$20.00
Language Placement Examination (one-time charge per language; no charge for retakes)	$10.00
Charge for technology, per term (college-wide)[2]	
College of Agricultural Sciences	$86.15
College of Business[3]	$103.00
College of Health and Human Sciences[3]	$74.50
College of Liberal Arts	$57.30
College of Natural Sciences	$94.50
College of Veterinary Medicine & Biomedical Sciences	$90.00
Intra-University	$40.00
Walter Scott, Jr. College of Engineering	$170.00
Warner College of Natural Resources	$94.50
University Alternative Transportation Fee[4]	$33.65
University Facility Fee (per credit hour)	$20.75
University Technology Fee	$25.00

1 Fees are subject to change.

2 Undergraduate students enrolled in twelve (12) or more credits and graduate students enrolled in nine (9) or more credits are considered full time and required to pay the full amount according to their college affiliation. Part-time undergraduate and graduate students pay a prorated amount. Graduate students in the Colleges of Natural Sciences, Veterinary Medicine and Biomedical Sciences, and the Intra-University option are not assessed a charge.

3 The colleges of Business and Health and Human Sciences are the only colleges that apply their charge during the summer session.

4 Undergraduate and graduate students enrolled in fewer than six (6) credits are assessed $14.13.

Paying Your Bill

Payment of Student Accounts

Any student who completes registration agrees to pay the University as follows:

Charges	Fall	Spring	Summer
Tuition, fees, residence hall charges, health insurance and other institutional charges	September 10th	February 10th	Due when billed

Charges that are incurred after the bill date for the semester will be billed mid-month of the following month and have a due date of the 10th of the month after that statement date or the following business day if the 10th falls on a weekend or University holiday.

University charges are due by the date specified on your bill. Due dates are the 10th of each month unless the 10th falls on a weekend or holiday. In those cases, the due date is the following work day. Payment of all CSU charges is to be received in the University Cashier's Office or cashiering system by the due date to avoid late payment penalties. Penalties include a late payment charge and holds on CSU services. Payments by check

are processed when received – postmarks do not apply and future dates are not honored.

Students are responsible for all charges on their account and arrangement of payments due. Payments should only be made when a balance due exists on an account. Credit card overpayments will be credited back to the originating card. All other overpayments will be refunded via mailed check to the student.

In support of CSU's Green Initiatives, CSU implemented e-billing effective in Fall 2010. Billing notifications are e-mailed to Rams e-mail addresses. Students can then log into RAMweb to view their University Billing Statement. Additional billing notifications may be sent to alternate e-mail addresses maintained by the student on RAMweb. Students who are sponsored by a third party may request direct billing to the sponsor for tuition, fees, and other related educational expenses. Detailed information on sponsor billing is available upon request from the Office of Financial Aid. Arrangements for sponsor billing must be made prior to the student account due dates to prevent late payment penalties.

"Billing Information" in RAMweb (https://ramweb.colostate.edu) provides more information on setting up a billing address, billing statement information, accepted payment methods, credit balance refunds, and education tax credit information.

Late Payment Penalties

Late Payment Charges

Mailed payments must reach the University Cashier's Office, 6015 Campus Delivery, by 4:00 p.m. mountain time on the due date (postmarks do not apply). Online payments must be made by 2:00 p.m. mountain time on the due date for the payment to be considered timely. Penalties in the amount of 1.5% of the past due balance will be assessed monthly for the purpose of encouraging prompt payment. Failure to pay amounts due may also result in referral of outstanding balances to a collection agency. These agencies may take legal action to collect past due balances. Further, CSU reserves the right to impose a penalty fee and financial hold for returned checks.

Registration, Transcript, and Diploma Holds

Unpaid past due balances may cause a hold on registration, transcripts, and diplomas. CSU will not register a student, release a diploma or proof of degree, nor provide an official transcript or diploma to any student or former student who has past due financial obligations to CSU until the hold is removed. The release of the hold may be expedited by paying the past due balance in full.

Returned Checks

Any person who presents a check to CSU, either paper or electronic, that is not accepted for payment by the bank (due to insufficient funds, stopped payment, non-existent account, or other reason for which the person is responsible) is charged a penalty as provided by state law. Contact the Treasury Services Office, 555 S. Howes Street First Floor, for the current returned check penalty fee.

CSU sends a notice to the person who presents a check that is not accepted for payment by the bank. In the case of students, the notice is mailed to the student's billing address on file with CSU. Within the time specified in the notice, the person is expected to make payment by guaranteed funds including cash, cashier's check, money order, wire transfer, or accepted credit cards. The payment must be equal to the total of the invalid check plus penalty fee if applicable. Failure to do so will result in action deemed appropriate under the circumstances. If the original presentation of the returned check allowed a student to register for an academic term and full payment of the check plus penalty fee is not made within the time specified in the notice, the student's class schedule may be cancelled.

Conditions that Affect the Assessment of Charges

Tuition and fees for a student registering for a combination of regular on-campus courses, or Continuing Education (CSU Online) courses will be assessed individually according to the schedule established for each. Students who are off campus for full-time internships, practica, or professional affiliations, and who are not concurrently enrolled in other on-campus experiences or courses, may be assessed a reduced student fee. CSU usually pays the tuition on behalf of teaching assistants (full-time registrants who receive a stipend of at least $1,370.00 per month). Research assistantship stipends are typically paid from research grants received by faculty members. Tuition charges may also be paid from these grant funds on behalf of the students, but practice is highly variable. Information should be requested from the department head or the faculty member serving as principal investigator on a particular grant. All students are directly responsible for the payment of fees.

Integrated Degree Program (IDP) Admission students enrolled in combined bachelor's/master's degree programs will be assessed tuition at the undergraduate rate until they have accumulated 120 credits towards their baccalaureate degree after which they will be assessed tuition at the graduate rate. Such students likewise become eligible to hold Graduate Assistantships at the same transitional time.

Additional Academic Expenditures

Graduate students may be responsible for all or part of the costs involved in the preparation of theses, dissertations, or other pieces of scholarly work required in the academic program. The expenses of an appropriate research or artistic project are highly variable, depending on the discipline, the specific nature of the work involved, and the availability of resources from funded projects, students' sponsoring agencies, or the academic departments. In some cases, students may pay such costs directly. In others, departments may request that funds be deposited in a special account in advance.

Personal Expenses

Health Insurance

The CSU Student Health Insurance Plan is designed to work in conjunction with the student fee-funded services provided at the CSU Health Network. The plan, underwritten by Aetna Life Insurance Company and its affiliates ("AETNA"), provides students with access to comprehensive, high quality care. Plan benefits are provided both within the CSU Health Network and when services are provided off campus, outside the CSU Health Network. Fee-paying students are eligible to enroll in this plan.

Graduate students who are enrolled in less than six (6) RI credits may opt into coverage by completing an enrollment form at the CSU Student Insurance Office (information in the Student Insurance Office before the plan enrollment/cancellation deadline. Graduate students enrolled in LESS THAN six (6) resident instruction (RI) credits will NO LONGER be automatically enrolled.

Students enrolled in six or more resident instruction credit hours are automatically enrolled in the plan and are subject to the mandatory insurance requirement. These students must demonstrate proof of

enrollment in comparable insurance in order to opt out via the CSU Student Health Insurance Waiver (http://www.health.colostate.edu) process. Students who have been granted a waiver in the fall semester will be automatically waived in the spring semester as well. All waiver requests must be submitted by the published enrollment/cancellation deadline.

If you do not waive out of the plan by the enrollment/cancellation deadline, your student account will be billed for the premium. Due to the terms of the insurance carrier, no exceptions can be made. Information about the enrollment/cancellation deadline (http://health.colostate.edu/student-health-insurance) for each semester is available online.

Note for International Students: International students are required to hold health insurance regardless of their enrollment status. You will be automatically enrolled in the CSU Student Health Insurance Plan and must show proof of enrollment in a comparable plan through the waiver process if you wish to opt out.

For more information visit the CSU Health Network (http://www.health.colostate.edu) or the Graduate School (http://graduateschool.colostate.edu/current-students/student-resources/health-insurance) websites.

Living Expenses

Since individual habits and needs vary greatly from individual to individual it is difficult to produce a standard estimate of overall living expenses. Information on housing options and costs is available through Housing and Dining Services (http://housing.colostate.edu) and the Office of Off-Campus Life (http://ocl.colostate.edu/home).

New students should be aware that expenses incurred as a graduate student are likely to be higher than as an undergraduate. The purchase of research supplies, the acquisition of a personal library, attendance of seminars, conferences and meetings, and general change of lifestyle are some of the factors that may account for this.

International students particularly may incur high costs. Many necessary articles cannot be transported as luggage and may have to be purchased after arrival at CSU. Clothing appropriate to the climate may have to be acquired. A detailed estimate of expenses including out-of-state tuition and fees, living expenses, and cost of mandatory health insurance for a full calendar year (two semesters and a summer term) may be obtained from the Office of International Programs (http://www.international.colostate.edu) or emailing isss@colostate.edu.

"In-State Residency" for Tuition Classification Purposes

O (http://sfs.colostate.edu)ffice of Financial Aid (http://financialaid.colostate.edu)
Centennial Hall
1065 Campus Delivery
(970) 491-6321
Fax: (970) 491-5010

Classification of students for tuition purposes is governed by State Statute ("tuition law") which sets forth conditions for a student being considered as "in-state" for purposes of tuition classification. The tuition law is contained in sections 23-7-101 to 111, of the Colorado Revised Statutes. Although individuals may be considered state residents for voting or other legal purposes after being in the state for a short period of time, the tuition law specifies additional requirements for classification as "in-state" for tuition purposes. The tuition law, which applies to all public institutions of higher education in Colorado, is subject to judicial interpretation and change at any time by the Colorado Legislature. CSU must apply the rules set forth in the Colorado Revised Statutes, and is not free to make exceptions except as specifically permitted under the Statute.

Note: This information is considered to be general guidance and is not legal advice. Refer to State Statute to review the actual law.

Definition of "In-State Residency" for Tuition Purposes

Under the Colorado tuition law, the term "in-state" student means: "A student who has been domiciled in Colorado for one year or more immediately preceding the first day of classes for the term for which such status is claimed." Further the tuition law states: "Attendance at an institution of higher education, public or private, within the state of Colorado shall not alone be sufficient to qualify for domicile in Colorado."

The Statute states that the applicant has the burden of providing clear and convincing evidence that a Colorado domicile has been established for the required one-year period. CSU may require completion of appropriate forms and additional documentation as necessary to make a determination of domicile. After registration, the initial tuition classification will remain unchanged absent clear and convincing evidence to the contrary.

In-state classification requires a domicile in Colorado for 12 months on or prior to the first day of classes of each semester. "Domicile" is the legal term used to describe the place where a person has chosen to make a true fixed and permanent home. Domicile is made up of two components: physical presence and evidence of intent. **Both** physical presence and evidence of intent must be established for 12 months on or prior to the first day of classes. A student can only establish domicile in Colorado for tuition purposes if he or she intends to reside permanently in the state and meet the definition of a "Qualified Person."

Initial residency determination for tuition purposes of any student enrolling at CSU is determined by the Office of Admissions. To be initially considered for in-state classification you must answer all residency questions completely and accurately on the application and submit requested evidence substantiating their claim. Failure to do so will result in classification as out- of-state for tuition purposes.

In-State Status: Other Circumstances

Exceptions to the one-year residence requirement exist for the following:

- Colorado National Guard members
- Active-duty military stationed in Colorado
- Honorably-discharged members of the U.S. Armed Forces
- Returning active-duty military members
- Canadian military stationed in Colorado
- Employees of companies moving to Colorado receiving government economic incentives
- Western Regional Graduate program enrollees (WICHE)
- A student, other than a nonimmigrant alien who attended a Colorado high school for three years who is admitted into a Colorado Institution of High Education within twelve months after graduation or completing a G.E.D. in Colorado.

For detailed explanation of the requirements for these exceptions, including spouse eligibility, go to CSU's Office of Financial Aid (https://

financialaid.colostate.edu/base-tuition) or the Colorado Higher Education Residency Guide (http://highered.colorado.gov/Finance/Residency).

International Students

International students who are lawful permanent residents or who are admitted as refugees are eligible to establish domicile for tuition purposes. Nonimmigrant aliens who are residing in Colorado for purposes other than education may qualify for in-state status after one year of Colorado domicile. A nonimmigrant with the following student visa categories cannot qualify for in-state tuition classification: F-1, F-2, H-3, H-4 (if the visa holder is the spouse or child of an H-3), J-1 and J-2 (if the J-1 visa holder is a student or trainee), M-1 and M-2.

Petition for Reclassification

A petition may be filed if a student wishes to contest out-of-state classification or if the student has subsequently become eligible for in-state status. Petitions will be processed only for students who have been admitted to CSU and currently enrolled for the semester in which they are requesting a change in classification. Please review the Office of Financial Aid (https://financialaid.colostate.edu) website for more information.

A student's current tuition classification will remain until they have received notification from the Office of Financial Aid Tuition Classification Officer indicating a residency change has been approved. Students who are petitioning for in-state classification remain responsible for paying their tuition based upon current tuition classification. Students are strongly urged to petition during the "Priority Deadline to Submit Petition" provided on the Office of Financial Aid (http://financialaid.colostate.edu) website in order to receive a response of their tuition classification prior to the beginning of the semester and tuition and fee deadlines.

Petition Process/Deadline

Office of Financial Aid must receive completed petitions no later than the published deadline date for the semester for which you are petitioning. Deadlines (https://financialaid.colostate.edu/petition-process-and-deadlines) are provided on our website. Petitions will not be accepted after the published deadline date and incomplete petitions will not be accepted and/or reviewed for that semester, and your tuition classification and tuition assessment will remain nonresident for that term. Petitioners will be notified of the results of their petition by mail. Please allow up to six weeks for notification. If additional information is required, the additional information must be submitted within 15 days from the original petition unless special arrangements are made with the Tuition Classification Officer.

Decisions made by the Tuition Classification Officer may be appealed by CSU's Residency Appeals Committee. A student wanting to appeal the decision to the Residency Appeals Committee must contact the Office of Financial Aid no later than two weeks (10 business days) after the date of the letter in which the decision was conveyed to the petitioner. The decision of the Residency Appeals Committee is the final University determination for that specific semester. In addition, there are no provisions in the Tuition Classification Statutes for retroactive compliance.

The fact that you do not qualify for in-state status in any other state does not guarantee in-state status in Colorado; in-state classification is governed solely by Colorado statute. The tuition classification statute places the burden of proof on the petitioner to provide clear and convincing evidence of eligibility.

Any student who provides false information to avoid paying out-of-state tuition may be subject to legal and/or disciplinary actions.

Enrollment and Academic Records

Information about credits, enrollment status, credit overloads, class schedules, registration process, registration waitlist, course overrides, late registration, registration cancellation prior to start of term, and repeating a course may be found in the Registration section of the General Catalog,.

About Grades
About Withdrawals
Class Attendance and Final Exams

Assessment of Tuition and Fees Based on Registration Changes in Full-or-Part-Time Status

Tuition and fees will be adjusted for students that go above or below the nine-credit assessment cut-off during the add/drop period at the beginning of the semester. The specific dates are listed in the appropriate online class schedule. After this deadline, there is no adjustment in tuition and fees if students withdraw from any portion of the courses for which they are registered.

Continuous Registration

All students admitted to a graduate degree program are required to be continuously enrolled in their degree programs in the fall and spring semesters. This policy applies from the time of first enrollment through the graduation term. Students should contact their advisor if they do not plan to register for at least one credit of course work or research. Students graduating in summer term are required to be registered for at least one credit or Continuous Registration (CR). Students registering for CR will be assessed a fee for each semester of CR registration. If Continuous Registration is added on or after the first day of the term, a $50 late registration charge will be applied. See Special Fees.

Students enrolled for Continuous Registration in any term may not be considered enrolled full time for the purposes of, for example, financial aid, student loans, visas, or employment. Moreover, to receive full privileges for the summer term, students must be enrolled either in the summer or for the following fall term.

Credit Load

Graduate assistants are required to register for at least one credit of course work and/or research during fall and spring terms. Assistants who have an appointment in effect in the summer must register for such credits as the appointing department may require. Students on other forms of financial assistance should register for the number of credits required by the sponsor.

Schedule Changes and the Add/Drop and Withdrawal Periods

See Schedule Changes

Registration Alternatives

Independent Study

Independent study is a type of learning that supplements regular, supervised classroom instruction by permitting the student to carry such learning even further, working independently under necessary and

sufficient guidance of a supervising instructor. While details of each independent study project are negotiated by the student and instructor, the expectation is that at least three hours per week of directed effort on the student's part is required for each credit. Personal contact (face-to-face, telephone, Internet, or other forms of communication) is expected.

The instructor and the student shall specify in writing the requirements the student should fulfill to complete the course, including due date, contact expectations, number of credits, and other pertinent information. The instructor, student, and department head shall sign this statement and retain a copy. Upon completion of the project, a copy or description of the work involved shall be retained in the department for at least seven years.

Colorado Exchange Program

See Colorado Exchange Program

About Grades

See Grade Points

Student Option Satisfactory/Unsatisfactory

Satisfactory/Unsatisfactory registration for graduate students is subject to limitations imposed by graduate committees and departments. Required courses listed on the program of study may not be taken on a "student-option satisfactory/unsatisfactory" basis. Courses which are offered "satisfactory/unsatisfactory only" or "instructor option satisfactory/unsatisfactory" are acceptable. Background courses may be taken "student-option satisfactory/unsatisfactory" if department policies permit. Registration for satisfactory/unsatisfactory should be approved by the advisor prior to enrollment and cannot be altered except during the schedule change period. Repeating a course on a satisfactory/unsatisfactory basis for which a previous traditional grade was assigned will not alter the effect of the previous grade on the GPA. For "student-option satisfactory/unsatisfactory" courses:

- A correct satisfactory/unsatisfactory registration including advisor approval is the express responsibility of each student.
- Performance equivalent to a grade of C or better is recorded as S (Satisfactory); performance equivalent to a D or F is recorded as U (Unsatisfactory). Neither the S nor U are used in calculating the CSU grade point average.
- A grade for a course taken as satisfactory/unsatisfactory may not be converted to a traditional grade for purposes of improving the GPA to meet graduation or scholastic requirements.
- When it is determined that an ineligible student is or has been registered for a satisfactory/unsatisfactory course, a traditional grade will be assigned.

Auditing a Class

See Audit

Incompletes

See Incomplete Grades

Discontinuing a Class (Student Non-Attendance)

See Discontinuing a Class

Grade Appeals

See Grade Appeals. (http://catalog.colostate.edu/general-catalog/academic-standards/grading)

Semester Grades

See Semester Grades.

Transcripts

See Transcripts.

Enrollment or Degree Verification

For verification of enrollment status, term(s) of attendance, or degree awarded, go to RAMweb (http://ramweb.colostate.edu). For other verifications contact the Registrar's Office in Centennial Hall, Room 100.

Degree Conferral

See Degree Conferral.

About Withdrawals

Withdrawal from a Course

See Withdrawing from a Class.

Withdrawal from CSU

See University Withdrawal.

Called to Active Military Duty

Called to Active Military Duty.

University Withdrawal for Call to Active Duty Process

See University Withdrawal for Call to Active Duty Process.

Retroactive Withdrawal

See Retroactive Withdrawal.

Class Attendance and Final Exams

Class Attendance Regulations

See Class Attendance Regulations.

Final Examinations

See Final Examinations.

Amendments to the Bulletin

Specifics on these amendments may be found on the Faculty Council (http://facultycouncil.colostate.edu/faculty-council-meeting-dates-agendas-minutes) **webpage**.

Faculty Council approved changes to the Scholastic Standards on May 1, 2018. This modification is found in the Faculty Council minutes (http://facultycouncil.colostate.edu/faculty-council-meeting-dates-agendas-minutes)on page 6-7.

Faculty Council approved changes to the Master's Degrees on April 3, 2018. This modification is found in the Faculty Council minutes (http://facultycouncil.colostate.edu/faculty-council-meeting-dates-agendas-minutes) on page 18.

Faculty Council approved the changes to the continuous registration policy on December 5, 2017. This modification is found in the Faculty Council minutes (http://facultycouncil.colostate.edu/faculty-council-meeting-dates-agendas-minutes) on page 10.

Faculty Council approved the changes to the advisory system policy on December 5, 2017. This modification is found in the Faculty Council

minutes (http://facultycouncil.colostate.edu/faculty-council-meeting-dates-agendas-minutes) on page 8.

Faculty Council approved the changes to the US Citizen application GPA provisional Admit policy on November 7, 2017. This modification is found in the Faculty Council minutes (http://facultycouncil.colostate.edu/faculty-council-meeting-dates-agendas-minutes) on page 68.

Faculty Council approved changes to the Doctoral Degree, adding a professional doctorate. These changes were approved on April 4, 2017 on page 120 of the Faculty Council minutes (http://facultycouncil.colostate.edu/faculty-council-meeting-dates-agendas-minutes).

Faculty Council approved revisions to Master's Degrees, Credit Requirements. These changes were approved on April 4, 2017 on page 118 of the Faculty Council minutes (http://facultycouncil.colostate.edu/faculty-council-meeting-dates-agendas-minutes).

Faculty Council approved changes to the Graduate Study section, adding Graduate Specializations. These changes were approved on December 6, 2016 on page 21 of the Faculty Council minutes (http://facultycouncil.colostate.edu/faculty-council-meeting-dates-agendas-minutes).

Faculty Council approved changes to the Admissions Requirements and Procedures. These changes were approved on November 1, 2016 and are found on page 13 of the Faculty Council minutes (http://facultycouncil.colostate.edu/faculty-council-meeting-dates-agendas-minutes).

Faculty Council approved modifications to the Evaluation of Graduate Students. These changes were approved on October 4, 2016 and are found on page 10 of the Faculty Council minutes (http://facultycouncil.colostate.edu/faculty-council-meeting-dates-agendas-minutes).

Faculty Council approved the changes to the continuous registration policy on September 6, 2016. This modification is found in the Faculty Council minutes (http://facultycouncil.colostate.edu/faculty-council-meeting-dates-agendas-minutes) on page 13.

Faculty Council approved the addition of the Student Conduct Code to the Graduate and Professional Bulletin. This addition was approved on October 4, 2016 and is found on page 10 of the Faculty Council minutes (http://facultycouncil.colostate.edu/faculty-council-meeting-dates-agendas-minutes).

Faculty Council approved the changes to the continuous registration policy on September 6, 2016. This modification is found on page 11 of the Faculty Council minutes (http://facultycouncil.colostate.edu/faculty-council-meeting-dates-agendas-minutes).

Faculty Council (12-1-15 minutes) approved additional wording regarding 100 and 200 level courses taken by graduate students and transfer course grade requirements. The full text of the changes to *Scholastic Standards* can be found on the Faculty Council Agenda (http://facultycouncil.colostate.edu/faculty-council-meeting-dates-agendas-minutes) (12-1-15) page 28.

Faculty Council (11-3-15 minutes) approved a wording change regarding the process appointing advisors and committee members. The full text of the changes to *The Advisory System* can be found on the Faculty Council Agenda (http://facultycouncil.colostate.edu/faculty-council-meeting-dates-agendas-minutes) (11-3-15) page 45.

Faculty Council (9-1-15 minutes) approved the addition of the Pearson Test of English (PTE) as an acceptable test for English proficiency. The full text of the changes to the *Application: International Students* in the *Admissions Requirements and Procedures* section can be found on the Faculty (http://facultycouncil.colostate.edu/faculty-council-meeting-dates-agendas-minutes) Council Agenda (http://facultycouncil.colostate.edu/faculty-council-meeting-dates-agendas-minutes) (9-1-15) page 127.

May 5, 2015 Faculty Council Revision to The Advisory System, Plan C master's students - Graduate Study - Requirements for All Graduate Degrees - The Advisory System.

March 4, 2015 Faculty Council Revision to Combined Degree Programs removal from this section – B.5 Combined Degree Programs – references to Track III were updated to Integrated Degree Program (IDP)

February 3, 2015 Faculty Council Revision to Collaborative Degree Program – E.4 Collaborative Degree Program.

December 2, 2014 Faculty Council Revision to Professional Science Master's – E.2 Master's Degrees

December 2, 2014 Faculty Council Revision to Appeals – E.1.4.Graduate School Appeals Procedure

December 2, 2014 Faculty Council Revision to Combined Degree Admissions and Track III Admissions to IDP and SDP- D.3 Combined Degree Programs and D.3.1 Track III Admissions

November 4, 2014 Faculty Council Revision to Scholastic Standards – E.1.3 Scholastic Standards

September 2, 2014 Faculty Council Revision to Combined Degree Program – revisions to section B: "The Graduate School", to section D: "Admission Requirements and Procedures" - D.1 Application: U.S. Citizens or Permanent Residents - D.3. Track III Admissions, section E. "Graduate Study": E.1.2 Program of Study – and section G. "Tuition, Fees, and Expenses"- G.7 Conditions That Affect the Assess of Charges

September 2, 2014 Faculty Council Revision to TOEFL/IELTS Requirement – D.5 Application: International Students

September 2, 2014 Faculty Council Revision to Graduate Certificate Program – E.6 Graduate Certificate Program

May 20, 2014 Faculty Council Revisions to Track III – The Graduate School B.5, B 5.1, Admission Requirements and Procedures D.1, D.3, D.3.1, Graduate Study E.1.2 and Tuition Fees and Expenses G.7.

April 2, 2013 Faculty Council Revision to New Graduate Degree Programs – The Graduate School B.1

April 2, 2013 Faculty Council Revision to Public Dissemination of Theses and Dissertations – Graduate Study E.5

April 2, 2013 Faculty Council Revision to Credit Requirements – Graduate Student 2.1, Table 1 and E.3.1

March 5, 2013 Faculty Council Revision to Probation Procedures – Scholastic Standards E.1.2

November 5, 2012 Faculty Council Revision to Graduate Assistantships – Financial Support F.2.3

September 4, 2012 Faculty Council Revision to the Probationary Period – Scholastic Standards E.1.3

February 7, 2012 Faculty Council Revision to the Enrollment and Academic Records – Degree Conferral

February 7, 2012 Faculty Council Revision to the Admissions Requirements and Procedures – Application- International Students

October 4, 2011 Faculty Council Revision to the Admissions Requirements and Procedures – Application: International Students

September 8, 2011 Faculty Council Revision to the Admissions Requirements and Procedures - "Application: International Students" Section

April 5, 2011 Faculty Council Revision to the Enrollment and Academic Records – Schedule Changes and the Add/Drop and Withdrawal Periods

April 5, 2011 Faculty Council Revision to the Enrollment and Academic Records – Traditional Grading – Plus/Minus

February 17, 2011 Faculty Council Revisions to the Student Rights and Responsibilities – "Academic Integrity" Section

February 10, 2011 Faculty Council Revisions to the Enrollment and Academic Records - "Called to Active Military Duty" Section

February 10, 2011 Faculty Council Revisions to the Graduate Study - "Table 2. Summary of Procedures for the Master's and Doctor of Philosophy Degrees" & "Dissertation and Thesis" Section

December 10, 2009 Faculty Council Revision to the Admissions Requirements and Procedures - "Application: American Citizens", "Track II Admissions", & "Application: International Students" Sections

November 18, 2009 Faculty Council Revision to the Graduate Study - "The Advisory System" Section

March 12, 2009 Faculty Council Revision to the Admissions Requirements and Procedures - "Application: American Citizens" Section

March 12, 2009 Faculty Council Revision to the Admissions Requirements and Procedures - "Application: International Students" Section

March 12, 2009 Faculty Council Revisions to the Admissions Requirements and Procedures - "Application: International Students" Section

CONTINUING EDUCATION/CSU ONLINE

Colorado State University Online offers selected undergraduate degrees, graduate degrees, graduate certificates, professional development training, and hundreds of courses that connect students to campus and CSU's renowned faculty, research, and curricula. CSU's online students receive the same education, learn from the same faculty, and earn the same regionally accredited degree(s) as students on campus.

Through CSU Online, more than 10,000 students each year, including thousands of students pursuing their degrees on campus, take online courses to gain a **world-class education** on a schedule that fits their lives. Learn more about CSU's online, distance, hybrid, and off-campus programs.

Online Degrees, Certificates, and Courses
Classroom Degree Programs and Courses
Admissions
Registration and Payment
Tuition and Fees
Financial Aid
Drop/Withdrawal Policy
Accessing Online Courses

Online Degrees, Certificates, and Courses

- Graduate Degrees (http://www.online.colostate.edu/degrees/graduate-degrees.dot)
- Graduate Certificates (http://www.online.colostate.edu/certificates/credit-certificates.dot)
- Graduate Courses (https://www.online.colostate.edu/courses/credit)
- Undergraduate Degrees (http://www.online.colostate.edu/degrees/undergraduate-degrees.dot)
- Undergraduate Certificates and Training (http://www.online.colostate.edu/certificates/undergraduate.dot) (https://www.online.colostate.edu/certificates/undergraduate.dot)
- Undergraduate Courses (https://www.online.colostate.edu/courses/credit)
- Professional Development (Noncredit) Certificate Programs (https://www.online.colostate.edu/certificates/professional-development.dot)
- Professional Development (Noncredit) Courses (https://www.online.colostate.edu/courses/noncredit)
- Digital Badge (Noncredit) Programs (http://www.online.colostate.edu/badges)
- Free Online Courses (http://www.online.colostate.edu/free-online-courses)
- How Does Online Learning Work? (http://www.online.colostate.edu/faqs/online-learning.dot)

Classroom Degree Programs and Courses

- Graduate Degrees (http://www.online.colostate.edu/degrees/graduate-degrees.dot)
- Credit Courses in (http://www.online.colostate.edu/courses/credit/?subject_cat=&open_only=false&term_filter=&location_cat=1191/#courselistings)Fort Collins (http://www.online.colostate.edu/courses/credit/?subject_cat=&open_only=false&term_filter=&location_cat=39426/#courselistings) or Denver (http://www.online.colostate.edu/courses/credit/?subject_cat=&open_only=false&term_filter=&location_cat=1191/#courselistings)
- Professional Development (Noncredit) Courses in Denver (http://www.online.colostate.edu/courses/noncredit/?subject_cat=&open_only=false&term_filter=&location_cat=1191/#courselistings) or Fort Collins (http://www.online.colostate.edu/courses/noncredit/?subject_cat=&open_only=false&term_filter=&location_cat=39426/#courselistings)
- Osher Lifelong Learning Institute (http://www.osher.colostate.edu)
- Classroom Locations (http://www.online.colostate.edu/faqs/classroom-locations)

Admissions

- Applying for Degrees and Graduate Certificates (http://www.online.colostate.edu/faqs/admission)
- Application Resources (http://www.online.colostate.edu/faqs/admission/application-resources.dot)
- Taking Courses without Applying (http://www.online.colostate.edu/faqs/admission)

Registration and Payment

- Credit Courses and Programs (http://www.online.colostate.edu/faqs/registration/credit)
- Professional Development (Noncredit) Courses and Programs (http://www.online.colostate.edu/faqs/registration/noncredit.dot)
- Continuous Registration (http://www.online.colostate.edu/faqs/policies/continuous-registration.dot)
- Planned Leave (http://www.online.colostate.edu/faqs/policies/planned-leave.dot)

Tuition and Fees

See more at CSU Online (http://www.online.colostate.edu/faqs/tuition-fees.dot).

Financial Aid, including Military Discounts

See more at **CSU Online** (http://www.online.colostate.edu/faqs/financial-aid.dot).

Drop/Withdrawal Policy

- Credit Courses and Programs (http://www.online.colostate.edu/faqs/policies/drop-policy.dot)
- Professional Development (Noncredit) Courses and Programs (http://www.online.colostate.edu/faqs/policies/drop-policy-noncredit.dot)
- Appeals Process (http://www.online.colostate.edu/faqs/policies/appeals.dot)

Accessing Online Courses

- Credit (http://www.online.colostate.edu/current-students/access-online-courses/credit-courses.dot)
- Professional Development (Noncredit (http://www.online.colostate.edu/current-students/access-online-courses/noncredit-courses.dot))

ABOUT CSU

Colorado State University is one of the nation's top public research universities, with a strong commitment to excel in all we do.

Colorado State was founded as the Colorado Agricultural College in 1870, six years before the Colorado Territory was granted statehood, and it was one of 68 land-grant colleges established by President Abraham Lincoln's signing of the Morrill Act. Our tradition of providing a high-quality, affordable higher education to all who have the desire and ability to achieve it runs deep, and CSU remains the "university of choice" for Colorado residents -- more Colorado high-school students choose CSU than any other campus.

We offer exceptional academic programs, with 76 undergraduate degree programs, 114 graduate degree programs, 21 professional master's degree programs, and our prestigious Professional Veterinary Medicine program. Many of CSU's academic programs are ranked among the best in the nation and world. Our world-class research and scholarship attract more than $370 million in research funding every year, and CSU ranks second nationally in federal research funding for universities without a medical school.

Faculty at CSU are among the best in their fields and combine classroom learning with experiential learning in the field and laboratory. More than 5,000 CSU students participate in undergraduate research opportunities every year, and even as CSU has grown, we've kept our student:faculty ratio at 19:1.

Within six months of graduation, 84 percent of our students have secured employment or continuing education -- and 88 percent of graduates say they would choose CSU again.

CSU educates students both to make a living and to make a difference -- and our faculty transform the world through their research, scholarship, and teaching. This is what it means to be a research university in the 21st century, and Colorado State University is proud to carry on that distinguished academic tradition.

Land Grant Tradition
Outreach, Research and Extension
CSU System
Accreditation
University Leadership
Fort Collins Community

Land Grant Tradition

Our Land-Grant Mission

The idea of the land-grant university arose in the middle of the 19th century around a set of converging social and cultural changes in the United States. In an era of economic, social, and political turmoil, U.S. Representative Justin Morrill, a Vermont native and son of a blacksmith, proposed the notion of government land-grants to support practical public education for the working classes. President Abraham Lincoln signed the first Morrill Act into law on July 2, 1862. This act dictated that proceeds from the sale of land in each state would be invested in a perpetual endowment to support colleges of agriculture and mechanic arts. The signing of the second Morrill Act in 1890, the Hatch Act in 1887 (to establish Agricultural Experiment Stations), and the Smith-Lever Act of 1914 that created the Cooperative Extension Service formed the basis of the land-grant university model as it exists today.

The spirit of the Morrill Act was, and is, to enable all citizens of the United States to participate in the nation's economic and social progress. After 150 years of profound social and economic transformation, the core values embodied in that spirit remain.

Colorado State University is a land-grant university. CSU came into existence as part of Lincoln and Morrill's dream to make a great college education available to every American. Colorado State also acknowledges, with respect, that its campus today sits on the traditional and ancestral homelands of the Arapaho, Cheyenne, and Ute Nations and peoples. While the University honors its mission to provide access to education and inclusion, we also recognize that CSU's founding came at a dire cost to Native Nations and peoples, both those whose land the campus was built upon and those whose land was sold to support its formation. As we carry out our mission today, we do so with this recognition of our institutional history, responsibility, and commitment.

To be a land-grant university in the 21st century means:

- **Inclusion, Opportunity, and Success**: We are proud to provide access to opportunity to anyone with the motivation and ability to earn a degree. With the signing of the Morrill Act, for the first time in history, higher education became broadly open to people from all walks of life. At CSU, we prize diversity and the rich history that different populations bring to the academic community – as well as the rich history of the land and region on which our university is built.
- **Research that Transforms Our World:** CSU ranks among the leading research universities in the nation and is home to world-class discovery. CSU research and scholarship advances the quality of life for people in Colorado and around the world. Our faculty and students lead innovative discovery and scholarship to solve local and global problems and expand our understanding of our world and the challenges that confront it.
- **Service to Society:** As the birthplace of the Peace Corps, CSU holds a strong belief that innovation can positively impact the quality of life for people worldwide. The people of Colorado State believe service to society and our world is a high calling. Our faculty and staff deploy knowledge and education to address pressing global challenges and improve the quality of life for people in Colorado and around the world, in keeping with our historic commitment to service and engagement. Students also put this value into action through their involvement and service on and off campus, whether collecting cans of food to feed the hungry in Fort Collins, participating in an alternative spring break trip, or working with faculty on projects in the developing world.
- **Education to Meet the Challenges of Today and Tomorrow:** CSU provides a pragmatic, meaningful, and transformational educational experience to prepare the next generation of scientists, artists, educators, and entrepreneurs. CSU alumni use their talents and expertise to transform our world, and their education is a cornerstone of a prosperous economy. CSU graduates have won Pulitzer Prizes, flown on space shuttle missions, led states and nations, made brilliant scientific discoveries, and had an impact on communities and industries worldwide.
- **Excellence Above All:** In all we do, we strive for excellence. CSU is a place where students build academic and personal success; where groundbreaking research is conducted and discovery achieved; where

innovation is readily deployed to meet local and world demands; and where alumni celebrate transformative lives and careers. We provide an outstanding, dynamic educational experience as the foundation for student success and retention. As one of the nation's leading research universities, Colorado State sets a high standard – and aims for excellence in all aspects of its educational, research, and service missions.

Outreach, Research and Extension

Colorado Agricultural Experiment Station
Colorado State Forest Service
Colorado Water Center
Environmental Learning Center
Extension

Colorado Agricultural Experiment Station

University Services Center, Room 408
601 South Howes Street
(970) 491-5371

Agricultural research has been part of Colorado State University (CSU) since the institution's beginning. In 1888, the Colorado General Assembly established the Colorado Agricultural Experiment Station (CAES) (http://aes.agsci.colostate.edu) as the contributor to the federally-created state agricultural experiment station system established by the Hatch Act, currently encompassing all fifty states and United States territories.

The CAES is an integral part of CSU and a unit within the College of Agricultural Sciences. The Colorado Agricultural Experiment Station creates and disseminates knowledge related to agriculture and natural resources with the overarching goal of enhancing economic viability and environmental sustainability in ways that are socially acceptable. Further, the CAES applies this knowledge to solving practical problems of producers and consumers.

The CAES supports faculty, staff, and students across CSU who conduct research on crop and livestock production, food systems, and natural resources problems. Our research is conducted in Fort Collins in seven of eight colleges, in more than 15 academic departments, and at nine off-campus research centers located throughout the state. The CAES is not a place but rather is an administrative umbrella that oversees research programs taking place on campus and at seven research centers across Colorado. These research centers are the Agricultural Research, Development and Education Center (ARDEC) near Fort Collins, the Arkansas Valley Research Center in Rocky Ford, the Eastern Colorado Research Center in Akron, the Plainsman Research Center in Walsh, the San Luis Valley Research Center in Center, the Southwestern Research Center in Yellow Jacket, and the Western Colorado Research Center with locations near Orchard Mesa, Roger's Mesa, and Fruita.

Agricultural research programs include the traditional areas of producing and processing food products such as wheat, beef, potatoes, fruits, and vegetables, as well as discovering how foods and diets influence human nutrition and health, new kinds of textiles we wear, the ornamental plants and gardens we enjoy, and sustainable use of rangelands where high-quality water comes from and which support grazing livestock and wildlife.

The CAES partners with CSU Extension, industry, schools, and any others who can help get new information and technologies into the hands of those who need it.

Colorado State Forest Service

State Office is located at the Foothills Campus, Building 1050
(970) 491-6303

The Colorado State Forest Service (CSFS) (http://csfs.colostate.edu) is a service and outreach agency of the Warner College of Natural Resources and provides staffing for the Division of Forestry within the Colorado Department of Natural Resources. Headquartered in Fort Collins and with 18 field offices throughout the state, the mission of the CSFS is "to achieve stewardship of Colorado's diverse forest environments for the benefit of present and future generations". The CSFS is organized into four management areas and is staffed by approximately 105 full- and part-time employees and more than 100 seasonal employees. The CSFS provides forestry outreach and education and administers forest management programs and projects, treating thousands of acres of forestland every year. The agency works with landowners, communities, and government agencies to improve forest health and resilience to wildfire, climate change, insects, and diseases. The CSFS also grows and distributes seedling trees and shrubs for reforestation and other conservation purposes, and assists the forest products harvesting and manufacturing industries to increase utilization of Colorado wood. .

Colorado Water Center

Office located in Engineering Building, Room E102
(970) 491-6308
watercenter.colostate.edu (https://watercenter.colostate.edu)

The **Colorado Water Center** is one of 54 Water Resources Research Institutes created by the Water Resources Act of 1964, which collectively form the National Institutes for Water Resources. As a division under CSU's Office of Engagement, the Center aims to connect all water expertise in Colorado's higher education system with research and education needs of Colorado's water managers and users, building on the rich water history at Colorado State University. The Center leads interdisciplinary research, education, and outreach to address complex and evolving water-related challenges by fostering collaboration between higher education and water stakeholders, synthesizing objective water knowledge to inform decision-making, and inspiring the next generation of water leaders.

Environmental Learning Center

Offices in Natural Resources Building, Rooms 218 and 223
Program site at 2400 South County Road 9 Ft. Collins, CO 80525
(970) 491-1661

Staff of the Environmental Learning Center (ELC) (http://www.csuelc.org) work to connect people with nature by facilitating educational, inclusive and safe experiences in the natural environment. The ELC provides a diversity of programs to groups throughout the community. This includes public schools, scout troops, CSU groups, service organizations, and many others.

Extension

Offices in University Square, Room 102
(970) 491-6281

Colorado State University Extension (CSUE) (http://extension.colostate.edu) provides information and education that encourages the application of research-based knowledge in response to local, state, and national issues affecting individuals, families, businesses, and communities of Colorado.

Extension in Colorado was established in 1913 when counties created programs. In 1914 federal legislation created the Extension system nationwide. It was accepted by Colorado's General Assembly in 1915, and reaffirmed in 1979. It is funded by county, state, and federal appropriations. Extension also functions as the educational arm of the U.S. Department of Agriculture, through each state's land grant university. CSUE has offices across the state of Colorado and serves all 64 counties.

Extension's outreach educational objectives fall within the scope of their land-grant mission and address high-priority needs and issues in Colorado in the broad areas of agriculture and natural resources, family and consumer sciences, 4-H youth development, and community development. Ongoing program teams focus on critical areas including: 4-H and youth development; cropping system; energy; environmental horticulture; community development; food systems; livestock and range; natural resources; nutrition, food safety, and health; and individual, family, and community well-being.

CSU System

Colorado State University System

410 Seventeenth Street, Suite 2440
Denver, CO 80202
(303) 534-6290

The Colorado State University System (http://www.csusystem.edu) has three campuses with distinct roles and missions that together serve the state, region, country, and the world, educating more than 40,000 new and returning scholars annually. Colorado State University in Fort Collins, the System's flagship, is a doctoral-granting research university and the state's land-grant institution. Colorado State University-Pueblo is a comprehensive regionally focused university and a federally designated Hispanic-Serving Institution offering both graduate and undergraduate degree programs. CSU-Global is the nation's first, independent, 100 percent online public university, created to serve learners in Colorado and beyond. The CSU System is led by a Chancellor who works with the appointed Board of Governors of the CSU System to further the role and mission of the System universities and ensure exceptional service to Colorado.

Board of Governors of the Colorado State University System

The Board of Governors (http://www.csusystem.edu/board-of-governors/board-members) consists of 15 members, nine of whom are voting members appointed by the Governor, as provided in Colo. Rev. Stat. § 23-30-101. The remaining members represent the component universities of the Colorado State University System with one faculty member and one student leader from each campus.

The Board of Governors fosters development of Colorado State University, Colorado State University–Pueblo, and Colorado State University–Global and supports these separate and distinct institutions through careful planning and resource development. The Board strives to maintain each institution's flexibility to address challenges and opportunities that arise as the institutions seek to fulfill their statutory missions, consistent with the policies of the Colorado Department of Higher Education

The Board also supports opportunities for cooperation in program and resource sharing among the institutions and facilitates system-wide financial accountability.

Accreditation

All academic and professional degrees and all course credits earned at CSU are regionally accredited by The Higher Learning Commission (https://www.hlcommission.org) to provide assurance that course credits and degrees earned at CSU meet rigorous quality standards. Accreditation is a requirement for federal financial aid funding and may be a requirement for some employment opportunities, professional licensure, and graduate education.

230 South LaSalle Street, Suite 7-500
Chicago, IL 60604-1411
(800) 621-7440; (312) 263-0456

Many of CSU's academic programs are accredited through professional organizations in their disciplines. Details are available on the pages for individual Degree Programs. A comprehensive list of accredited academic programs may be found on CSU's Accreditation website (http://accreditation.colostate.edu/accreditations-academic.aspx).

Assessment of Program Quality and Continuous Improvement

Academic degree programs are periodically reviewed through an internal process to assure the relevancy and high quality expected of a CSU degree. Each degree program defines meaningful student learning outcomes that identify the specific knowledge, competencies, skills, abilities, and values that students should be able to demonstrate upon

completion. Defensible standards for evaluating whether students are achieving those outcomes are established and monitored. Appropriate assessment of student learning outcomes may include both direct and indirect measures (comprehensive exams, thesis projects, internship evaluations, reflective journals, peer comparisons, job placement rates, graduate school acceptance rates etc.). Departments are responsible for the collection and analysis of learning outcomes data and additionally responsible to demonstrate that the findings are used in a process of continuous quality improvement within the degree program.

University Leadership

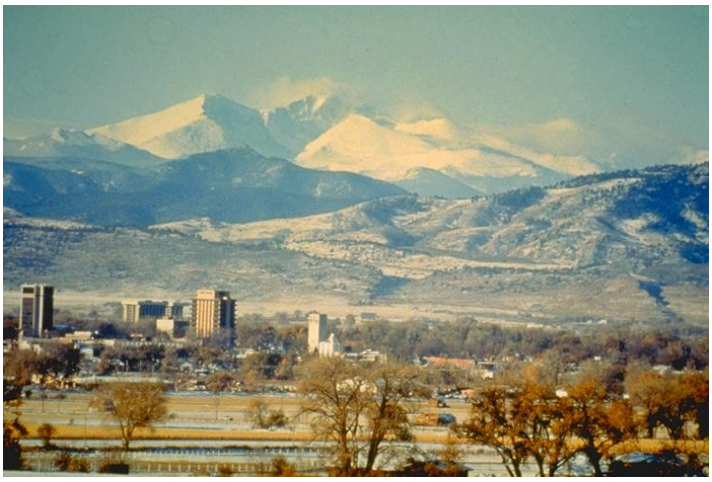
President's Cabinet

Joyce McConnell	President	http://www.president.colostate.edu
Rick Miranda	Provost and Executive Vice President	http://www.provost.colostate.edu
Brett Anderson	Special Assistant to the President	http://www.president.colostate.edu
Patrick J. Burns	Vice President for Information Technology, Dean of Libraries	http://www.acns.colostate.edu
Dan Bush	Vice Provost for Faculty Affairs	http://www.provost.colostate.edu
Kathleen Fairfax	Vice Provost for International Affairs	http://www.international.colostate.edu
Tim Gallagher	Chair, Faculty Council	http://www.facultycouncil.colostate.edu
Blanche M. Hughes	Vice President for Student Affairs	http://www.studentaffairs.colostate.edu
Laura Jensen	Vice Provost for Planning and Effectiveness	http://www.provost.colostate.edu
Pam Jackson	Interim Vice President for External Relations	http://www.externalrelations.colostate.edu
Lynn Johnson	Vice President for University Operations & Chief Financial Officer	https://operations.colostate.edu/
Kelly Long	Vice Provost for Undergraduate Affairs	http://www.provost.colostate.edu
Jannine Mohr	Deputy General Counsel, Office of the General Counsel	http://www.csusystem.edu/general-counsel
Mary Ontiveros	Vice President for Diversity	http://www.diversity.colostate.edu
Joe Parker	Director of Athletics	http://www.csurams.com
Alan S. Rudolph	Vice President for Research	https://www.research.colostate.edu/
Mary Stromberger	Vice Provost for Graduate Affairs/Dean of the Graduate School	http://www.graduateschool.colostate.edu
Lou Swanson	Vice Provost for Engagement/Director of Colorado State University Extension	http://www.outreach.colostate.edu
Leslie Taylor	Vice President for Enrollment and Access	http://www.vpea.colostate.edu
Kim Tobin	Vice President for University Advancement	http://www.supporting.colostate.edu

Cabinet Staff

Ann Claycomb	Director of Presidential and Administrative Communications
Mark Gill	Chief of Staff to the President
Kathleen Henry	President and CEO of CSURF
Emily Lewis	Executive Assistant to the President
Cheri O'Neil	President and CEO of CSUF

Fort Collins Community



The Colorado State University main campus is located in **Fort Collins**, an award-winning city of about 171,000 residents, located an hour north of Denver near the foothills of the Rocky Mountain Front Range. Easy access to bike trails, hiking, skiing, water sports, rafting, fishing, and other outdoor sports makes Fort Collins an ideal location for those looking for outdoor adventure and natural beauty coupled with a vibrant and diverse community.

The county seat of Larimer County, Fort Collins is 65 miles north of Denver on Interstate 25, 45 miles south of Cheyenne, Wyoming, and within an hour's drive of such major recreational areas as Estes Park, Red Feather Lakes, Horsetooth Reservoir, and several mountain parks, including the 790,000-acre Roosevelt National Forest and Rocky Mountain National Park.

Located at an elevation of 5,000 feet, Fort Collins has a clear, dry atmosphere, more than 300 days of sunshine and generally pleasant temperatures throughout the year. The summer temperature ranges from an average high of 85°F to an average low of 52°F; the winter temperature ranges from an average high of 42°F to an average low of 13°F.

Fort Collins is home to a robust arts and entertainment culture and includes an active local music scene, several museums and theater companies, a vibrant public library district, the civic symphony, and CSU's own University Center for the Arts. The packed University calendar – athletics events, guest speakers, art exhibits, theater, cinema, concerts – adds to community life. This broad spectrum of cultural and outdoor recreational facilities, the excellent climate, and the mountain surroundings contribute to making Fort Collins an ideal university setting.

FACULTY

Faculty

Name	Position	Education
Abdel-Ghany, Salah	Assistant Professor	Masters, Zagazig University, Zagazig, Egypt, 1992 Doctorate, Biology, General, Colorado State University, 2001
Abdo, Zaid	Associate Professor	Doctorate, Computer Science, Univerity of Idaho, 2005
Abdunabi, Ramadan	Instructor	Bachelors, University of Benghazi, Libya, 1995 Masters, University of Twente, Enschede, Netherlands, 2004 Masters, Colorado State University, 2010 Doctorate, Colorado State University, 2013
Aberle, Jennifer	Associate Professor	Bachelors, Stanford University, 1997 Masters, Colorado State University, 2003 Doctorate, Colorado State University, 2007
Aboellail, Tawfik	Associate Professor	Bachelors, Pre-Veterinary Studies, American University of Cairo, 1988 Masters, Veterinary Medicine (D.V.M.), American University of Cairo, 1992 Professional, Veterinary Medicine (D.V.M.), American University of Cairo, 1997
Abrams, Katherine	Associate Professor	Bachelors, Agricultural Business and Management, General, Purdue University, 2005 Masters, Agricultural Business and Management, General, University of Florida, 2007 Doctorate, Agricultural Business and Management, General, University of Florida - Gainesville, 2010
Achter, Jeffrey	Professor	Bachelors, Mathematics, Brown University, 1992 Doctorate, Mathematics, University of Pennsylvania, 1998
Ackerson, Christopher	Associate Professor	Bachelors, Biochemistry, University of Texas - Austin, 1998 Doctorate, Biophysics, Stanford University, 2005
Adams, Henry	Assistant Professor	Bachelors, Mathematics, Stanford University, 2007 Doctorate, Mathematics, Stanford, 2013
Aguilar, Christine	Instructor	Bachelors, Education, General, U of N. Colorado, 1994 Masters, Educational Supervision, U of Wyo, 2000 Doctorate, Educational Evaluation, Research and Statistics, Other, Colorado State University, 2013
Ahola, Jason	Professor	Bachelors, Animal Sciences, General, Penn State Univ, 1995 Masters, Animal Sciences, General, Colorado State University, 1997 Doctorate, Animal Sciences, General, Colorado State University, 2004
Akkina, Ramesh	Professor	Professional, Veterinary Medicine (D.V.M.), AP AGRCLTR UNIV, 1972 Masters, Veterinary Medicine (D.V.M.), U OF AGRCLTR SC, 1975 Doctorate, Veterinary Medicine (D.V.M.), U OF MINNESOTA, 1982
Albert, Lumina	Associate Professor	Doctorate, University of Madras, 2006

Alberts, Eli	Instructor	Masters, Leiden University, Cen for Non-Wesetrn Studies, The Netherlands, 2002 Doctorate, East and Southeast Asian Languages and Literatures, Other, University of Pennsylvania, 2005
Albrecht, Donald	Instructor	Bachelors, Industrial Design, CA State Univ @ San Jose, 1977
Albritton, Jane	Instructor	Bachelors, Southern Methodist University Masters, Southern Methodist University
Alciatore, David	Associate Professor	Bachelors, Mechanical Engin., UNIV NEW ORLEAN, 1986 Masters, Mechanical Engin., U OF TEXAS, 1987 Doctorate, Mechanical Engin., U OF TEXAS, 1989
Aldridge, Cameron	Associate Professor	Bachelors, Univ Calgary, Calgary AB, 1996 Masters, University of Regina, Regina SK, 2000 Doctorate, Univ Alberta, Canada, 2005
Aleksanyan, Yeva	Instructor	Bachelors, Armenian State University of Economics, 2007 Masters, Williams College, 2012
Alexander, Ruth	Professor	Bachelors, History, Other, CTY COL OF NY, 1976 Masters, History, Other, U OF CALIFORNIA, 1983 Doctorate, History, Other, CORNELL UNIV, 1990
Allen, Anna	Assistant Professor	Bachelors, Computer Science, University of Guelph, 2005 Masters, Organic Chemistry, University of Guelph, 2007 Doctorate, Organic Chemistry, Princeton University, 2012
Allen, Ashlee	Instructor	Bachelors, Business Administration and Management, General, University of Colorado - Boulder, 1997 Bachelors, Spanish Language and Literature, University of Colorado - Boulder, 2004 Masters, Teaching English as a Second Language/Foreign Language, University of Nevada, 2009
Allen, Sonja	Instructor	
Aloise-Young, Patricia	Associate Professor	Bachelors, Psychology, General, University of Florida, 1985 Masters, Psychology, General, University of Florida, 1988 Doctorate, Psychology, General, University of Florida, 1990
Alshaibi, Usama	Assistant Professor	Bachelors, Film/Cinema Studies, Columbia College, Chicago, 1997 Masters, Film/Cinema Studies, University of Colorado, Boulder, 2015
Altschul, Andrew	Associate Professor	Masters, University of California, Irvine, 2004
Alvarez, Daniel	Senior Instructor	Bachelors, Philosophy, Colorado State University, 2004 Masters, Philosophy, Colorado State University, 2010
Amberg, Gregory	Professor	Bachelors, Biology, General, Idaho State University, 1994 Masters, Pharmacology, Human and Animal, Idaho State University, 1998 Doctorate, Physiology, Human and Animal, University of Nevada - Reno, 2002
Amberg, Martha	Instructor	Bachelors, Psychology, General, Idaho State University, 1996 Masters, Experimental Psychology, Idaho State University, 2000 Doctorate, Experimental Psychology, University of Nevada Reno, 2002

Ames, Marisa	Associate Professor	Bachelors, Music, Other, University of California at Berkeley, 2001 Professional, Veterinary Medicine (D.V.M.), The Ohio State University, 2007
Amidon, Timothy	Assistant Professor	Doctorate, University of Rhode Island, 2014
Ancell, Michelle	Instructor	Bachelors, Colorado State University
Andales, Allan	Professor	Bachelors, Univ of the Philippines, Los BAnos, 1990 Masters, Iowa State Univ, 1995 Doctorate, Iowa State Univ, 1998
Anderson, Ashley	Associate Professor	Bachelors, Journalism, University of Missouri - Columbia, 2002 Masters, Communications, General, Georgetown University, 2007 Doctorate, Mass Communications, University of Wisconsin - Madison, 2012
Anderson, Charles	Professor	Bachelors, Computer and Information Sciences, General, U OF NEBR, 1978 Masters, Computer and Information Sciences, General, U OF MASS, 1982 Doctorate, Computer and Information Sciences, General, U OF MASS, 1986
Anderson, Georgiana	Assistant Professor	Bachelors, North Carolina State University, 2002 Bachelors, North Carolina State University, 2004 Masters, Yale University, 2006 Doctorate, Yale University, 2010
Anderson, Jana	Professor	Doctorate, Mathematical Statistics, Colorado State University, 1992
Anderson, Karrin	Professor	Bachelors, Communications, General, Metropolitan State College, 1993 Masters, Communications, General, Colorado State University, 1995 Masters, Women's Studies, Colorado State University, 1995 Doctorate, Communications, General, Indiana University, 1998
Anderson, Sharon	Professor	Bachelors, English Teacher Education, UNIV WYOMING, 1978 Masters, Counselor Education Counseling and Guidance Services, UNIV WYOMING, 1981 Doctorate, Counseling Psychology, UNIV DENVER, 1993
Angeloni, Lisa	Professor	Bachelors, Biological Sciences/Life Sciences, Other, Univ. of California, Berkeley, 1995 Doctorate, Biological Sciences/Life Sciences, Other, Univ. of California, San Diego, 2001
Anthony, Russell	Professor	Bachelors, Animal Sciences, General, KANSAS ST UNIV, 1977 Masters, Animal Sciences, Other, U NEBRASKA, 1979 Doctorate, Biochemistry, U WYOMING, 1983
Antolin, Michael	Professor	Bachelors, Biology, General, U OF PENN, 1981 Masters, Zoology, General, U OF ALBERTA, 1985 Doctorate, Biology, General, FLORIDA ST UNIV, 1990

Aoki, Eric	Professor	Bachelors, Communications, General, California State University, Fresno, 1990 Masters, Communications, General, California State University, Fresno, 1992 Doctorate, Communications, Other, University of Washington, 1997
Apodaca, Denise	Senior Instructor	Bachelors, Piano Performance, 1994 Masters, Northwestern University, 1996 Masters, Northwestern University, 1996
Applin, John	Instructor	Bachelors, Computer Engin., University of Michigan, 1978 Masters, Computer Science, Colorado State University, 1991
Arabi, Mazdak	Professor	Bachelors, University of Tehran, 1998 Masters, University of Tehran, 2000 Doctorate, Purdue University, 2005
Aragon, Antonette	Associate Professor	Bachelors, Political Science, General, Colorado College, 1990 Masters, Speech Teacher Education, Colorado State University, 1993 Doctorate, Education, General, Colorado State University, 2003
Archambeau, Nicole	Assistant Professor	Bachelors, University of Wyoming, 1994 Masters, University of Montana, 1996 Masters, University of California, Los Angeles (UCLA), 2002 Doctorate, University of California, Santa Barbara (UCSB), 2009
Archibeque, Shawn	Professor	Doctorate, Nutritional Sciences, Texas AM, 2003
Archie, Andre	Associate Professor	Bachelors, Philosophy, Colorado State University, 1996 Masters, Philosophy, DuQuesne University, 1998 Doctorate, Philosophy, Duquesne University, 2002
Arcila Villa, Laura	Instructor	Bachelors, Psychology, General, University of Andes, 1979 Masters, Education, General, Suny Buffalo, 1994 Doctorate, Philosophy, State University of New York Buffalo, 2004
Argueso, Cristiana	Assistant Professor	Doctorate, Cornell University, 2004
Argueso, Juan	Associate Professor	Bachelors, Engin., General, University of Sao Paulo - Brazil, 1993 Masters, Plant Breeding and Genetics, University of Sao Paulo - Brazil, 1997 Doctorate, Biochemistry, Cornell University, 2004
Aristoff, David	Assistant Professor	Bachelors, Mathematics, university of michigan, 2005 Doctorate, Mathematics, University of Texas, 2011
Arneson, Erin	Assistant Professor	
Arneson, Michelle	Instructor	Bachelors, University of Iowa, 1981 Masters, CSU, 1989
Arthun, Erik	Assistant Professor	Bachelors, Concordia College, 2004 Doctorate, Colorado State University, 2011
Arthur, Tori	Assistant Professor	Bachelors, James Madison University, 1999 Doctorate, American University, 2006 Doctorate, Bowling Green State University, 2016

Assetto, Valerie	Professor	Bachelors, Political Science, General, LEHIGH UNIV, 1976 Masters, Political Science, General, RICE UNIV, 1980 Doctorate, Political Science, General, RICE UNIV, 1984
Aster, Richard	Professor	Bachelors, Computer Engin., University of Wisconsin, Madison, 1983 Masters, Geophysics and Seismology, University of Wisconsin-Madison, 1986 Doctorate, Earth and Planetary Sciences, Scripps Institution of Oceanography, Univ of California, San Diego, 1991
Atadero, Rebecca	Associate Professor	Bachelors, Colorado State University, 2002 Masters, University of California, San Diego, 2004 Doctorate, University of California, San Diego, 2006
Atler, Karen	Associate Professor	Bachelors, Occupational Therapy, Colorado State University, 1980 Masters, Occupational Therapy, Colorado State University, 1986 Doctorate, Colorado State University, 2012
Aubry, Lise	Assistant Professor	Bachelors, Biology, General, Universite Paul Sabatier Toulouse III, France, 2003 Masters, Ecology, Universite Paul Sabatier Toulouse III, France, 2005 Doctorate, Ecology, Universite Paul Sabatier Toulose III, France, 2009
Auld, Garry	Professor	Bachelors, Chemistry, General, DREXEL UNIV, 1970 Masters, Foods and Nutrition Studies, Other, PENN STATE UNIV, 1987 Doctorate, Foods and Nutrition Studies, Other, PENN STATE UNIV, 1990
Austin, Roger	Instructor	Doctorate, Georgia State University, 2018
Avery, Anne	Professor	Bachelors, Mount Holyoke College, MA, 1982 Professional, University of Pennsylvania, PA, 1990 Doctorate, Cornell University, NY, 1991
Avery, Jessica	Instructor	Bachelors, Child Growth, Care and Development Studies, Colorado State University, 1999 Bachelors, French Language and Literature, Colorado State University, 2003 Masters, English Language and Literature, General, Colorado State University, 2006 Masters, French Language and Literature, Colorado State University, 2006
Avery, Paul	Associate Professor	Bachelors, Cornell University, 1987 Professional, University of Pennsylvania, 1991 Doctorate, Colorado State University, 2002
Ayers, Garrett	Instructor	Bachelors, Western Michigan University, 2001 Masters, Naropa University, 2009

Azimi-Sadjadi, Mahmood	Professor	Bachelors, Electrical, Electronics and Communication Engin., U OF TEHRAN, 1977 Masters, Electrical, Electronics and Communication Engin., IMPERIAL COL,UK, 1978 Doctorate, Electrical, Electronics and Communication Engin., IMPERIAL COL,UK, 1982
Aziz, Asad	Senior Instructor	Doctorate, University of Colorado, 2008
Babbitt, Patricia	Instructor	Bachelors, Linguistics, University of Washington, 1984 Masters, English Language and Literature, General, Colorado State University, 1994
Bacon, Joel	Professor	Bachelors, Mathematics, Baylor University, 1994 Bachelors, Music - Piano and Organ Performance, Baylor University, 1995 Masters, Music - Piano and Organ Performance, Baylor University, 1998 Doctorate, Musicology and Ethnomusicology, Universitat fur Musik und darstellende Kunst, 2004
Badia, Lynn	Assistant Professor	Doctorate, University of North Carolina at Chapel Hill, 2014
Baer, Helen	Assistant Professor	Bachelors, Political Science, General, California Polytechnic State University, 1996 Masters, Library Science/Librarianship, University of Texas at Austin, 1998
Bailey, Larissa	Professor	Bachelors, Biology, General, Mesa State College, 1993 Masters, Medical Biomathematics and Biometrics, North Carolina State University, 1997 Doctorate, Zoology, General, North Carolina State University, 2002
Bailey, Ryan	Associate Professor	Bachelors, Brigham Young University, 2006 Masters, University of Guam, 2008 Doctorate, Colorado State University, 2012
Bailey, Susan	Professor	Bachelors, Biological Sciences/Life Sciences, Other, Colorado State University, 1976 Masters, University of New Mexico School of Medicine, 1996 Doctorate, University of New Mexico School of Medicine, 2000
Bailey, Travis	Professor	Bachelors, Univ of Florida, 1995 Bachelors, Univ of Florida, 1995 Doctorate, Univ of Minnesota, 2001
Bain, Joseph	Instructor	Doctorate, University of Arkansas, 2010
Bajtelsmit, Vickie	Professor	Bachelors, University of Virginia, 1979 Doctorate, Law (LL.B., J.D.), RUTGERS LAW, 1982 Masters, Insurance and Risk Management, UNIV OF PENN, 1991 Doctorate, UNIV OF PENN, 1994
Baker, Daniel	Assistant Professor	Bachelors, Montana State University, 1999 Masters, Montana State University, 2001 Doctorate, Colorado State University, 2009
Baker, Paris	Instructor	

Baker, Susan	Professor	Bachelors, Food Sciences and Tech, Meredith College, Raleigh, NC, 1980 Masters, North Carolina State University, 1994 Doctorate, North Carolina State University, 2003
Balgopal, Meena	Associate Professor	Bachelors, Animal Sciences, General, UNIVERSITY OF ILLINOIS URBANA CAMPUS, 1991 Masters, Entomology, UNIVERSITY OF WISCONSIN COLLEGES, 1994 Doctorate, Zoology, General, NORTH DAKOTA STATE UNIVERSITY MAIN CAMPUS, 2007
Ballweber, Lora	Professor	Associates, Casper Junior College, 1978 Bachelors, University of Wyoming, 1980 Masters, University of Wyoming, 1982 Masters, Oregon State University, 1989 Professional, Oregon State Univ/Washington State Univ (WOI joint program), 1992
Bamburg, James	Professor	Bachelors, Chemistry, General, U OF ILLINOIS, 1965 Doctorate, Biochemistry, U OF WISCONSIN, 1969
Bandar, Jeffrey	Assistant Professor	Bachelors, Chemistry, General, Saint John's University, 2009 Masters, Chemistry, General, Columbia University, 2011 Masters, Chemistry, General, Columbia University, 2011 Doctorate, Chemistry, General, Columbia University, 2014
Bandhauer, Todd	Associate Professor	Bachelors, Iowa State University, 1999 Masters, Iowa State University, 2002 Doctorate, Georgia Institue of Technology, 2011
Bangerth, Wolfgang	Professor	Doctorate, Mathematics, Heidelberg University, 2002
Banister Quynn, Kristina	Assistant Professor	Bachelors, University of Colorado, Boulder, 1994 Masters, Montana State University, 1998 Doctorate, Michigan State University, 2009
Banister Quynn, Kristina	Senior Instructor	Bachelors, University of Colorado, Boulder, 1994 Masters, Montana State University, 1998 Doctorate, Michigan State University, 2009
Banning, James	Instructor	Bachelors, Psychology, General, WILLIAM JEWELL, 1960 Doctorate, Clinical Psychology, UNIV OF COLO, 1965 Masters, Psychology, General, UNIV OF COLO, 1965
Barasi, Fathalla	Instructor	Bachelors, University of Garyounis, 1999 Masters, University of Garyounis, 2004
Barbier, Edward	Professor	Bachelors, Yale University, 1979 Masters, London School of Economics and Political Science, 1980 Doctorate, Birkbeck College, University of London, 1986
Barbier, Joanne	Assistant Professor	Bachelors, University College London, University of London, 1988 Masters, University College London, University of London, 1991 Doctorate, University College London, University of London, 2000
Bareither, Christopher	Associate Professor	Bachelors, University of Idaho, 2004 Masters, University of Wisconsin, Madison, 2006 Doctorate, University of Wisconsin, Madison, 2010

Barfield, Jennifer	Assistant Professor	Bachelors, Animal Sciences, General, North Carolina State University, 2000 Doctorate, University of New Orleans, 2007
Barisas, B George	Professor	Bachelors, University of Kansas, 1965 Bachelors, Chemistry, General, OXFORD UNIV, 1967 Masters, Chemistry, General, YALE UNIV, 1969 Doctorate, Chemistry, General, YALE UNIV, 1971
Bark, David	Assistant Professor	Bachelors, Univ of Illinois At Urbana, 2004 Masters, Georgia Inst of Tech, 2007 Doctorate, Georgia Inst of Tech, 2010
Barker, Lorie	Instructor	
Barnard, JP Nick	Instructor	Bachelors, Texas Tech University, 1993 Masters, Western Oregon University, 2000
Barnes Keys, Elizabeth	Associate Professor	Bachelors, Mathematics, University of Minnesota, 2007 Bachelors, Physics, General, University of Minnesota, 2007 Doctorate, Atmospheric Sciences and Meteorology, University of Washington - Seattle, 2012
Barnes, Natalie	Senior Instructor	Bachelors, Painting, Boise State University, 1990 Masters, Art Teacher Education, Boise State University, 1992
Barrett Frisbie, Myra	Associate Professor	Bachelors, Psychology, General, Stanford University, 1999 Professional, Veterinary Medicine (D.V.M.), Colorado State University, 2006 Masters, Colorado State University, 2010
Barrett, Karen	Professor	Bachelors, Individual and Family Development Studies, General, CORNELL UNIV, 1977 Masters, Psychology, General, UNIV OF DENVER, 1981 Doctorate, Psychology, General, UNIV OF DENVER, 1984
Bartels, Randy	Professor	Bachelors, OKLAHOMA ST, 1997 Masters, UNIV OF MICH, 1999 Doctorate, UNIV OF MICH, 2002
Bartlett, Robert	Instructor	Bachelors, University at Buffalo, 2006 Professional, University at Buffalo
Bartner, Lisa	Assistant Professor	
Basaraba, Randall	Professor	Bachelors, Washington State University, 1981 Professional, Washington State University, 1985 Doctorate, Washington State University, 1991
Basile, Vincent	Assistant Professor	Bachelors, Anthropology, Franklin Marshall College, 1999 Masters, Science Teacher Education, General, University of Colorado Denver, 2005 Doctorate, Curriculum and Instruction, University of Colorado - Boulder, 2015
Bass, Luke	Assistant Professor	
Bastian, Christopher	Instructor	Bachelors, Farm and Ranch Management, University of Wyoming, 1988 Masters, Agricultural Economics, University of Wyoming, 1990 Doctorate, Agricultural Economics, Colorado State University, 2004

Bates, Daniel	Associate Professor	Bachelors, Mathematics, College of Wooster, 2001 Masters, Mathematics, University of Notre Dame, 2003 Doctorate, Mathematics, University of Notre Dame, 2006
Bates, Haley	Associate Professor	Bachelors, Metal and Jewelry Arts, University of North Texas, 1994 Masters, Metal and Jewelry Arts, Cranbrook Academy of Art, 2002
Bauerle, William	Professor	Bachelors, Nursery Operations and Management, Colorado State University, 1995 Masters, Horticulture Science, University of Washington, 1997 Doctorate, Plant Physiology, Cornell University, 2001
Bayham, Jude	Assistant Professor	Bachelors, Economics, Other, California State University, Chico, 2006 Masters, Agricultural Economics, University of Idaho, 2009 Doctorate, Economics, Other, Washington State University, 2013
Beachy-Quick, Dan	Professor	Bachelors, University of Denver, 1995 Doctorate, University of Iowa, 2000
Bechara, Samuel	Assistant Professor	Associates, Highline Community College, 2005 Bachelors, Washington State University, 2008 Doctorate, Colorado State University, 2012
Becker, Anthony	Associate Professor	Bachelors, Millersville University of Pennslyvania, 2003 Doctorate, Northern Arizona University, 2011 Masters, Georgia State University
Becker, Christian	Senior Instructor	Masters, University of Heidelberg, Germany, 1999 Doctorate, University of Heidelberg, Germany, 2003 Doctorate, University of Kaisers Lautern, Germany, 2010
Becker, Leslee	Professor	Bachelors, English Language and Literature, General, SUNY CORTLAND, 1966 Masters, English Language and Literature, General, University of Vermont, 1972 Masters, Hollins College, 1980 Doctorate, English Creative Writing, UNIV OF IOWA, 1984
Bedinger, Patricia	Professor	Bachelors, Biology, General, EVERGREEN ST CO, 1975 Doctorate, Biochemistry, U CA, SAN FRAN, 1982
Bejarano, Judith	Instructor	Bachelors, University of Northern Colorado, 1984 Masters, University of Colorado, 1989
Belisle, John	Professor	Doctorate, Colorado State University, 1992
Belk, Keith	Professor	Bachelors, Colorado State University, 1983 Masters, Colorado State University, 1986 Doctorate, Texas AM University, 1992
Bell, Christopher	Associate Professor	Bachelors, Socio-Psychological Sports Studies, Crewe Alsager, 1991 Masters, Exercise Sciences/Physiology and Movement Studies, Manchester Metropolitan University, 1994 Doctorate, Exercise Sciences/Physiology and Movement Studies, University of Western Ontario, 1999

Bell, Michael	Associate Professor	Bachelors, Religion/ Religious Studies, University of Florida, 1996 Bachelors, Applied Mathematics, General, Metropolitan State College in Denver, 2001 Masters, Atmospheric Sciences and Meteorology, Colorado State University, 2006 Doctorate, Atmospheric Sciences and Meteorology, Naval Postgraduate School, 2010
Bellows, Laura	Associate Professor	Bachelors, Miami University, 1997 Masters, University of Michigan, 1999 Doctorate, Dietetics/ Human Nutritional Services, Colorado State University, 2007
Ben-Hur, Asa	Professor	Bachelors, Physics, General, Hebrew University, Jerusalem, 1993 Masters, Physics, General, Hebrew University, Jerusalem, 1995 Doctorate, Information Sciences and Systems, Technion - Israel Institute of Technology, 2001
Bendeck, Shawna	Instructor	Masters, University of Northern Colorado, 2009
Benn, Barbara	Instructor	Bachelors, Pre-Elementary/Early Childhood/Kindergarten Teacher Education, Shippensburg University, 1979 Masters, Education Administration and Supervision, General, University of Denver, 2010
Benoit, Steven	Assistant Professor	Bachelors, Electrical, Electronics and Communication Engin., Rose-Hulman Institute of Technology, 1990 Bachelors, Physics, General, Rose-Hulman Institute of Technology, 1990 Masters, Mathematics, Colorado State University, 2006 Doctorate, Mathematics, Colorado State University, 2011
Benson, Delwin	Professor	Bachelors, Wildlife and Wildlands Management, COLO STATE UNIV, 1971 Masters, Natural Resources Management and Policy, COLO STATE UNIV, 1973 Doctorate, Parks, Recreation and Leisure Studies, COLO STATE UNIV, 1989
Benton, Jerel	Instructor	Bachelors, Nursing, Adult Health (Post-R.N.), Western Kentucky University, 2008 Masters, Adult and Continuing Education Administration, Morehead State University, 2011
Benzel, Susan	Instructor	Bachelors, CSU, 1988
Berg, Marni	Senior Instructor	Masters, Political Science, General, University of Colorado, 1991 Bachelors, Political Science, General, University of Colorado, 1998 Doctorate, Political Science, General, Colorado State University, 1999

Berger, Joel	Professor	Bachelors, Biology, General, California State University, Northridge, 1974 Masters, Biology, General, California State University Northridge, 1975 Doctorate, Biology, General, University of Colorado, 1978
Berklund, Annabelle	Instructor	Bachelors, Whitman College, 2010 Masters, Colorado State University, 2012
Bernagozzi, Debora	Instructor	Masters, Alfred University, 2002
Bernagozzi, Jason	Assistant Professor	Bachelors, Film/Video and Photographic Arts, Other, Kansas City Art Institute, 2008 Masters, Film/Video and Photographic Arts, Other, Alfred University, 2010
Bernasek, Alexandra	Professor	Bachelors, Economics, General, U OF SYDNEY, 1984 Masters, Economics, General, U OF MICHIGAN, 1989 Doctorate, Economics, General, U OF MICHIGAN, 1992
Bernhardt, Autumn	Instructor	Bachelors, Colorado State University, 2001 Doctorate, University of Colorado School of Law, 2004
Berning, Joshua	Associate Professor	Bachelors, Valparaiso University, 1996 Masters, University of Idaho, 2003 Doctorate, Washington State University, 2008
Bernstein, Barbara	Professor	Certificate, Zoology, General, OBERLIN COLLEGE, 1964 Masters, Cell Biology, CA INST OF TECH, 1966 Doctorate, Neuroscience, COLO STATE UNIV, 1991
Bernstein, Elliot	Professor	Bachelors, Chemistry, General, PRINCETON UNIV, 1963 Doctorate, Chemistry, General, CALTECH, 1967
Berry, Christopher	Assistant Professor	Bachelors, University of Tennessee at Chattanooga, 2010 Masters, University of Tennessee at Chattanooga, 2012 Doctorate, University of Arkansas, 2017
Berry, Kenneth	Professor	Bachelors, Sociology, KALAMAZOO COLL, 1962 Doctorate, Sociology, U OF OREGON, 1966
Betsill, Michele	Professor	Bachelors, French Language and Literature, De Paul University, 1989 Masters, Development Economics and International Development, University of Denver, 1991 Masters, Political Science, General, University of Colorado Boulder, 1997 Doctorate, Political Science, General, University of Colorado Boulder, 2000
Betten, Anton	Associate Professor	Bachelors, Mathematics, Technical University Karlsruhe, 1991 Masters, Mathematics, University of Bayreuth Germany, 1995 Doctorate, Mathematics, University of Bayreuth Germany, 2000
Beveridge, J Ross	Professor	Bachelors, Mechanical Engin., UNIV OF CALIF, SAN DEIGO, 1980 Masters, Computer and Information Sciences, Other, UNIVER OF MASSACHUSETTES, 1987 Doctorate, Computer Science, UNIVERSITY OF MASSACHUSETTS, 1993
Bhaskar, Aditi	Assistant Professor	Bachelors, Brown University, 2008 Doctorate, University of Maryland, 2013

Bian, Jifeng	Assistant Professor	Professional, Dentistry (D.D.S., D.M.D.), Shandong Medical Univeristy, 1993 Masters, Microbiology/ Bacteriology, Shandong Medical University, 1996 Doctorate, Medical Molecular Biology, Shandong Univerity, 2003
Biegert, Jeff	Instructor	
Bielak, Allison	Associate Professor	Bachelors, Psychology, General, University of Winnipeg, Canada, 2002 Masters, Psychology, General, University of Victoria, Canada, 2004 Doctorate, Psychology, General, University of Victoria, Canada, 2008
Bigler, Michelle	Instructor	Bachelors, Mathematics Teacher Education, Montana State University, 1988 Certificate, Mathematics, Other, Continuing Education, 2007 Masters, Elementary, Middle and Secondary Education Administration, Colorado State University, 2009
Bimper Jr, Albert	Associate Professor	Bachelors, Colorado State University, 2006 Masters, Purdue University, 2009 Doctorate, The University of Texas at Austin, 2012
Biringen, Zeynep	Professor	Bachelors, State Univ of New York at Binghamton, 1975 Doctorate, Developmental and Child Psychology, University of California, Berkeley, CA, 1987 Masters, Pre-Elementary/Early Childhood/Kindergarten Teacher Education, Stanford University, Stanford, CA, 1987 Associates, Clinical Psychology, University of Colorado, Boulder, CO, 1993
Birmingham, Daniel	Assistant Professor	Bachelors, Economics, Other, Michigan State University, 1998 Masters, Education, General, University of Northern Colorado, 2003 Masters, Elementary, Middle and Secondary Education Administration, University of Northern Colorado, 2006 Doctorate, Teacher Education, Multiple Levels, Michigan State University, 2013
Bischak, Linde	Instructor	Bachelors, Mathematics, Mary Baldwin College, 2010 Masters, Mathematical Statistics, Colorado State University, 2013
Biser-Suarez, Courtenay	Senior Instructor	Bachelors, Spanish Language and Literature, Western Maryland College, 1986 Masters, Spanish Language Teacher Education, Univ. Ill., Urbana-Champaign, 1991
Bjostad, Louis	Professor	Bachelors, Biology, General, WILLIAM MARY, 1973 Doctorate, Entomology, U OF CALIFORNIA, 1978
Black IV, William	Professor	Bachelors, Biology, General, GRINELL COLLEGE, 1979 Masters, Miscellaneous Physical Sciences, Other, DUKE UNIV, 1981 Doctorate, Entomology, IOWA STATE UNIV, 1985
Black, Jerry	Associate Professor	Professional, Colorado State University, 1971
Black, Raymond	Assistant Professor	Bachelors, California State University Sacramento, 1999 Doctorate, University of Chicago, 2011
Blackburn, Heather	Assistant Professor	Doctorate, CSU, 2009

Blair, Darrell	Instructor	Bachelors, Colorado State University Doctorate, University of Tennessee Masters, University of Northern Colorado
Blake Oliver, Tiffany	Associate Professor	Bachelors, Sonoma State University, 1998 Masters, Eastman School of Music, 2000 Doctorate, Eastman School of Music, 2006
Blocker, Christopher	Associate Professor	Bachelors, Business Marketing and Marketing Management, Texas Christian University, 1998 Masters, Business Administration and Management, General, Texas Christian University, 2000 Doctorate, Business Marketing and Marketing Management, University of Tennesee, 2007
Bloom, Larry	Instructor	Bachelors, Psychology, General, ARIZONA STATE U, 1970 Masters, Psychology, General, U OF MISSOURI, 1971 Doctorate, Clinical Psychology, UNIV OF KANSAS, 1975
Blumhardt, Kim	Instructor	Bachelors, Advertising, U OF NEBRASKA, 1982
Bohling, Joyce	Instructor	Masters, Colorado State University, 2017
Bohm, Anton	Professor	Masters, Mathematics, TECH UNIV DELFT, 1974 Doctorate, Mathematics, UNIV OF UTRECHT, 1984
Bohn, Andrea	Associate Professor	Bachelors, Stephens College, 1984 Professional, University of Minnesota, 1988 Doctorate, Colorado State University, 1997
Boice, Jocelyn	Associate Professor	Bachelors, Mathematics, Smith College, 1999 Masters, Library Science, Other, Syracuse University, 2013
Bollinger, Aaunterria	Instructor	Bachelors, Southern Illinois University, 2015 Certificate, Southern Illinois University, 2017 Masters, Colorado State University, 2018
Bonanno, Alessandro	Associate Professor	Masters, Agricultural Economics, University of Connecticut, 2003 Doctorate, Agricultural Economics, University of Connecticut, 2007
Bond, Laurel	Instructor	Bachelors, English Language and Literature, General, Colorado State University, 2001 Masters, Teaching English as a Second Language/Foreign Language, Colorado State University, 2007
Boon, June	Instructor	Bachelors, Zoology, General, U OF S FLORIDA, 1977 Masters, Basic Medical Sciences, Other, COLO STATE UNIV, 1983
Boone, Randall	Professor	Bachelors, Oregon State University, 1986 Masters, University of Maine, 1991 Doctorate, Wildlife and Wildlands Management, University of Maine, 1996
Borak, Thomas	Professor	Bachelors, Physics, General, ST JOHNS UNIV, 1964 Doctorate, Physics, Other, VANDERBILT UNIV, 1969
Borch, Thomas	Professor	Bachelors, Chemistry, Other, UNIV OF COPENHAGEN, 1997 Masters, Chemistry, Other, UNIV OF COPENHAGEN, 1999 Doctorate, Environmental Science/Studies, MONTANA STATE UNIV, 2003

Borello, Emelie	Instructor	Bachelors, Computer and Information Sciences, General, University of Phoenix, 2004 Masters, Colorado State University, 2015
Borlee, Bradley	Associate Professor	Bachelors, Plant Pathology, University of wisconsin - Madison, 1998 Doctorate, Plant Pathology, University of Wisconsin-Madison, 2006
Borrayo, Evelinn	Professor	Bachelors, Psychology, General, University of the Ozarks, 1993 Masters, Clinical Psychology, University of North Texas, 1997 Doctorate, Clinical Psychology, University of North Texas, 1999
Boscan, Pedro	Professor	Professional, Veterinary Medicine (D.V.M.), Barquisimeto, Venezuela, 1996 Doctorate, Medical Physiology, University of Bristol, 2001
Bosco-Lauth, Angela	Assistant Professor	Bachelors, Microbiology/ Bacteriology, Colorado State University, 2006 Doctorate, Medical Microbiology, Colorado State University, 2010 Professional, Veterinary Medicine (D.V.M.), Colorado State University, 2017
Bouma, Gerrit	Associate Professor	Bachelors, Environmental Science/ Studies, The Van Hall Institute, 1998 Doctorate, Zoology, General, University of Idaho, 2003
Bousselot, Jennifer	Assistant Professor	Bachelors, Iowa State Universtiy, 2001 Masters, iowa State Universtiy, 2003 Doctorate, Colorado State University, 2010
Bowen, Richard	Professor	Professional, Veterinary Medicine (D.V.M.), COLO STATE UNIV, 1973 Masters, Physiology, Human and Animal, COLO STATE UNIV, 1977 Doctorate, Colorado State University, 1982
Bowen, Stephanie	Instructor	Doctorate, University of Wyoming, 1998
Boykin, Nancy Jo	Master Instructor	Doctorate, University of North Texas, 1992
Bradbury, Kelly	Instructor	Doctorate, Ohio State University, 2009
Bradley, Richard	Professor	Bachelors, Physics, General, U OF TORONTO, 1979 Doctorate, Physics, General, STANFORD UNIV, 1985
Brady, Shawn	Senior Instructor	Bachelors, Philosophy, University of North Florida, 2007 Masters, Philosophy, Colorado State University, 2010
Brady, Tracy	Senior Instructor	Bachelors, American (United States) History, University of Colorado, 1984 Masters, American (United States) History, Colorado State University, 1994 Doctorate, American (United States) History, University of Colorado, 2004
Brandl, Alexander	Associate Professor	Bachelors, Physics, General, Univerisity of New Mexico, 1996 Masters, Physics, General, University of New Mexico, 1999 Doctorate, Physics, General, University of New Mexico, 2002

Braun, Barry	Professor	Bachelors, Biology, General, University of Pennsylvania, 1982 Masters, Exercise Sciences/Physiology and Movement Studies, University of Massachusetts-Amherst, 1990 Doctorate, Nutritional Sciences, University of California-Berkeley, 1993
Braunstein, Elissa	Professor	Bachelors, Development Economics and International Development, Cornell University, 1988 Masters, Development Economics and International Development, University of California at San Diego, 1992 Doctorate, International Economics, University of Massachusetts, 2000
Brazile, William	Associate Professor	Bachelors, Biology, General, University of Southern Colorado, 1990 Masters, University of Southern Colorado, 1992 Doctorate, Environmental Health, Colorado State University, 1996
Breidt, F Jay	Professor	Bachelors, Mathematical Statistics, College of Idaho, 1987 Masters, Mathematical Statistics, Colorado State University, 1989 Doctorate, Mathematical Statistics, Colorado State University, 1991
Brennan, Carol	Professor	Bachelors, Microbiology/ Bacteriology, U OF UTAH, 1964 Doctorate, Molecular Biology, U OF CALIFORNIA, 1968
Brennan, Patrick	Professor	Bachelors, National Univ of Ireland, 1961 Masters, National Univ of Ireland, 1962 Doctorate, Trintiy College, Dublin, 1965
Bresnan, Mark	Instructor	Doctorate, University of Iowa, 2009
Bress, Courtney	Instructor	Bachelors, Eastman School of Music, 1997 Certificate, Eastman School of Music, 1997 Masters, Chicago College of Performing Arts, 2002
Briggs, Thomas	Instructor	Bachelors, University of Missouri St Louis, 2014 Masters, Colorado State University, 2016
Bright, Alan	Professor	Doctorate, Recreation Products/Services Marketing Operations, Colorado State University, 1993
Brooks, Ryan	Instructor	Bachelors, Animal Sciences, General, Virginia Tech, 2007 Masters, Animal Sciences, General, Colorado State University, 2010
Brookshier, Lindsay	Instructor	Masters, Colorado State University, 2017
Brothers, Allyson	Assistant Professor	Bachelors, Roanoke College, 2003 Masters, Penn State University, 2008 Doctorate, Colorado State University, 2016
Broussard, Josiane	Assistant Professor	
Brown, Brett	Senior Instructor	
Brown, Cynthia	Professor	Doctorate, Ecology, University of California Davis, 1998
Brown, Mark	Associate Professor	Bachelors, Natural Resources Management and Protective SErvices, Other, Colorado State University, 1999 Masters, Medical Biochemistry, Georgetown University, 2002 Doctorate, Agricultural Animal Breeding and Genetics, University of Texas, 2007

Brown, Samantha	Assistant Professor	Bachelors, Psychology, Other, College of Saint Rose, 2007 Masters, Psychology, Other, University of Denver, 2010 Doctorate, Social Work, University of Denver, 2016
Browne, Katherine	Professor	Bachelors, English Language and Literature, General, S METHODIST U, 1976 Masters, Anthropology, S METHODIST U, 1990 Doctorate, Anthropology, S METHODIST U, 1993
Bruder, Daniel	Instructor	Bachelors, University of Central Florida, 1989 Masters, University of Central Florida, 1995
Bruemmer, Jason	Professor	Bachelors, Animal Sciences, General, Texas AM University, 1987 Masters, Physiology, Human and Animal, Texas AM University, 1991 Doctorate, Agricultural Animal Physiology, New Mexico State University, 1996
Brummer, Joe	Associate Professor	Bachelors, Range Science and Management, Colo State Univ, 1984 Masters, Range Science and Management, Oklahoma State Univ, 1986 Doctorate, Range Science and Management, Univ of Nebraska, 1994
Brunet, Philippe	Instructor	Masters, Essec Business School, 1984 Professional, Harvard Buisness School, 2000
Brushwood, James	Assistant Professor	Bachelors, Texas A M, 2006 Masters, Texas A M, 2006 Doctorate, University of Arizona
Bruyere, Brett	Associate Professor	Bachelors, Political Science, General, Washington State University, 1993 Masters, Parks, Recreation and Leisure Studies, Colorado State University, 2000 Doctorate, Environmental Science/ Studies, Colorado State University, 2003
Bryan, Sean	Senior Instructor	Bachelors, Geology, Carleton College, 2004 Masters, Geological Sciences, Other, University of Colorado, 2007 Doctorate, Geological Sciences, Other, University of Colorado, 2010
Bubar, Roe	Professor	Bachelors, Psychology, General, University of New Hampshire, 1980 Doctorate, Law (LL.B., J.D.), University of Colorado, 1987
Bubien, Christine	Professor	Bachelors, Ecology, Ohio State University, 1997 Certificate, Gerontology, University of Akron, 2000 Masters, Family/ Consumer Resource Management, Other, University of Akron, 2000 Doctorate, Individual and Family Development Studies, General, Virginia Polytechnic Institute, 2003
Buchanan, Kristen	Associate Professor	Bachelors, University of Manitoba, 1998 Masters, University of Alberta, 2000 Doctorate, University of Alberta, 2004
Buchanan, Norman	Associate Professor	Doctorate, Physics, General, University of Alberta, 2003 Professional, Florida State University, 2003

Buckley, Cara	Instructor	Bachelors, The Pennsylvania State University, 1998 Masters, Colorado State University, 2001
Bundy, Anita	Professor	Doctorate, Boston University, 1987
Bunning, Marisa	Professor	Bachelors, Biology, General, Cameron University, 1976 Masters, Botany, General, Oklahoma State University, 1980 Doctorate, Food Sciences and Tech, Colorado State University, 2007
Burgchardt, Carl	Professor	Bachelors, Speech and Rhetorical Studies, PENN STATE UNIV, 1975 Masters, Communications, Other, U OF WISCONSIN, 1977 Doctorate, Communications, Other, U OF WISCONSIN, 1982
Burgoon, Jared	Instructor	
Burke, Colleen	Instructor	Bachelors, Colorado State University Masters, Colorado State University
Burke-Lund, Patricia	Instructor	Bachelors, Counseling Psychology, Rutgers University, 1997 Masters, Colorado State University
Burkhardt, Jesse	Assistant Professor	Masters, Yale University, 2011 Doctorate, Economics, General, Yale University, 2016
Burnes, Ellen	Instructor	Bachelors, Allegheny College, 1990 Professional, University of Texas , Austin, 1995 Doctorate, Oregon State University, 2001
Burns, Kelly	Instructor	Bachelors, University of Missouri at Kansas City, 2003 Masters, Rockhurst University, Kansas City, Missouri, 2005
Burns, Timothy	Instructor	Bachelors, Duquesne University, 2005 Masters, Eastman School of Music, 2009 Doctorate, Eastman School of Music, 2014 Masters, Eastman School of Music, 2014
Burzynska, Agnieszka	Assistant Professor	Bachelors, Univeristy of Perugia, Italy, 2005 Masters, Internatioanl Max Planck Research School in Goettingen, Germany, 2007 Doctorate, International Max Planck Research School of the Lifecourse, Humboldt University, 2011
Butler, Charles	Professor	Bachelors, Management Science, U OF S FLORIDA, 1970 Masters, Management Science, U OF S FLORIDA, 1975 Doctorate, TEXAS A M, 1981
Butler, Sharon	Instructor	Professional, Colorado State University, 1986
Butnor, Ashby	Assistant Professor	Bachelors, Philosophy and Religion, University of Richmond, 1996 Masters, Philosophy, University of Hawaii, Manoa, 1999 Doctorate, Philosophy, University of Hawaii Manoa, 2009
Butters, Gregory	Associate Professor	Bachelors, Chemistry, General, U OF CALIFORNIA - Riverside, 1983 Bachelors, Environmental Science/ Studies, University of California - Riverside, 1983 Doctorate, Soil Sciences, U OF CALIFORNIA, 1987
Byrne, Patrick	Professor	Bachelors, Biology, General, Wahington University, 1970 Masters, Horticulture Science, University of Missouri, 1978 Doctorate, Agronomy and Crop Science, UNIVERSITY OF MISSOURI, 1987

Byrne, Zinta	Professor	Bachelors, Computer Science, California State University, Hayward, 1986 Masters, Industrial and Organizational Psychology, Colorado State University, 1999 Doctorate, Industrial and Organizational Psychology, Colorado State University, 2001
Caballero Bonilla, Hannah	Senior Instructor	Bachelors, University of Idaho, 2011 Masters, Colorado State University, 2011
Cada, Chryss	Instructor	Bachelors, University of Colorado
Cafaro, Philip	Professor	Bachelors, University of Chicago, 1984 Masters, University of Georgia, 1988 Doctorate, Philosophy, Boston University, 1997
Callahan, Gerald	Professor	Bachelors, Biology, General, UNIV OF UTAH, 1969 Doctorate, Pathology, Human and Animal, UNIV OF UTAH, 1974
Callan, Robert	Professor	Professional, Veterinary Medicine (D.V.M.), Oregon State University, 1986 Masters, Physiology, Human and Animal, Utah State University, 1988 Doctorate, Virology, University of Wisconsin, 1996
Campbell, Holli	Instructor	Bachelors, Agricultural Economics, Michigan State U, 1996 Masters, U of Georgia, 2002
Campbell, Ryan	Instructor	Masters, Colorado State University, 2006
Camper, Matthew	Senior Instructor	Masters, Entomology, Colorado State University, 2007
Canetto, Silvia	Professor	Doctorate, Experimental Psychology, UNIV OF PADUA, 1977 Masters, Psychology, General, HEBREW U OF JER, 1983 Doctorate, Clinical Psychology, NORTHWESTERN U, 1987
Cannon, Joseph	Professor	Bachelors, Marquette University, 1982 Doctorate, University of North Carolina at Chapel Hill, 1992
Carcasson, Martin	Professor	Bachelors, Communications, General, Texas AM, 1994 Masters, Texas AM University, 1998 Doctorate, Communications, General, Texas A M, 2004
Carlson, Kenneth	Professor	Bachelors, Chemical Engin., University of Wisconsin, 1982 Masters, Civil Engin., General, Colorado State University, 1992 Doctorate, Civil Engin., General, University of Colorado, 1996
Carlson, Kristina	Instructor	Bachelors, Business, General, Colorado State University, 1989 Masters, Higher Education Administration, Colorado State University, 1994 Doctorate, Higher Education Administration, University of Colorado - Denver, 2007

Carlson, Laurie	Associate Professor	Bachelors, English Language and Literature, General, Moorhead State University, 1985 Masters, College/ Postsecondary Student Counseling and Personnel Services, Western Washington University, 1993 Doctorate, Counselor Education Counseling and Guidance Services, University of Arkansas, 2000
Carlyon, Jonathan	Associate Professor	Bachelors, Spanish Language and Literature, Univ. of Connecticut- Storrs, 1995 Masters, Spanish Language and Literature, Univ. of Connecticut, 1998 Doctorate, Spanish Language and Literature, Univ. of Connecticut -Storrs, 2003
Carman, Scott	Assistant Professor	Bachelors, Cornell University, 1994 Masters, Landscape Architecture, Harvard University, 1997
Carnevale, Elaine	Professor	Bachelors, Colorado State University, 1981 Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1985 Masters, Physiology, Human and Animal, Colorado State University, 1989 Doctorate, Physiology, Human and Animal, University of Wisconsin, 1993
Carolan, Michael	Professor	Bachelors, University of Iowa, 1997 Masters, Iowa State University, 1999 Doctorate, Sociology, Iowa State University, 2002
Carr Childers, Leisl	Assistant Professor	Bachelors, Pepperdine University, 1993 Masters, Pepperdine University, 2005 Doctorate, Univ of Nevada, Las Vegas, 2011
Carr, Karen	Instructor	Bachelors, Social Sciences, General, University of Northern Colorado, 1995 Certificate, Red Rocks Community College, 2004 Masters, Business Management and Administrative Services, Other, University of Colorado - Denver, 2013
Carrillo, Ian	Instructor	
Carta, Jamie	Instructor	
Carter, Ellison	Assistant Professor	Bachelors, Indiana University, 2004 Masters, University of Texas, Austin, 2009 Doctorate, University of Texas, Austin, 2013
Carter, Genesea	Assistant Professor	Doctorate, University of New Mexico, 2013
Caspari, Horst	Professor	Masters, Horticulture Science, Rheinische Friedrich-Wilhelms-Universitat Bonn, 1989 Doctorate, Horticulture Science, Rheinische Friedrich-Wilhelms-Universitat Bonn, 1993
Castillo, Daniela	Senior Instructor	Bachelors, Technological Institute of Higher Studies of Monterrey Mexico City Doctorate, Colorado State University Masters, California State University
Castor, Jennifer	Instructor	Bachelors, Elementary Teacher Education, Northern Arizona University, 2002 Masters, Education, Other, University of Colorado-Boulder, 2010
Catalano, Lori	Associate Professor	Bachelors, Iowa State University, 1986 Masters, University of Pennsylvania, 1992

Caton, Deborah	Instructor	Bachelors, Physics, Other, Frostburg State University, 2001 Masters, Secondary Teacher Education, Johns Hopkins University, 2007
Cauvin, Thomas	Assistant Professor	Masters, Institut d'Etudes Politiques, Sciences-Po, Paris, France, 2002 Doctorate, European University Institute, 2012
Cavalieri, Renzo	Professor	Bachelors, Mathematics, University of Milano, 1999 Professional, Mathematics, University of Utah, 2005
Cavanagh, Amanda	Instructor	Bachelors, Biology, General, Georgetown University, 2007 Professional, Veterinary Medicine (D.V.M.), Auburn University, 2012
Cavanagh, Tom	Instructor	Doctorate, Colorado State University, 2004
Cavdar, Gamze	Associate Professor	Bachelors, International and Comparative Education, Ankara University, 1994 Doctorate, International and Comparative Education, University of Utah, 2006
Ceas, Sandra	Instructor	Professional, San Francisco Art Institute, 2006 Bachelors, Rocky Mountain College of Art Professional, University of Denver
Chaffee, Virginia	Instructor	Bachelors, Southwest Missouri State University, 2003 Masters, Humboldt State University, 2010
Chai, Dae Seok	Assistant Professor	Bachelors, Earth and Planetary Sciences, Hanyang University, 1999 Bachelors, Business Teacher Education (Vocational), The University of Georgia (Athens), 2000 Certificate, Business Teacher Education (Vocational), The Univeristy of Georgia - Athens, 2006 Certificate, Adult and Continuing Education Administration, The University of Minnesota, 2008 Masters, Human Resources Management, University of Minnesota - Minneapolis, 2008 Doctorate, Human Resources Management, Other, Texas AM University - College Station, 2016
Champ, Joseph	Associate Professor	Doctorate, Journalism and Mass Communication, Other, University of Colorado-Boulder, 2001
Chan, Siu Hung	Assistant Professor	
Chanda, Soham	Assistant Professor	
Chang, Chung-Fu	Professor	Masters, Dance, University CA, Irvine, 1998
Chappell, Kelly	Associate Professor	Doctorate, Mathematics, University of Washington, 1997
Chard, Christine	Assistant Professor	
Charkowski, Amy	Professor	Bachelors, Plant Pathology, University of Wisconsin-Madison, 1993 Doctorate, Plant Pathology, Cornell University, 1998
Chatterjee, Delphi	Professor	Bachelors, Organic Chemistry, Visav Bharati Univ, 1973 Masters, Organic Chemistry, Visav Bharati Univ, 1975 Doctorate, Chemistry, Other, UNIV OF LONDON, 1980

Chavez, Ernest	Professor	Bachelors, Psychology, General, U OF NEW MEXICO, 1971 Masters, Psychology, General, WASHINGTON S U, 1973 Doctorate, Clinical Psychology, WASHINGTON S U, 1976
Chavez, Jose	Associate Professor	Bachelors, Agricultural Engineerin, 1992 Masters, Irrigation Engineering, 1999 Doctorate, Biological Ag Engineering, 2005
Chen, Chaoping	Associate Professor	Bachelors, Biochemistry, Nanjing University, 1987 Masters, Genetics, Plant and Animal, Chinese Academy of Science, 1990 Doctorate, Microbiology/ Bacteriology, Purdue University, 1999
Chen, Eugene	Professor	Bachelors, Shangrao Teachers College, 1985 Masters, Nankai University, 1988 Doctorate, University of Massachusetts-Amherst, 1995
Chen, Hua	Assistant Professor	Bachelors, Physics, General, Zhengzhou University, 2006 Doctorate, Physics, General, University of Tennessee at Knoxville, 2012
Chen, Junwen	Assistant Professor	Doctorate, Univeristy of Georgia, 2011
Chen, Suren	Professor	Bachelors, Tung Ji University, 1994 Masters, Tung Ji University, 1997 Doctorate, Louisana State University, 2004
Chen, Thomas	Professor	Bachelors, Electrical, Electronics and Communication Engin., SHANGHAI UNIV, 1982 Doctorate, Electrical, Electronics and Communication Engin., UNIV OF EDINBUR, 1986
Cheney, Margaret	Professor	Bachelors, Mathematics, Oberlin College, 1976 Doctorate, Mathematics, Indiana University, 1982
Cheng, Antony	Professor	Bachelors, Political Science, General, Whitman College, 1990 Masters, Forestry, General, University of Minnesota, 1993 Doctorate, Forest Management, Oregon State University, 1999
Chermack, Thomas	Professor	Bachelors, Human Resources Management, Other, University of Minnesota, 1999 Doctorate, Human Resources Management, Other, University of Minnesota, 2003
Chicco, Adam	Associate Professor	Bachelors, Business Management and Administrative Services, Other, Marietta College, 1993 Masters, Exercise Sciences/Physiology and Movement Studies, Temple University, 1999 Doctorate, Exercise Sciences/Physiology and Movement Studies, University of Northern Colorado, 2004
Chien, Ting Fang	Assistant Professor	
Childers, Michael	Assistant Professor	Bachelors, Western State College, 1995 Masters, Colorado State University, 1997 Doctorate, History, Other, Univ of Nebvada, Las Vegas, 2010

Chitsaz, Hamid	Assistant Professor	Bachelors, Computer Science, Sharif University of Technology, 2001 Bachelors, Mathematics, Other, Sharif University of Technology, 2001 Masters, Mathematics, University of Illinois, 2006 Doctorate, Computer Science, University of Illinois, 2008
Chiu, Chuchang	Senior Instructor	Bachelors, Journalism, Chengchi University, Taiwan, 1979 Masters, Mass Communications, University of Minnesota, 1982
Chiu, Jui-Yuan	Associate Professor	Bachelors, Atmospheric Sciences and Meteorology, National Central Univesity - Taiwan, 1992 Masters, Atmospheric Sciences and Meteorology, National Central University - Taiwan, 1994 Doctorate, Atmospheric Sciences and Meteorology, Purdue University, 2003
Choi, Eunhee	Assistant Professor	Bachelors, Political Science, General, Kyunghee University, Seoul, South Korea, 2004 Masters, Social Work, Yonsei University, Seoul, South Korea, 2007 Doctorate, Social Work, University of Pittsburgh, 2013
Choi, Jane	Associate Professor	Bachelors, Parsons School of Design, 1997 Masters, Landscape Architecture, Harvard, 1997
Choi, Young Eun	Instructor	Masters, Colorado State University, 2014
Chong, Edwin	Professor	Bachelors, UNIV OF ADELAIDE, 1987 Masters, PRINCETON UNIV, 1989 Doctorate, PRINCETON UNIV, 1991
Chouinard, Hayley	Professor	Bachelors, Montana State University, 1991 Masters, Applied and Resource Economics, Montana State University, 1994 Doctorate, University of California Berkeley, 2002
Christensen, Scott	Senior Instructor	Bachelors, Graphic Design, Commercial Art and Illustration, Iowa State University, 1981 Masters, Visual and Performing Arts, Colorado State University, 1986
Chung, Hye	Associate Professor	Bachelors, Ewha Women's University, Seul, Korea, 1994 Masters, LCollege of Stover Island, C.U.N.Y., 1999 Doctorate, University of California, Los Angeles, 2004
Chung, Jean	Assistant Professor	
Church, Christine	Instructor	Masters, A.B. Freeman School, Tulane University, 1997
Clapp, Tod	Associate Professor	Bachelors, Colorado State University, 1996 Masters, Colostate University, 1999 Doctorate, Medical Neurobiology, Colorado State University, 2004
Clark, Jon	Professor	Bachelors, Business Administration and Management, General, MICH STATE UNIV, 1968 Masters, Finance, General, E MICHIGAN UNIV, 1972 Doctorate, Management Information Systems and Business Data Processing, CASE WESTERN RE, 1977
Clark, Maggie	Assistant Professor	Bachelors, Miami University, Oxford, OH, 1999 Masters, Colorado State University, 2005 Doctorate, Colorado State University, 2007

Clark, Nathan	Instructor	Bachelors, Agriculture/ Agricultural Sciences, General, Michigan State University, 2000 Certificate, University of Arizona, 2001 Masters, Colorado State University, 2014
Clay, Colin	Professor	Bachelors, Animal Sciences, General, COLO STATE UNIV, 1979 Masters, Physiology, Human and Animal, COLO STATE UNIV, 1983 Doctorate, Physiology, Human and Animal, COLO STATE UNIV, 1988
Cleary, Anne	Professor	Bachelors, Psychology, General, John Carroll University, 1997 Masters, Experimental Psychology, Case Western Reserve University, 1999 Doctorate, Experimental Psychology, Case Western Reserve University, 2001
Clegg, Benjamin	Professor	Bachelors, Psychology, General, University of Bath, United Kingdom, 1991 Masters, Cognitive Psychology and Psycholinguistics, University of Oregon, 1996 Doctorate, Cognitive Psychology and Psycholinguistics, University of Oregon, 1998
Clements, William	Professor	Bachelors, Biology, General, FLORIDA STATE U, 1978 Masters, Biology, General, FLORIDA STATE U, 1982 Doctorate, Zoology, General, VA POLYTECH INS, 1988
Clementz, Joshua	Instructor	Masters, Colorado State University, 2014
Clemons, Stephanie	Professor	Bachelors, Interior Design, MICHIGAN STATE, 1979 Masters, Interior Environments, UTAH STATE UNIV, 1987 Doctorate, Higher Education Administration, Colorado State University, 1998
Cleveland, Jeanette	Professor	Bachelors, Psychology, General, Occidental College, 1977 Masters, Industrial and Organizational Psychology, The Pennsylvania State University, 1979 Doctorate, Industrial and Organizational Psychology, The Pennsylvania State University, 1982
Cloud, Douglas	Assistant Professor	Doctorate, Carnegie Mellon University, 2014
Coates, Tabitha	Instructor	Bachelors, Psychology, Other, Virginia Tech, 2005 Masters, Industrial and Organizational Psychology, CUNY Baruch College, 2008
Coats, Jennifer	Master Instructor	Doctorate, Texas A M University, 1997
Coatsworth, James	Professor	Bachelors, Psychology, General, Harvard University, 1983 Doctorate, Clinical Psychology, University of Minnesota, 1991
Coffino, Kara	Assistant Professor	Bachelors, Individual and Family Development Studies, General, University of California Berkeley, 2002 Masters, Organizational Behavior Studies, Columbia University - Teachers College, 2007 Doctorate, Curriculum and Instruction, University of Minnesota - Twin Cities, 2012

Coffman, Elizabeth	Instructor	Bachelors, Biochemistry, University of Tennessee, 2005 Professional, Veterinary Medicine (D.V.M.), University of Tennessee, 2009 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), The Ohio State University, 2013
Cohen, Adrienne	Assistant Professor	Doctorate, Yale University
Cohen, Robert	Professor	Bachelors, Biochemistry, University of California, Berkeley, 1974 Doctorate, Biochemistry, University of California, Berkeley, 1980
Coke, Pamela	Associate Professor	Bachelors, Univ. of Northern Iowa, 1991 Doctorate, Univ. of Iowa, 2002
Coleman, Robert	Master Instructor	Bachelors, Forestry, General, CSU, 1977 Masters, Forestry, General, CSU, 1982
Coleman, Stephen	Assistant Professor	Bachelors, Agriculture/ Agricultural Sciences, General, Univeristy of Kentucky, 2003 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), University of Kentucky, 2006 Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), University of Kentucky, 2011
Collett Jr, Jeffrey	Professor	Bachelors, Chemical Engin., MIT, 1984 Masters, Environmental/ Environmental Health Engin., CA INST TECH, 1985 Doctorate, Environmental/ Environmental Health Engin., CA INST TECH, 1989
Collier, Mary Jane	Professor	
Collins, George	Professor	Bachelors, Electrical, Electronics and Communication Engin., MANHATTAN COLL, 1964 Masters, Electrical, Electronics and Communication Engin., YALE UNIV, 1965 Doctorate, Electrical, Electronics and Communication Engin., YALE UNIV, 1970
Collins, Sayuri	Senior Instructor	Bachelors, Kagawa University, Japan, 1983 Masters, Colorado State University, 1988
Conant, Richard	Professor	Bachelors, University of Colorado, Bldr., 1990 Doctorate, Ecology, ARIZONIA STATE UNIVERSITY, 1997
Connell, Eileen	Instructor	Bachelors, Sociology, University of Northern Colorado, 1995 Masters, Sociology, University of Northern Colorado, 1997 Doctorate, Colorado State University, 2006
Conner, Bradley	Associate Professor	Bachelors, Psychology, General, UCLA, 1997 Masters, Clinical Psychology, UCLA, 1999 Doctorate, Clinical Psychology, UCLA, 2006
Conroy, Samantha	Assistant Professor	Bachelors, Missouri State University, 2004 Masters, University of Missouri-Kansas City, 2006 Doctorate, University of Arkansas, 2014
Contino, Erin	Assistant Professor	Bachelors, Animal Sciences, Other, Colorado State University, 1999 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 2009 Professional, Veterinary Medicine (D.V.M.), Colorado State University, 2010

Conway, Thomas	Senior Instructor	Bachelors, Colorado State University, 2004 Masters, Colorado State University, 2007
Cooley, Daniel	Professor	Bachelors, Mathematics, University of Colorado, 1994 Masters, Applied Mathematics, General, University of Colorado, 2002 Doctorate, Applied Mathematics, General, University of Colorado, 2005
Cooner, Donna	Professor	Doctorate, Education Administration and Supervision, General, Texas AM University, 1989
Cooper, Leroy	Instructor	Bachelors, Biology, General, MIT/ Cambridge, 1959 Masters, Philosophy, Columbia University, NYC, 1968
Cooperman, Matthew	Professor	Bachelors, Colgate University, 1986 Masters, University of Colorado, 1992 Professional, Ohio University, 1998
Copeland, Hannah	Instructor	Bachelors, University of Missouri
Correa, Maite	Associate Professor	Bachelors, University of Duesto, Spain, 2000 Masters, University of Arizona, 2003 Doctorate, University of Arizona, 2008
Cory, Leslie	Instructor	Bachelors, University of California Masters, University of California
Costanigro, Marco	Associate Professor	Bachelors, Agricultural Business and Management, General, University of Bologna, Italy, 1974 Doctorate, Agricultural Economics, Washington State University, 2007 Masters, Washington State University, 2007
Cotrufo, Maria	Professor	Bachelors, Biology, General, University of Naples, Italy, 1991 Doctorate, Soil Sciences, Lancaster Univ/Institute of Terrestrial Ecology, UK, 1995
Cottrell, Stuart	Professor	Bachelors, Western Illinois University, 1980 Masters, Florida International University, 1987 Doctorate, Pennsylvania State University, 1993
Countryman, Amanda	Associate Professor	Bachelors, Agricultural Economics, University of Arizona, 2005 Masters, Agricultural Economics, Texas AM University, 2007 Doctorate, Agricultural Economics, Purdue University, 2010
Covino, Timothy	Assistant Professor	Doctorate, Environmental Science/ Studies, Montana State University, 2012
Cox-York, Kimberly	Assistant Professor	Bachelors, Fort Lewis College Doctorate, Colorado State University Masters, University of Hawaii
Crain, Tori	Assistant Professor	Bachelors, Psychology, General, Whitworth University, 2009 Masters, Psychology, Other, Portland State University, 2012 Doctorate, Psychology, Other, Portland State University, 2014
Crair, Stuart	Instructor	Bachelors, University of Maryland, College Park
Crandall, Heather	Instructor	
Crans, Christiaan	Instructor	Doctorate, Indiana University Jacobs School of Music, 2011
Crans, Debbie	Professor	Bachelors, Chemistry, General, University of Copenhagen, 1978 Masters, Chemistry, General, University of Copenhagen, 1980 Doctorate, Organic Chemistry, HARVARD UNIV, 1985

Cranshaw, Whitney	Professor	Bachelors, Biology, General, HAMPSHIRE COLL, 1976 Masters, Entomology, U OF MINNESOTA, 1979 Doctorate, Entomology, U OF MINNESOTA, 1981
Craver, Joshua	Assistant Professor	Bachelors, Mississippi State University, 2012 Masters, Kansas State University, 2014 Doctorate, Purdue University, 2018
Crawford, Sarita	Instructor	Bachelors, English Language and Literature/Letters, Other, University of Colorado - Colorado Springs, 1993 Masters, Teaching English as a Second Language/Foreign Language, Colorado State University, 1995
Crick, Dean	Professor	Doctorate, University of Western Ontario, 1989
Crofton, Kevin	Instructor	Masters, Colorado State University, 2015 Bachelors, Albion College
Crooks, Kevin	Professor	Bachelors, Zoology, General, Colorado State University, 1989 Masters, Ecology, Univ of Calif - Santa Cruz, 1994 Doctorate, Biology, General, Univ of California - San Diego, 1999
Cross, Jennifer	Professor	Bachelors, Sociology, Colorado State University, 1993 Masters, Sociology, U. Calif-Davis, 1996 Doctorate, Sociology, U.Calif-Davis, 2001
Crouch, Mark	Instructor	
Crozier, Clarissa	Instructor	Bachelors, University of Northen Colorado
Cunningham, Samantha	Instructor	Bachelors, Texas Tech University, 2002 Masters, Texas AM University, 2005 Doctorate, Animal Sciences, General, Texas AM University, 2008
Cunningham-Sabo, Leslie	Professor	Bachelors, Medical Anatomy, Michigan State University, 1979 Masters, Dietetics/ Human Nutritional Services, University of Arizona, 1989 Doctorate, Health Teacher Education, University of New Mexico, 2000
Curl, Kelly	Associate Professor	Bachelors, Villanova University, 1999 Masters, Landscape Architecture, University of Pennsylvania, 2002
Curtis, Stanley	Assistant Professor	Bachelors, University of Alabama, 1986 Masters, Cleveland Insitute of Music, 1988 Doctorate, Indiana University, 2005
Cutler, Harvey	Professor	Bachelors, Business Administration and Management, General, U OF COLORADO, 1972 Masters, Economics, General, PORTLAND STATE, 1977 Doctorate, Economics, General, U OF WASHINGTON, 1985
Cuyler, Antonio	Instructor	Bachelors, Music, General, Stetson University, 2001 Masters, Florida State University, 2003 Doctorate, Art Teacher Education, Florida State University, 2007
Dalsted, Norman	Professor	Bachelors, Agricultural Economics, N DAKOTA STATE, 1968 Masters, Agricultural Economics, N DAKOTA STATE, 1972 Doctorate, Agricultural Economics, COLO STATE UNIV, 1981
Dandaneau, Debra	Assistant Professor	
Dandy, David	Professor	Bachelors, Chemical Engin., U OF CALIFORNIA-Davis, 1981 Masters, Chemical Engin., CALTECH, 1983 Doctorate, Chemical Engin., CALTECH, 1987

Danford, Mac	Master Instructor	Bachelors, Political Science, General, Colorado State University, 1975 Professional, University of Denver, 1989
Dangelmayr, Gerhard	Professor	Doctorate, Mathematics, University of Tubingen, 1979 Professional, Mathematics, University of Tubingen, 1987
Daniell, Erica	Instructor	Bachelors, Colorado State University, 1999 Masters, Colorado State University, 2008
Daniels, Joshua	Associate Professor	Doctorate, Veterinary Medicine (D.V.M.), University of Wisconsin - Madison, 1999 Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), Washington State University, 2008
Daum, Courtenay	Professor	Bachelors, Political Science, General, University of Delaware, 1997 Masters, American Government and Politics, Univeristy of Delaware, 1998 Doctorate, American Government and Politics, Georgetown University, 2004
Daunhauer, Lisa	Associate Professor	Bachelors, Journalism, University of Florida, 1989 Masters, Occupational Therapy, Boston University, 1996 Doctorate, Occupational Therapy, Boston University, 2004
Davalos, Deana	Professor	Bachelors, Psychology, General, Texas AM University, 1994 Masters, Counseling Psychology, Colorado State University, 1997 Doctorate, Counseling Psychology, Colorado State University, 2000
David, James	Associate Professor	Bachelors, University of Georgia, 2000 Masters, University of Georgia, 2002 Doctorate, Florida State University, 2006
Davies, Ashley	Senior Instructor	Bachelors, Utah Valley University, 2008 Masters, Colorado State University, 2010
Davies, Patricia	Professor	Doctorate, University of Wyoming, 1995
Davis, Jessica	Professor	Bachelors, Agronomy and Crop Science, Cornell University, 1983 Masters, Texas Tech Universtiy, 1984 Doctorate, Texas A M University, 1989
Davis, Leslie	Instructor	Bachelors, Colorado State University, 2012 Bachelors, Colorado State University, 2013 Masters, Colorado State University, 2016 Masters, Colorado State University, 2016
Davis, Thomas	Assistant Professor	Bachelors, Forestry, General, Northern Arizona University, 2006 Masters, Entomology, Northern Arizona University, 2008 Doctorate, Forestry Sciences, Northern Arizona University, 2011
Dayan, Franck	Professor	Bachelors, Stephen F. Austin State University, 1988 Masters, Stephen F. Austin State University, 1992 Doctorate, Botany, General, Auburn University, 1995
de Brito, Paulo	Instructor	Bachelors, Mackenzie University, 2001 Masters, Universidade de Sao Paulo, 2006 Masters, Colorado State University, 2010
de la Venta Granda, Jose	Assistant Professor	Doctorate, Physics, General, University of Madrid, Spain, 2009
De Long, Susan	Associate Professor	Bachelors, Univ of Calif. Berkeley, 1999 Masters, Univ of Texas at Austin, 2005 Doctorate, Univ of Texas at Austin, 2009

Dean, Gregg	Professor	Bachelors, Pre-Veterinary Studies, Colorado State University, 1985 Professional, Veterinary Medicine (D.V.M.), Colorado State Univerisy, 1988 Doctorate, Pathology, Human and Animal, Colorado State University, 1991
Dean, Thomas	Professor	Doctorate, University of Colorado, 1992
DeCarlo, Chelsea	Instructor	Bachelors, Indiana University, 2010 Masters, Colorado State University, 2013
Decker, Derek	Assistant Professor	Bachelors, Elementary Teacher Education, University of Montana, 2004 Masters, Curriculum and Instruction, University of Phoenix, 2006 Doctorate, Education Administration and Supervision, Other, Colorado State University, 2017
Decker, Joy	Instructor	Bachelors, Elementary, Middle and Secondary Education Administration, The University of Montana, 2003 Masters, Curriculum and Instruction, The University of Phoenix, 2006
Deines, Burton	Master Instructor	Masters, Colorado State University, 1996
Deines, Susan	Associate Professor	Bachelors, Microbiology/ Bacteriology, CSU, 1979 Masters, Microbiology/ Bacteriology, CSU, 1994
Del Real, Manuel	Instructor	Bachelors, University of Denver, 2009 Masters, University of Denver, 2011 Doctorate, Higher Education Administration, Iowa State University, 2017
Delahunty, Gerald	Professor	Bachelors, English Literature (British and Commonwealth), UNIV COL DUBLIN, 1968 Masters, Linguistics, UNIV COL DUBLIN, 1970 Doctorate, Linguistics, U OF CALIFORNIA, 1981
Delcambre, Jeremy	Assistant Professor	Bachelors, Biology, General, University of Louisiana at Monroe, 2002 Masters, Biology, General, University of Louisiana at Monroe, 2005 Professional, Veterinary Medicine (D.V.M.), Louisiana State University, 2009
Delee, Floris	Instructor	Bachelors, Catholic University - Antwerp
Delmore, Lynn	Instructor	Bachelors, California Polytechnic State University, 1991 Masters, Animal Sciences, General, University of Nebraska-Lincoln, 1993 Doctorate, Colorado State University, 1998
Delmore, Robert	Professor	Bachelors, Food Sciences and Tech, California Polytechnic State University - San Luis Doispo, 1991 Masters, Animal Sciences, General, University of Nebraska, 1993 Doctorate, Animal Sciences, General, Colorado State University, 1998
Delosh, Edward	Associate Professor	Bachelors, Psychology, General, Northwestern University, 1992 Masters, Cognitive Psychology and Psycholinguistics, Purdue University, 1994 Doctorate, Cognitive Psychology and Psycholinguistics, Purdue University, 1996

DeLuca, Jennifer	Professor	Bachelors, Biology, General, University of North Carolina, Chapel Hill, 1994 Doctorate, Cell and Molecular Biology, Other, University of California, Santa Barbara, 2000
Demasters, Megan	Instructor	Bachelors, Idaho State University, 2010 Masters, University of Utah, 2012 Doctorate, Colorado State University, 2017
Deming, Monica	Senior Instructor	Bachelors, Graphic Design, Commercial Art and Illustration, University of Nebraska, 1988 Masters, Drawing, Colorado State University, 1996
DeMirjyn, Maricela	Associate Professor	Bachelors, University of California, Santa Barbara, 1995 Masters, San Diego State University, 2000 Doctorate, University of California, Santa Barbara, 2005
Denning, A	Professor	Bachelors, Geology, UNIV OF MAINE, 1984 Masters, Atmospheric Sciences and Meteorology, CSU, 1993 Doctorate, Atmospheric Sciences and Meteorology, CSU, 1995
Denniston, David	Associate Professor	Doctorate, Animal Sciences, General, New Mexico State University, 2001
DeSouchet, Kathryn	Instructor	
DeTienne, Dawn	Professor	Bachelors, University of Northern Colorado, 1991 Masters, Colorado State University, 1999 Doctorate, University of Colorado, 2002
DeVoe, Dale	Professor	Bachelors, Physical Education Teaching and Coaching, UNIV OF MASS, 1980 Masters, Education Administration and Supervision, General, SPRINGFIELD COL, 1984 Doctorate, Education, General, U OF NEW MEXICO, 1987
DeYoung, Wendy	Instructor	Bachelors, Health and Physical Education, General, University of Northern Colorado, 1982 Masters, Exercise Sciences/Physiology and Movement Studies, University of Denver, 1986
Di Pietro, Santiago	Associate Professor	Bachelors, University of Buenos Aires, 1996 Doctorate, University of Buenos Aires, 2001
Dicesare, Catherine	Associate Professor	Bachelors, Art History, Criticism and Conservation, Florida State University, 1990 Masters, Art History, Criticism and Conservation, Syracuse University, 1994 Doctorate, Art History, Criticism and Conservation, University of New Mexico, 2002
Dickerson, William	Assistant Professor	Bachelors, English Language and Literature, General, Ohio University, 2011 Masters, English Language and Literature, General, Marshall University, 2013 Masters, Library Science, Other, Kent State University, 2014

Dickinson, Greg	Professor	Bachelors, Communications, General, Walla Walla College, 1987 Masters, Speech and Rhetorical Studies, University of California, Davis, 1990 Doctorate, Speech and Rhetorical Studies, University of Southern California, 1994
Dickison, Brenda	Instructor	Bachelors, Psychology, General, Evergreen State College, 1975 Masters, Social Work, University of Washington, 1982
Diddi, Sonali	Assistant Professor	Certificate, Business Administration and Management, General, Central Queensland Univ, 2009 Masters, Clothing/ Apparel and Textile Studies, RMIT University, 2009 Doctorate, Clothing/ Apparel and Textile Studies, Iowa State Univ, 2014
Didier, John	Associate Professor	Doctorate, History, Other, Princeton University, 1998
Diehl, Manfred	Professor	Bachelors, Psychology, General, Rheinische Friedrick-Wilhelms Univ Bonn Germany, 1980 Masters, Rheinishe Friedrich-Wilhelms Univ Bonn Germany, 1984 Doctorate, Penn State University, 1991
Diffrient, David	Professor	Bachelors, Film/Cinema Studies, University of Southern Mississippi, 1996 Masters, Film/Cinema Studies, City University of New York, 1999 Doctorate, Film/Cinema Studies, UCLA, 2005
Dik, Bryan	Professor	Bachelors, Psychology, General, Calvin College, 1998 Doctorate, Counseling Psychology, University of Minnesota, 2005
Dillon, Jasmine	Assistant Professor	Bachelors, Texas AM University, 2011 Masters, Texas AM University, 2013 Doctorate, Penn State University, 2019
Dineen, Mark	Assistant Professor	Bachelors, Landscape Architecture, University of Illinois, 2006 Masters, Cranbrook Academy of Art, 2013
Dinenno, Frank	Professor	Bachelors, Exercise Sciences/Physiology and Movement Studies, University of Arizona, 1996 Masters, Exercise Sciences/Physiology and Movement Studies, University of Colorado - Boulder, 1998 Doctorate, Exercise Sciences/Physiology and Movement Studies, University of Colordao Boulder, 2000
DiRado, Paul	Instructor	Bachelors, Agricultural Business and Management, General, Whitman College, 2007 Masters, Philosophy, University of Kentucky, 2011 Doctorate, Philosophy, University of Kentucky, 2015
Discoe, Christine	Instructor	Bachelors, French Language and Literature, Univ of California, Santa Cruz, 1992 Masters, Linguistics, University of South Carolina, 1996
Distaso, Cheryl	Instructor	
DiVerdi, Joseph	Associate Professor	Bachelors, Biochemistry, St. Peter's College, 1975 Masters, Chemistry, General, Univ of Pennsylvania, 1977 Doctorate, Chemistry, General, University of Pennsylvania, 1981 Masters, Business, General, Colorado State University, 1999

Dixon, Bryanna	Instructor	Bachelors, Linfield College, 2014 Masters, Colorado State University, 2016
Dobos, Karen	Professor	Bachelors, Adams State College, 1990 Doctorate, Colorado State University, 1995
Docheff, Joshua	Instructor	Bachelors, Animal Sciences, General, Colorado State University, 2008
Doe, Sue	Professor	Doctorate, Colorado State University, 2001
Doe, William	Instructor	Doctorate, Civil Engin., General, Colorado State University, 1992
Doherty Jr, Paul	Professor	Doctorate, Ohio State University, 2000
Dombrow, Jonathan	Master Instructor	Bachelors, Purdue University Calumet, 1989 Masters, Louisiana State University, 1991 Doctorate, University of Connecticut, 1997
Dombrowski, Stephen	Instructor	Bachelors, Boston University, 2003
Donavan, D Todd	Associate Professor	Doctorate, Oklahoma State University, 1999
Donovan, Ryan	Instructor	Bachelors, Exercise Sciences/Physiology and Movement Studies, University of Wisconsin-La Crosse, 2004 Masters, Exercise Sciences/Physiology and Movement Studies, Colorado State University, 2007
Dooley, Gregory	Assistant Professor	Bachelors, Biology, General, Frostburg State University, 2000 Masters, Toxicology, The University of Georgia, 2002 Doctorate, Toxicology, Colorado State University, 2007
Dossani, Asad	Assistant Professor	Masters, London School of Economics, 2007 Masters, University of Oxford, 2011 Doctorate, University of California San Diego, 2018
Dow, Steven	Professor	Bachelors, Cell Biology, University of Virginia, 1978 Professional, Veterinary Medicine (D.V.M.), University of Georgia, 1982 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 1987 Doctorate, Biological Immunology, Colorado State University, 1992
Dowers, Kristy	Associate Professor	Bachelors, Cognitive Psychology and Psycholinguistics, Massachusetts Institute of Technology, 1988 Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1997 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 2003
Downing, Jason	Instructor	Masters, Minnesota State University - Mankato, 2002
Draeger, Michelle	Assistant Professor	Bachelors, Marquette University, 2006 Doctorate, Oklahoma State University, 2018
Drager, Jody	Instructor	Bachelors, Individual and Family Development Studies, General, Colorado State University, 1994 Masters, Secondary Teacher Education, Colorado State University, 2017
Draper, Bruce	Professor	Bachelors, Computer Science, Yale University, 1984 Masters, Computer Science, University of Massachusetts Amherst, 1987 Doctorate, Computer Science, University of Massachusetts Amherst, 1993
Drennen, Hannah	Instructor	

Dudley, Natalie	Instructor	Bachelors, English Teacher Education, Colorado State University, 2004 Masters, English Teacher Education, Colorado State University, 2010
Duerr, Felix	Associate Professor	Professional, Veterinary Medicine (D.V.M.), School of Veterinary Medicine-Hanover, Germany, 2001 Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), School of Veterinary Medicine - Hanover, Germany, 2002 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 2007
Duffy, Andrea	Assistant Professor	Doctorate, Georgetown University, 2007
Duffy, Robert	Professor	Bachelors, Lafayette College, 1981 Masters, University of Delaware, 1983 Doctorate, American Government and Politics, Brandeis University, 1991
Duncan, Colleen	Associate Professor	Bachelors, Queen's University, 1998 Professional, University of Saskatchewan, 2003 Masters, University of Saskatchewan, 2005 Doctorate, Colorado State University, 2009
Duncan, Pamela	Senior Instructor	Bachelors, Political Science, General, University of California, 1980 Masters, American Government and Politics, Colorado State University, 1983 Doctorate, Political Science and Government, Other, Colorado State University, 2003
Dungy, Camille	Professor	Bachelors, Stanford University, 1995 Masters, University of North Carolina, Greensboro, 1997
Dunn, Dean	Instructor	
Dunn, Thomas	Associate Professor	Bachelors, University of Richmond, 2002 Masters, Syracuse University, 2005 Doctorate, University of Pittsburgh, 2011
Durand, Mark	Instructor	
Duval, Dawn	Associate Professor	Bachelors, Biochemistry, University of Nevada, Reno, 1990 Doctorate, Pharmacology, Human and Animal, University of Nevada, Reno, 1994
Eakes, Donald	Instructor	Bachelors, Auburn University, 1981 Masters, Auburn University, 1984 Doctorate, Virginia Polytechnic Institute, 1989
Eakman, Aaron	Associate Professor	Bachelors, University of North Dakota, 1989 Masters, Western Michigan University, 1992 Doctorate, University of Southern California, 2007
Easley, Jeremiah	Assistant Professor	Bachelors, College of Charleston, 2002 Professional, VA-MD Regional College of Veterinary Medicine
Easley, William	Instructor	Masters, Colorado State University, 2014 Bachelors, Colorado State University
Ebel, Gregory	Professor	Bachelors, English Language and Literature, General, University of Minnesota, Twin Cities, 1991 Masters, Public Health, General, Harvard School of Public Health, 1997 Doctorate, Epidemiology, Harvard School of Public Health, 2000
Edwards-Callaway, Lily	Assistant Professor	Bachelors, Amherst College, 2002 Masters, University of Rhode Island, 2006 Doctorate, Colorado State University, 2009

Egenhoff, Sven	Professor	Bachelors, Geology, Technische Universitaet Clausthal, 1991 Masters, Geology, Universitaet Heidelberg, 1996 Doctorate, Geology, Technische Universitaet Berlin, 2000
Ehlers-Zavala, Fabiola	Professor	Bachelors, Universidad Carolica de Valparaiso, 1992 Masters, Illinois State University, 1994 Doctorate, Illinois State University, 1999
Ehrhart, Nicole	Professor	Professional, Veterinary Medicine (D.V.M.), University of Pennsylvania, 1990 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 1994
Eichenbaum, Jesse	Instructor	Bachelors, Biology, General, Tufts University, 1974 Masters, Animal Sciences, General, Colorado State University, 1977 Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1982 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 1987
Elder, John	Professor	Doctorate, University of Virginia, 1995
Eldridge, Brandy	Instructor	
Elf, Jessica	Assistant Professor	Bachelors, University of Florida, 2004 Masters, Public Health, Other, Johns Hopkins Bloomberg School of Public Health, 2009 Doctorate, Public Health, Other, Johns Hopkins Bloomberg School of Public Health, 2016
Elkins, Evan	Assistant Professor	Masters, University of Texas Austin, 2009 Doctorate, University of Wisconsin Madison, 2015 Bachelors, English Language and Literature/Letters, Other, Michigan State University
Elkins, Mary	Instructor	Bachelors, English Language and Literature, General, Emmanuel College, Boston, 1966 Masters, English Language and Literature, General, Southern Illinois University, 1968 Doctorate, Southern Illinois University, 1979
Ellingwood, Bruce	Professor	Bachelors, University Illinois at UC, 1968 Masters, University of Illinois at UC, 1969 Doctorate, University of Illinois at UC, 1972
Elliott, Adriane	Instructor	Bachelors, Sociology, TEXAS CHRISTIAN UNIVERSITY, 1997 Masters, Soil Sciences, COLORADO STATE UNIVERSITY, 2004
Elliott, Jonathan	Associate Professor	Bachelors, Construction and Building Finishers and Managers, Other, Pennsylvania College of Technology, 2004 Masters, Construction and Building Finishers and Managers, Other, Colorado State University, 2010 Doctorate, Education, General, Colorado State University, 2013
Ellis, Robert	Professor	Bachelors, Microbiology/ Bacteriology, U OF WYOMING, 1966 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), PURDUE UNIV, 1969 Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), PURDUE UNIV, 1972

Elmer, Matthew	Instructor	Bachelors, University of Colorado, 2013 Masters, Colorado State University, 2015
Emami, Sanam	Associate Professor	Bachelors, History, General, James Madison University, 1993 Masters, Ceramics Arts and Ceramics, Alfred University, 2002
Emanouilov, Oleg	Professor	Bachelors, Mathematics, Moscow State University, 1986 Masters, Mathematics, Moscow State University, 1986 Professional, Mathematics, Moscow State University, 1991
Endeshaw, Haileyesus	Assistant Professor	Bachelors, Engin. Mechanics, Mekelle University, 2005 Masters, Engin. Mechanics, Texas Tech University, 2011 Doctorate, Engin. Mechanics, Texas Tech University, 2017
Engelhardt, Tricia	Instructor	Bachelors, Russian and Slavic Area Studies, Univesity of Iowa, 1992 Masters, Linguistics, University of Iowa, 1995
Engle, Terry	Professor	Bachelors, Animal Sciences, General, Colorado State University, 1993 Masters, Animal Sciences, Other, Colorado State University, 1996 Doctorate, Animal Sciences, Other, North Carolina State University, 1999
Enns, Kellie	Associate Professor	Bachelors, Animal Sciences, General, Washington State University, 1993 Masters, Agriculture/ Agricultural Sciences, General, Colorado State University, 1996 Doctorate, Education, General, Colorado State University, 2008
Enns, Richard	Professor	Bachelors, Biology, General, Tabor College, 1987 Masters, Animal Sciences, General, CSU, 1991 Doctorate, Animal Sciences, General, CSU, 1995
Erickson, Peter	Assistant Professor	Doctorate, University of Chicago, 2014
Essah, Samuel	Associate Professor	Doctorate, Agronomy and Crop Science, Alabama A M University, 1999
Essert, Deborah	Assistant Professor	Bachelors, Psychology, General, Colorado State University, 2001 Masters, Clinical Psychology, University of Alaska, 2005 Masters, Counseling Psychology, Colorado State University, 2014 Doctorate, Counseling Psychology, Colorado State University, 2017
Estep, Donald	Professor	Doctorate, Applied Mathematics, General, University of Michigan, 1987 Masters, Applied Mathematics, General, University of Michigan, 1987
Ettema, Robert	Professor	Bachelors, Aucklund Universithy, NZ, 1975 Masters, Aucklund University, NZ, 1977 Doctorate, Aucklund University, NZ, 1980
Evans, Corey	Instructor	Bachelors, Colorado State University, 2015 Masters, Colorado State University, 2018
Everett, Derek	Instructor	Bachelors, Western State College of Colorado, Gunnison, 2001 Masters, Colorado State University, 2003 Doctorate, University of Arkansas, Fayetteville, 2008

Ex, Seth	Assistant Professor	Bachelors, Forestry, General, Utah State University, 2009 Masters, Forestry Sciences, Colorado State University, 2011 Doctorate, Forestry Sciences, Colorado State University, 2014
Eykholt, Richard	Associate Professor	Bachelors, Mathematics, University of California, 1978 Bachelors, Physics, General, U OF CALIFORNIA, 1978 Masters, Physics, General, U OF CALIFORNIA, 1980 Doctorate, Physics, General, U OF CALIFORNIA, 1984
Fahey, Patrick	Associate Professor	Bachelors, Art Teacher Education, Viterbo University, 1977 Masters, Art Teacher Education, Univeristy of Iowa, 1987 Masters, Fiber, Textile and Weaving Arts, University of Iowa, 1990 Doctorate, Art Teacher Education, University of Iowa, 1994
Fahrner, Scott	Associate Professor	
Fails, Anna	Assistant Professor	Bachelors, Biology, General, University of Arizona, 1983 Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1987 Doctorate, Anatomy, Colorado State University, 1999
Fairbank Jr, William	Professor	Bachelors, Physics, General, POMONA COLLEGE, 1968 Masters, Physics, General, STANFORD UNIV, 1969 Doctorate, Physics, General, STANFORD UNIV, 1974
Fairchild, Ana	Senior Instructor	Bachelors, Music, General, Benedictine College, 1988 Bachelors, Spanish Language and Literature, Benedictine College, 1988 Masters, Spanish Language and Literature, Colorado State University, 1992 Masters, Accounting, Other, Regis University, 2000
Faircloth, Susan	Professor	Bachelors, History, General, Appalachian State University Doctorate, Education Administration and Supervision, General, The Pennsylvania State Univ Masters, Counselor Education Counseling and Guidance Services, The Pennsylvania State University
Falkowski, Michael	Associate Professor	Bachelors, Geography, University of Wisconsin at Stevens Point, 2000 Masters, Natural Resources Conservation, General, University of Idaho, 2005 Doctorate, Forestry, General, University of Idaho, 2008
Fannon, Elizabeth	Instructor	Bachelors, Webster University, 2000 Masters, CU Denver, 2013
Farinas, Janina	Assistant Professor	Bachelors, University of New Orleans Certificate, Marriage Family Therapy Licensing Program Doctorate, The Chicago School of Professional Psychology Masters, Naropa University
Faris, Suzanne	Associate Professor	Bachelors, Design and Visual Communications, Purdue University, 1994 Bachelors, Painting, Purdue University, 1994 Masters, Sculpture, University of Colorado, 2001

Farmer, Delphine	Associate Professor	Bachelors, Chemistry, General, McGill University, 2000 Masters, Environmental Science/Studies, University of California, Berkeley, 2001 Doctorate, Chemistry, General, University of California, Berkeley, 2006
Farmer, Joseph	Instructor	
Fassnacht, Steven	Professor	Bachelors, Civil Engin., General, University of Waterloo, 1992 Masters, Civil Engin., General, University of Waterloo, 1995 Doctorate, Civil Engin., General, University of Waterloo, 2000
Fattor, Eric	Instructor	Bachelors, University of Portland, 1996 Masters, International Relations and Affairs, University of Denver, 2000 Doctorate, University of Denver
Faw, Meara	Assistant Professor	Masters, University of Washington, 2011 Doctorate, Communications, General, University of Washington, 2014 Bachelors, Whitworth University
Feagin, Tommy	Assistant Professor	Bachelors, The University of Memphis, 2006 Masters, The University of Memphis, 2008 Doctorate, The University of Arizona, 2017
Fellmann, Connie	Assistant Professor	Doctorate, Anthropology, New York University, 2011
Fenton, Michael	Instructor	Bachelors, Art, General, University of Northern Colorado, 1997 Masters, Art History, Criticism and Conservation, University of Northern Colorado, 2001
Fenton-Nichols, Deborah	Instructor	
Fernandez-Gimenez, Maria	Professor	Bachelors, Philosophy, Yale University, 1987 Masters, Range Science and Management, Univ. of California - Berkeley, 1992 Doctorate, Wildlife and Wildlands Management, Univ. of California - Berkeley, 1997
Ferreira, Copper	Instructor	Bachelors, Brevard College, 2003 Masters, Arizona State University, 2005 Masters, University of Western Ontario, 2007
Ferreira, Wesley	Associate Professor	Bachelors, University of Western Ontario, 2003 Masters, Arizona State University, 2006
Ferrer, Kim	Instructor	Bachelors, Sculpture, Colorado State University, 1991 Masters, Sculpture, Colorado State University, 2004
Feterl, Tamara	Instructor	Bachelors, Grand Canyon University, 2014 Masters, University of Colorado Denver, 2016
Fetsch, Robert	Professor	Bachelors, Philosophy, Conception Seminary, 1967 Masters, St. Mary's University, San Antonio, TX, 1967 Masters, Theological Studies and Religious Vocations, Other, ST MARY'S U, 1970 Masters, Counseling Psychology, OLOFTLU, 1972 Doctorate, Counselor Education Counseling and Guidance Services, U OF WYOMING, 1979
Fidler, Deborah	Professor	Bachelors, Psychology, Other, Cornell University, 1996 Masters, Educational Psychology, University of California, Los Angeles, 1998 Doctorate, Educational Psychology, University of California, Los Angeles, 2001

Field, Stuart	Associate Professor	Bachelors, Physics, General, Stanford University, 1981 Masters, Physics, General, University of Chicago, 1982 Doctorate, Physics, General, University of Chicago, 1986
Fieseler, Kathryn	Instructor	Professional, Michigan State University, 1982
Finke, Richard	Professor	Bachelors, Chemistry, General, UNIV COLORADO, 1972 Doctorate, Chemistry, General, STANFORD UNIV, 1976
Firooz, Janet	Instructor	Bachelors, Southern Methodist University, 1989 Masters, Harvard University, 1990 Masters, Penn State University, 1994
Firooz, Jonathan	Instructor	Bachelors, Colorado Statue Univeristy, 1996
Fischer, Emily	Associate Professor	Bachelors, Atmospheric Sciences and Meteorology, University of British Columbia, 2002 Masters, Earth and Planetary Sciences, University of New Hampshire, 2005 Doctorate, Atmospheric Sciences and Meteorology, University of Washington, 2010
Fisher, Christopher	Professor	Doctorate, Anthropology, University of Wisconsin-Madison, 2000
Fisher, Gwenith	Associate Professor	Bachelors, Psychology, General, Pennsylvania State University, 1995 Masters, Industrial and Organizational Psychology, Bowling Green State University, 1999 Doctorate, Industrial and Organizational Psychology, Bowling Green State University, 2001
Flammini, McKyley	Instructor	
Fletcher, Harrison	Associate Professor	Masters, Vermont College of Fine Arts, 2006
Fling, Brett	Assistant Professor	Bachelors, Exercise Sciences/Physiology and Movement Studies, University of Northern Colorado, 2002 Masters, Exercise Sciences/Physiology and Movement Studies, University of Massachusetts - Amherst, 2007 Doctorate, Exercise Sciences/Physiology and Movement Studies, University of Michigan, 2011
Flippen, Paul	Associate Professor	Bachelors, Art History, Criticism and Conservation, University of Texas at Austin, 1995 Bachelors, Fine/Studio Arts, University of Texas at Austin, 1995 Masters, Art History, Criticism and Conservation, Pratt Institute, 2000 Masters, Painting, Pratt Institute, 2000
Florant, Gregory	Professor	Bachelors, Biology, General, CORNELL UNIV, 1973 Doctorate, Physiology, Human and Animal, STANFORD UNIV, 1978
Flott, Amanda	Instructor	Masters, Social Work, University of Chicago, 2011 Bachelors, Political Science, General, University of Kansas
Flynn Jr, Sean	Assistant Professor	Bachelors, University of South Dakota, 2008 Doctorate, Arizona State University, 2017
Folkestad, James	Professor	Bachelors, History, General, University of Colorado, 1989 Masters, California State University - Long Beach, 1993 Doctorate, Texas AM, 1996

Folsom, Jennifer	Instructor	Bachelors, Roosevelt University Doctorate, Colorado State University Masters, Colorado State University
Fontana, Anna	Assistant Professor	Bachelors, Colorado State University, 1997 Masters, Stanford University, 2006
Fonte, Steven	Associate Professor	Bachelors, University of California, Davis, 1998 Masters, Oregon State University, 2003 Doctorate, University of California Davis, 2010
Ford, Erin	Instructor	Bachelors, Wellesley College, 2009 Masters, Bank street College of Education, 2012
Fosdick, Bailey	Assistant Professor	Bachelors, Mathematical Statistics, Colorado State University, 2008 Doctorate, Mathematical Statistics, University of Washington, 2013
Foskin, Kevin	Assistant Professor	Bachelors, English Language and Literature, General, COLO STATE UNIV, 1989 Masters, English Creative Writing, COLO STATE UNIV, 1991
Foster, Michelle	Associate Professor	Doctorate, Georgia State University, 2005 Bachelors, Spelman College
Fothergill, Wendy	Assistant Professor	Bachelors, Communications, General, Colorado State University, 1996 Masters, Educational/ Instructional Media Tech./Technician, University of Northern Colorado, 2001 Certificate, Educational Supervision, Colorado State University, 2011 Doctorate, Educational Supervision, Colorado State University, 2011
Fox-Sanders, Anthony	Instructor	
Foy, Brian	Professor	Bachelors, University of Notre Dame, 1994 Doctorate, Tulane University, 2001
Francois, Ronald	Professor	Bachelors, McGill University, 1988 Masters, University of Maryland, 1994 Doctorate, University of Maryland, 1998
Frank, Chad	Assistant Professor	Bachelors, Microbiology/ Bacteriology, Colorodo State University, 2003 Masters, Anatomy, Colorado State University, 2004 Professional, Veterinary Medicine (D.V.M.), Michigan State University, 2008 Masters, Pathology, Human and Animal, Purdue University, 2011
Franz, Bill	Assistant Professor	Bachelors, Business Management and Administrative Services, Other, Black Hills State University, 1979 Masters, Business Management and Administrative Services, Other, University of South Dakota, 1981 Doctorate, Colorado State University, 2004
Frasier, Mark	Associate Professor	Bachelors, Biological Sciences/Life Sciences, Other, COLO STATE UNIV, 1969 Masters, Anatomy, COLO STATE UNIV, 1973
Frasier, W	Professor	Bachelors, Agricultural Economics, U NEBRASKA-LINC, 1983 Masters, Agricultural Economics, U NEBRASKA-LINC, 1990 Doctorate, Agricultural Economics, WASH STATE UNIV, 1993

Frazier, Michael	Assistant Professor	Bachelors, Design and Applied Arts, Other, Missouri State University, 1993 Masters, Design and Applied Arts, Other, Colorado State University, 2007
Frederiksen, Heidi	Instructor	Bachelors, Music, General, Colorado State University, 1992 Bachelors, University of Northern Colorado, 1996 Masters, Education, General, Colorado State University, 2003 Doctorate, Education, General, Colorado State University, 2010
Freed, David	Instructor	Masters, Harvard University
Freeman, Hilary	Senior Instructor	Bachelors, Mathematics, Colorado State University, 2000 Masters, Mathematics, Colorado State University, 2002
Fremstad, Anders	Assistant Professor	Bachelors, Georgetown University, 2006 Doctorate, Economics, Other, University of Massachusetts, Amherst, 2015
Frisbie, David	Professor	Bachelors, Biochemistry, University of Wisconsin-River Falls, 1987 Professional, Veterinary Medicine (D.V.M.), University of Wisconsin-Madison, 1992 Masters, Medical Pathology, Colorado State University, 1996 Doctorate, Molecular Biology, Colorado State University, 1999
Fulford, Devon	Instructor	Masters, University of Denver, 2014
Funk, William	Professor	Bachelors, Biology, General, Wesleyan University, 1994 Doctorate, Ecology, University of Montana, 2004
Fyffe, Lisa	Assistant Professor	Bachelors, Occupational Therapy, Colorado State University, 1999 Masters, Colorado State University, 2006
Gabriel, Katherine	Instructor	
Gaines, Dana	Instructor	Bachelors, Social Work, Colorado State University, 2001 Masters, Social Work, Colorado State University, 2005
Gaines, Todd	Associate Professor	Bachelors, Soil Sciences, Colorado State University, 2004 Masters, Colorado State University, 2006 Doctorate, Colorado State University, 2009
Gallagher, Timothy	Professor	Bachelors, Finance, General, U OF ILLINOIS, 1974 Masters, Finance, General, U OF ILLINOIS, 1976 Doctorate, Finance, General, U OF ILLINOIS, 1978
Gallen, Sean	Assistant Professor	Doctorate, Earth and Planetary Sciences, North Carolina State University, 2013
Galvez, Jose	Instructor	Bachelors, Rollins College, 2009 Masters, Colorado State University, 2012
Galvin, Kathleen	Professor	Bachelors, Anthropology, COLO STATE UNIV, 1971 Masters, Anthropology, COLO STATE UNIV, 1979 Doctorate, Anthropology, SUNY BINGHAMTON, 1985
Gamble, Harold	Senior Instructor	Bachelors, Philosophy, University of Montana, 1966 Masters, Philosophy, Washington University, 1969 Doctorate, Washington University in St. Louis, 1974

Gandy, John	Assistant Professor	Associates, Compton College, 1966 Bachelors, Social Work, Cal State Univ Long Beach, 1968 Masters, Social Work, Cal State Univ Fresno, 1970 Doctorate, University of Denver, 1975
Ganguly, Arpan	Instructor	Bachelors, University of Delhi, 2007 Masters, University of Hyderabad, 2012 Masters, Colorado State University, 2015
Ganster, Daniel	Professor	Bachelors, Wabash College, 1973 Masters, Purdue, 1976 Doctorate, Purdue Krannert Graduate School of Management, 1978
Gao, Wei	Professor	Bachelors, Anhui Normal University, 1988 Bachelors, Atmospheric Sciences and Meteorology, Nanjing Institute of Meteorology, 1988 Masters, Mississippi State University, 1992 Doctorate, Purdue University, 1997
Gao, Xinfeng	Associate Professor	Bachelors, Nanjing University of Aero Astro, 1995 Masters, Syracuse University, 2001 Doctorate, University of Toronto, 2008
Garcia Farina, Azahara Africa	Instructor	
Garifi, Susan	Instructor	Bachelors, Colorado State University, 1998 Masters, New York University, 2004
Garrett, Andrew	Instructor	Bachelors, Environmental Health, Colorado State University, 2014 Masters, Basic Medical Sciences, Other, Colorado State University, 2017
Garrity, Deborah	Professor	Bachelors, Biology, General, Colorado State University, 1989 Doctorate, Molecular Biology, Cornell University, 1998
Garry, Franklyn	Professor	Bachelors, Biology, General, CORNELL UNIV, 1977 Professional, Veterinary Medicine (D.V.M.), CORNELL UNIV, 1981 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), OHIO STATE UNIV, 1987
Garvey, Sara	Instructor	Bachelors, Psychology, General, Miami University, 2004 Masters, Clinical Psychology, The Citadel, 2008 Masters, Social Psychology, Colorado State University, 2012 Doctorate, Social Psychology, Colorado State University, 2015
Gates, Timothy	Professor	Bachelors, Agricultural Engin., Louisiana State University AM College, 1978 Masters, Civil Engin., General, Colorado State University, 1980 Doctorate, Civil Engin., General, University of California, Berkeley, 1988
Gavin, Michael	Associate Professor	Bachelors, Biology, General, Bowdoin College, 1995 Doctorate, Ecology, University of Connecticut, 2002
Gazelka, Erin	Instructor	
Geiss, Brian	Associate Professor	Bachelors, Univ of Kansas, 1997 Doctorate, St. Louis University School of Medicine, 2002
Gelfand, Martin	Associate Professor	Bachelors, Physics, General, UNIV PENN, 1984 Doctorate, Physics, General, CORNELL UNIV, 1990
Gensmer, Kristin	Instructor	Masters, Anthropology, Colorado State University, 2012

Gentile, Christopher	Associate Professor	Bachelors, Exercise Sciences/Physiology and Movement Studies, Skidmore College, 1999 Masters, Foods and Nutrition Science, University of Colorado at Boulder, 2003 Doctorate, Dietetics/ Human Nutritional Services, Virginia Polytechnic Institute State University, 2006
Gentry-Weeks, Claudia	Associate Professor	Doctorate, Univ Of Oklahoma, 1985
Georgaras, Ifigenia	Associate Professor	Doctorate, Cell and Molecular Biology, Other, University of the Witwatersrand, 2000
Gersch, Joseph	Assistant Professor	Bachelors, Computer Science, University of Michigan, 1973 Masters, Computer Science, Colorado State University, 1982
Gerst, Katherine	Assistant Professor	Bachelors, Michigan State University, 2006 Bachelors, Michigan State University, 2006 Masters, Northern Illionis University, 2009 Doctorate, Texas Tech University, 2017
Ghalambor, Cameron	Professor	Bachelors, Geography, U.C.L.A., 1991 Doctorate, Biology, General, University of Montana, 1998
Ghosh, Soham	Assistant Professor	Bachelors, Mechanical Engin., Jadavpor University, 2008 Masters, Mechanical Engin., Indian Institute of Techonolgy, 2010 Doctorate, Mechanical Engin., Purdue University, 2014
Ghosh, Soumajit	Instructor	Masters, Texas Tech University, 1997
Ghosh, Sudipto	Professor	Doctorate, Purdue University, 2000
Gibbons, Alyssa	Assistant Professor	Bachelors, Psychology, General, University of Evansville, 2000 Masters, Industrial and Organizational Psychology, University of Illinois, Champaign, 2003 Doctorate, Industrial and Organizational Psychology, University of Illinois, Champaign, 2007
Giberson, Paul	Instructor	Bachelors, Colorado State University, 2001 Masters, Higher Education Administration, Colorado State, 2005
Gibson, Katie	Professor	Bachelors, Loyola Marymount University, Los Angeles, 1998 Masters, California State University, Northridge, 2000 Doctorate, Pennsylvania State University, 2004
Gile, Traci	Instructor	Bachelors, English Language and Literature, General, Colorado State University, 1995 Masters, Education, General, University of Northern Colorado, 2001
Gilhooly, Barbara	Instructor	
Gilliland, David	Professor	Bachelors, University of Tennessee, 1981 Masters, Georgia State University, 1986 Doctorate, Georgia State University, 1997
Gingerich, Karla	Associate Professor	Bachelors, Psychology, General, University of Southern Colorado, 1991 Masters, Counseling Psychology, Colorado State University, 1995 Doctorate, Counseling Psychology, Colorado State University, 1998
Ginsberg, Ricki	Assistant Professor	Doctorate, University of Connecticut, 2017

Glantz, Michelle	Professor	Bachelors, Anthropology, University of Pennsylvania, 1990 Doctorate, Anthropology, University of Pennsylvania, 1999
Glazener, Hope	Instructor	Bachelors, Biology, General, University of Minnesota, 1995 Masters, Health and Physical Education, General, Colorado State University, 2002
Glick, Scott	Associate Professor	Bachelors, Accounting, University of Northern Colorado, 1982 Masters, Public Administration, University of Wyoming, 1991 Masters, Construction and Building Finishers and Managers, Other, Colorado State University, 2004 Doctorate, Education, General, Colorado State University, 2007
Glidewell, Kyle	Instructor	Masters, Colorado State University, 2011
Gloeckner, Gene	Professor	Bachelors, Tech. Teacher Education/ Industrial Arts Teacher Education, OHIO STATE UNIV, 1974 Masters, Industrial Design, COLO STATE UNIV, 1977 Doctorate, Tech. Teacher Education/ Industrial Arts Teacher Education, OHIO STATE UNIV, 1983
Glycenfer, Frances	Instructor	Masters, University of Colorado, Boulder, 1982 Bachelors, University of Colorado Boulder
Goar, Allison	Instructor	Bachelors, Western Washington University, 2011 Masters, Colorado State University, 2016
Goble, Daniel	Professor	Bachelors, The University of Northern Colorado, 1983 Masters, The University of Texas at Austin, 1986 Doctorate, The University of Texas at Austin, 1993
Goble, Patricia	Instructor	Bachelors, Music Teacher Education, University of Northern Colorado, 1983 Masters, Music - Voice and Choral/Opera Performance, New England Conservatory of Music, 2014
Goemans, Christopher	Associate Professor	Bachelors, Economics, General, University of Maine, 1997 Masters, Economics, General, University of Colorado, 2000 Doctorate, Economics, General, University of Colorado, 2006
Goetz, Bradley	Professor	Bachelors, Landscape Architecture, COLO STATE UNIV, 1990 Masters, Landscape Architecture, HARVARD UNIV, 1992
Goh, Clara	Instructor	Bachelors, University of Sydney, Australia, 1997 Bachelors, University of Sydney, Australia, 2002 Certificate, ACVS, 2011 Certificate, Surgical Oncology, 2011
Gohl, Matthew	Instructor	Bachelors, Colorado State University
Goldstein, Liba	Associate Professor	Bachelors, Biology, General, Middlebury College, 1997 Doctorate, Environmental Science/ Studies, University of California Santa Cruz, 2004
Golicic, Susan	Professor	Bachelors, Wayne State University, 1989 Masters, University of Tennessee, 1997 Doctorate, University of Tennessee, 2003

Gollapudi, Aparna	Associate Professor	Bachelors, Delhi University, 1988 Masters, Delhi University, 1991 Masters, Delhi University, 1993 Doctorate, University of Connecticut, 2006
Gonzalez-Juarrero, Mercedes	Professor	Bachelors, Univ Complutense de Madrid, 1982 Masters, Univ Complutense de Madrid, 1982 Doctorate, Univ Autonoma de Madrid, 1990
Gonzalez-Voller, Jessica	Assistant Professor	Bachelors, Psychology, General, Florida International University, 2009 Masters, Liberal Arts and Sciences/ Liberal Studies, Nova Southeastern University, 2011 Doctorate, Counselor Education Counseling and Guidance Services, University of Central Florida, 2015
Goodrich, Laurie	Professor	Bachelors, Pathology, Human and Animal, University of Connecticut, 1987 Doctorate, Veterinary Medicine (D.V.M.), University of Illinois, 1991 Masters, Pharmacology, Human and Animal, Virginia Tech University, 1996 Professional, Cell and Molecular Biology, Other, Cornell University, 2004
Goodwin, Jill	Instructor	Bachelors, Colorado State University Masters, Colorado State University
Gorin, Moti	Assistant Professor	Doctorate, Philosophy, Rice University, 2013 Masters, University of Pennyslvania, 2015
Grace, Jesse	Instructor	Bachelors, Middle Tennessee State University Masters, Colorado State University
Graff, Gregory	Professor	Bachelors, Cornell University, 1992 Masters, Ohio State University, 1995 Masters, University of CA, Berkley, 1999 Doctorate, University of California, Berkley, 2002
Graglia, Pamela	Assistant Professor	Bachelors, Univ of Wisconsin-La Crosse, 1991 Doctorate, Higher Education Administration, University of Northern Colorado, 2009 Masters, Univ of Northern CO, 2009
Graham, Daniel	Associate Professor	Bachelors, Psychology, General, Providence College, 2003 Masters, Social Psychology, University of California Irvine, 2006 Doctorate, Psychology, General, University of California Irvine, 2009
Graham, James	Professor	Bachelors, Biology, General, U OF MINNESOTA, 1979 Doctorate, Pathology, Human and Animal, CORNELL UNIV, 1985
Graham, James	Professor	
Graham, Rachel	Associate Professor	Bachelors, Beloit College, 2003 Masters, University of California, Irvine, 2005 Doctorate, University of California, Irvine, 2009
Grainger, David	Instructor	
Grandin, Temple	Professor	Bachelors, Psychology, General, Franklin Pierce College, 1970 Masters, Animal Sciences, General, Arizona State University, 1975 Doctorate, Animal Sciences, General, University of Illinois, 1989
Grant, Jessica	Instructor	
Grapes, Karyn	Associate Professor	Bachelors, Western, 1988 Masters, Colorado State University, 2008 Doctorate, University of Colorado Boulder, 2012

Gravdahl, John	Professor	Bachelors, Graphic Design, Commercial Art and Illustration, COLO STATE UNIV, 1980 Masters, Graphic Design, Commercial Art and Illustration, SYRACUSE UNIV, 1991
Gray, Terry	Instructor	Doctorate, Molecular Biology, University of Oregon, 1985
Greeb, Madeline	Instructor	Masters, Michigan State University, 1965
Greenfield, Nicholas	Instructor	Masters, University of Exter, UK, 2012
Greenough, Forest	Associate Professor	Doctorate, University of Northern Colorado, 2005
Greenwood, Ian	Instructor	Masters, The University of Montana, 2016
Greife, Matthew	Instructor	Doctorate, Univeristy of Gerogia Doctorate, Whittier University - School of Law
Griffenhagen, Gregg	Instructor	
Griffin, Lynn	Assistant Professor	Professional, Veterinary Medicine (D.V.M.), University of Guelph, Ontario Canada, 1997 Masters, Colorado State University, 2013
Grigg, Neil	Professor	Bachelors, Military Technol., Unites States Military Academy, 1961 Masters, Water Resources Engin., Auburn University, 1965 Doctorate, Water Resources Engin., Colorado State University, 1969
Grim, Frederique	Associate Professor	Doctorate, French Language Teacher Education, University of Illinois at Urbana-Champaign, 2005
Grindle, Sharon	Senior Instructor	Bachelors, Humboldt State University, 2006 Masters, Colorado State University, 2009
Gross, Michael	Professor	Bachelors, Arizona State University, 1988 Masters, University of Southern California, 1990 Doctorate, Arizona State University, 1998
Grosse, Larry	Instructor	Doctorate, Texas AM University, 1987
Gruby, Rebecca	Associate Professor	Bachelors, Natural Resources Conservation, General, University of Florida, 2006 Doctorate, Environmental Science/Studies, Duke University, 2013
Gudmestad, Robert	Professor	Bachelors, History, General, North Dakota State, 1987 Masters, History, General, University of Richmond, 1993 Doctorate, American (United States) History, Louisiana State Univ., 1999
Gulati, Bharman	Instructor	Masters, Integrated Academy of Mgmt Tech Ghaziabad, 1999 Masters, University of Nevada Reno, 2014
Guo, Yanlin	Assistant Professor	Bachelors, Southeast Univsersity, China, 2007 Masters, Hong Kong Polytechnic University, 2010 Doctorate, University of Notre Dame, 2015
Gupta, Kalpana	Assistant Professor	Bachelors, Business Administration and Management, General, Philadephia University, 1990 Masters, Liberal Arts and Sciences/ Liberal Studies, Regis University, 2002 Doctorate, Adult and Continuing Teacher Education, University of Wyoming, 2012
Gurvich, Zhanna	Instructor	Bachelors, Clark University, 1989 Masters, Southern Methodist University, 1994
Gustafson, Daniel	Professor	Bachelors, Biology, General, Santa Clara University, 1987 Doctorate, Pharmacology, Human and Animal, University of Nevada, 1992

Guth, Amanda	Assistant Professor	Doctorate, Biological Immunology, University of Colorado, 2003 Professional, Veterinary Medicine (D.V.M.), Colorado State University, 2007
Gutilla, Margaret	Assistant Professor	Masters, Ohio State University, 2004
Guzik, Stephen	Assistant Professor	Bachelors, Royal Military College of Canada, 1998 Masters, Laval University, 2003 Doctorate, University of Toronto, 2010
Hackett, Eileen	Associate Professor	Professional, Veterinary Medicine (D.V.M.), University of Illinois, 1998
Hackett, Timothy	Professor	Bachelors, Zoology, General, University of Nevada, 1984 Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1989 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 1994
Haddock, Shelley	Professor	Bachelors, University of Utah, 1990 Masters, Colorado State University, 1995 Doctorate, Colorado State University, 2001
Hagan, Maame	Instructor	Bachelors, SUNY Potsdam, 2012 Masters, University of Wyoming, 2014
Hagman, Jessica	Assistant Professor	Bachelors, California Polytechnic Institute, San Luis Obispo, 2007 Masters, California Polytechnic Institute, San Luis Obispo, 2009 Doctorate, San Diego State University, University of California, San Diego, 2014
Haley, Scott	Professor	Bachelors, Washington State University, 1983 Masters, Colorado State University, 1989 Doctorate, Colorado State University, 1992
Hall, Ed	Assistant Professor	Bachelors, Biology, General, University of Massachusetts, Amherst, 1997 Doctorate, Ecology, University of Minnesota, 2006
Hall, Laura	Instructor	Masters, Colorado State University, 2016
Hallahan, Kirk	Instructor	Doctorate, University of Wisconsin Madison, 1995
Halsey, Charlotte	Instructor	Bachelors, Tufts University, 2001 Masters, Auburn University, 2006
Halter, Amy	Assistant Professor	Bachelors, Liberal Arts and Sciences/Liberal Studies, California State University Fullerton, 2003 Masters, Higher Education Administration, Indiana University Bloomington, 2005 Doctorate, Higher Education Administration, University of Northern Colorado, 2014
Ham, Jay	Professor	Bachelors, Agronomy and Crop Science, Kansas State Univ, 1984 Masters, Agronomy and Crop Science, Oklahoma State Univ, 1986 Doctorate, Soil Sciences, Texas A M, 1990
Hamar, Dwayne	Associate Professor	Bachelors, Chemistry, General, NEBRASKA ST COL, 1958 Masters, Biochemistry, UNIV NEBRASKA, 1961 Doctorate, Biochemistry, UNIV NEBRASKA, 1964
Hamid, Idris	Professor	Bachelors, Physics, Other, Georgia State University, 1990 Masters, Physics, Other, University of Buffalo, New York, 1996 Doctorate, Philosophy, University of Buffalo, New York, 1998

Hamilton, Karyn	Professor	Bachelors, Nutritional Sciences, Montana Statue University Bozeman, 1989 Masters, Exercise Sciences/Physiology and Movement Studies, Montana State University Bozeman, 1996 Doctorate, Exercise Sciences/Physiology and Movement Studies, University of Florida, 2000
Han, Sushan	Associate Professor	Bachelors, Pre-Veterinary Studies, University of Idaho, 1995 Professional, Veterinary Medicine (D.V.M.), Washington State University, 1999 Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), Washington State University, 2009
Handa, Robert	Professor	Doctorate, Anatomy, UCLA, 1984
Handelsman, Corey	Instructor	
Handran, Joni	Assistant Professor	Bachelors, Communications, General, University of Colorado, 2000 Masters, Social Work, Colorado State University, 2005
Hanlon, David	Associate Professor	Professional, Veterinary Medicine (D.V.M.), Murdoch University, Australia, 1992 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Massey University, New Zealand, 1995 Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), Massey University, New Zealand, 2012
Hanna, Roger	Associate Professor	Bachelors, University of California at Los Angeles, 1988 Masters, New York University, 1991
Hannah, Judith	Professor	Bachelors, Geology, University of California, Davis, 1972 Doctorate, Geological Sciences, Other, University of California, Davis, 1980
Hanneman, William	Professor	Bachelors, Animal Sciences, General, University of California Davis, 1988 Masters, Physiology, Human and Animal, California State Polytechnic University, 1990 Doctorate, Toxicology, Texas AM University, 1995
Hansen, Jeffrey	Professor	Bachelors, Biological Sciences/Life Sciences, Other, Oakland University, 1980 Doctorate, Biochemistry, University of Wisconsih-Madiso, 1986
Hansen, Thomas	Professor	Bachelors, Animal Sciences, General, Colorado State University, 1980 Masters, Physiology, Human and Animal, Texas AM University, 1984 Doctorate, Physiology, Human and Animal, Texas AM University, 1986
Hanson, Cheri	Instructor	Bachelors, Colorado State University, 2011 Masters, University of Hawaii, 2014
Hanson, Lea	Assistant Professor	Bachelors, Psychology, General, University of North dakota, 2001 Masters, Higher Education Administration, Colorado State University, 2003 Doctorate, Education Administration and Supervision, Other, Colorado State University, 2012

Hardegree-Ullman, Emily	Assistant Professor	Bachelors, University of Arizona Doctorate, Rensselaer Polytechnic Institute Masters, Rensselaer Polytechnic Institute
Harden, Erika	Instructor	Bachelors, West Virginia Weselyan College Doctorate, Rutgers University Masters, University of Colorado@Denver
Harman, Jennifer	Associate Professor	Bachelors, Psychology, General, CUNY Hunter College, 1996 Masters, Counseling Psychology, Columbia University, Teachers College, 1998 Doctorate, Social Psychology, University of Connecticut, 2005
Harper, Christofer	Assistant Professor	
Harris, Mary	Professor	Bachelors, Foods and Nutrition Science, MICHIGAN STATE, 1970 Masters, Foods and Nutrition Science, FRAMINGHAM State University, 1974 Doctorate, Biology, General, UNIV OF RI, 1982
Harris, Peter	Assistant Professor	Bachelors, University of Edinburgh, 2008 Masters, University of London, 2009 Doctorate, University of Texas, 2015
Harrow, Del	Associate Professor	Bachelors, Visual and Performing Arts, University of Oregon, 1999 Masters, Ceramics Arts and Ceramics, Alfred University, 2005
Harry, Dennis	Professor	Bachelors, Geophysics and Seismology, Texas A M University, 1981 Masters, Geophysics and Seismology, Texas A M University, 1983 Doctorate, Geophysics and Seismology, University of Texas at Dallas, 1989
Harton, John	Professor	Bachelors, Physics, General, University of California, Davis, 1982 Doctorate, Elementary Particle Physics, MIT, 1988
Harvey, Ashley	Associate Professor	Bachelors, Florida State University, 1994 Masters, Colorado State University, 1998 Doctorate, Purdue University, 2005
Harvey, Harold	Instructor	
Harvey, Madeline	Assistant Professor	Bachelors, Dance, University of North Carolina, 2010 Masters, Dance, Jacksonville University, 2016
Hassel, Diana	Associate Professor	Bachelors, Animal Sciences, General, University of California, Davis, 1989 Professional, Veterinary Medicine (D.V.M.), University of California, Davis, 1993 Doctorate, Pathology, Human and Animal, University of California, Davis, 2003
Hastings, Orestes	Assistant Professor	Bachelors, Rice University, 2007 Bachelors, Rice University, 2007 Masters, University of California, Berkeley, 2013 Doctorate, University of California, Berkeley, 2017
Hatch, Alison	Instructor	
Hatzel, Jennifer	Assistant Professor	
Hausermann, Heidi	Assistant Professor	Doctorate, Geography, University of Arizona, 2010
Haussler, Kevin	Associate Professor	Bachelors, Biological Sciences/Life Sciences, Other, University of Nebraska - Lincoln, 1984 Professional, Veterinary Medicine (D.V.M.), The Ohio State University, 1988 Doctorate, Medical Pathology, University of California - Davis, 1997

Hawthorne, Barbara	Instructor	Bachelors, Anthropology, Colorado State University, 1972 Masters, Anthropology, Colorado State University, 1998 Doctorate, Anthropology, Colorado State University, 2004
Hayne, Stephen	Professor	Bachelors, University of Alberta, 1986 Doctorate, University of Arizona, 1990
Hector, Rachel	Instructor	
Hedleston, Jo	Instructor	Bachelors, Philosophy, University of Missouri, Columbia, 1970 Masters, Philosophy, Colorado State University, 1998
Heiderscheidt, Judy	Assistant Professor	Bachelors, Environmental Health, Colorado State University, 1987 Masters, Environmental Health, Colorado State University, 1996
Heineman, Kristin	Instructor	Bachelors, University of New Mexico, 2007 Doctorate, University of Newcastle, NSW Australia, 2013
Hellmund, Paul	Instructor	Bachelors, Horticulture Services Operations and Management, Other, Colorado State University, 1977 Masters, Landscape Architecture, Harvard University, 1983
Hellstein, Valerie	Instructor	
Hellyer, Peter	Professor	Professional, Veterinary Medicine (D.V.M.), The Ohio State University, 1983
Hempel, Lynn	Associate Professor	Bachelors, Syracuse University, 1987 Masters, London School of Economics, 1992 Doctorate, Duke University, 2003
Henao Tamayo, Marcela	Assistant Professor	Professional, Medicine (M.D.), Universidad de Antioquia, 1999 Doctorate, Microbiology/ Bacteriology, Colorado State University, 2009
Hendrickson, Dean	Professor	Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1988 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Cornell University, 1992
Henke, Nancy	Senior Instructor	Bachelors, Boise State University, 2005 Masters, Colorado State University, 2010
Henle, Christine	Professor	Doctorate, Colorado State University, 2001
Henriksen, Michala de Linde	Assistant Professor	Professional, University of Copenhagen, Denmark, 2005 Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), University of Copenhagen, Denmark, 2013
Henry, Charles	Professor	Bachelors, Missouri Southern State College, 1994 Doctorate, Analytical Chemistry, University of Arkansas, 1998
Henry, Edward	Assistant Professor	Doctorate, Anthropology, Washington University in St. Louis
Henry, Kimberly	Professor	Bachelors, Health and Physical Education/ Fitness, Other, Indiana University of Pennsylvania, 1994 Masters, Colorado State University, 1996 Doctorate, Health and Medical Biostatistics, The Pennsylvania State University, 2002
Hentges, Shane	Professor	Bachelors, Cell Biology, Washington State University, 1995 Doctorate, Neuroscience, Washington State University, 1999
Hentschell, Roze	Professor	Bachelors, Vassar College, 1992 Masters, Univ of CA, Santa Barbara, 1995 Doctorate, Univ of CA, Santa Barbara, 1998

Hepburn, Susan	Professor	Bachelors, Pennsylvania State University, 1989 Masters, Vanderbilt University, 1996 Doctorate, Vanderbilt University, 2000
Herman, Alison	Assistant Professor	
Herman, Julia	Instructor	Bachelors, Zoology, General, Colorado State University, 2007 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 2013 Professional, Veterinary Medicine (D.V.M.), Colorado State University, 2015
Herms, Jr., Curtis	Instructor	Bachelors, South Texas College of Law Bachelors, Texas State University
Herrera-Alonso, Margarita	Associate Professor	
Hess, Ann	Associate Professor	Bachelors, Mathematics, Other, University of Hartford, 1998 Masters, Mathematical Statistics, Colorado State University, 2001 Doctorate, Mathematical Statistics, Colorado State University, 2005
Hess, Tanja	Associate Professor	Bachelors, Veterinary Medicine (D.V.M.), Universida Federal Fluminense, 1990 Masters, Veterinary Medicine (D.V.M.), Universiade Federal Rural Do Rio De Janeiro, 1997 Doctorate, Virginia Polytechnic Institute and State University, 2005
Heuberger, Adam	Assistant Professor	Bachelors, University of Wisconsin-Madison, 2004 Masters, University of Wisconsin-Madison, 2008 Doctorate, Colorado State University, 2011
Heyliger, Paul	Professor	Bachelors, Civil Engin., General, Colorado State University, 1981 Masters, Civil Engin., General, Colorado State University, 1983 Doctorate, Engin. Science, Virginia Polytech Institute State University, 1986
Heyman, Andrea	Instructor	Bachelors, Speech-Language Pathology and Audiology, Queens College, 1973 Masters, Speech-Language Pathology, Univ of Colorado - Boulder, 1976
Hickey, Mary	Instructor	Bachelors, Fort Lewis College, 2006 Masters, Colorado State University, 2010
Hickey, Matthew	Professor	Bachelors, Exercise Sciences/Physiology and Movement Studies, Western Carolina University, 1988 Masters, Exercise Sciences/Physiology and Movement Studies, Virginia Tech, 1990 Doctorate, Biochemistry, Ball State University, 1993
Hill, Brett	Instructor	Masters, Washington University Professional, Northwestern School of Law at Lewis and Clark
Himstedt, Dennis	Instructor	Bachelors, Finance, General, University of Houston, 1976 Masters, Law (LL.B., J.D.), University of Denver, 1982
Hines, Hal	Instructor	Bachelors, Colorado State University, 1990 Masters, Colorado State University, 2010

Hirchi, Mohammed	Associate Professor	Associates, Sociology, University at Rennes, France, 1987 Bachelors, French Language and Literature, Indiana University, 1991 Masters, French Language and Literature, Indiana University, 1993 Doctorate, French Language and Literature, Indiana University, 2000 Masters, Business Administration and Management, General, Colorado State University, 2002
Hitt, Matthew	Assistant Professor	Bachelors, Sociology, Colorado State University, 2007 Masters, The Ohio State University, 2011 Doctorate, The Ohio State Universtiy, 2014
Ho, Pui	Professor	Bachelors, Chemistry, General, Franklin Marshall College, 1979 Doctorate, Biochemistry, Northwestern University, 1984
Hoag, Dana	Professor	Bachelors, Farm and Ranch Management, COLO STATE UNIV, 1980 Masters, Agricultural Economics, COLO STATE UNIV, 1981 Doctorate, Agricultural Economics, WASHINGTON STAT, 1984
Hobbs, Elizabeth	Associate Professor	Bachelors, Economics, Other, AMERICAN UNIV, 1977 Masters, Landscape Architecture, U OF ILLINOIS, 1984
Hoerndli, Frederic	Assistant Professor	Doctorate, University of Zuerich, 2005 Masters, University of Lausanne
Hoeting, Jennifer	Professor	Bachelors, Mathematical Statistics, University of Michigan, 1988 Masters, Mathematical Statistics, University of Washington, 1991 Doctorate, Mathematical Statistics, University of Washington, 1994
Hoffman, Chad	Associate Professor	Bachelors, Forestry Sciences, Northern Arizona University, 2003 Masters, Forestry Sciences, Northern Arizona University, 2005 Doctorate, University of Idaho, 2011
Hoffman, Kathryn	Senior Instructor	Bachelors, Ferris State University, 2008 Masters, Colorado State University, 2010
Hoffman, Kenneth	Professor	Bachelors, General Marketing Operations, OHIO STATE UNIV, 1981 Masters, University of Kentucky, 1984 Doctorate, General Marketing Operations, UNIV KENTUCKY, 1987
Hofmann, Marie-Jo	Senior Instructor	Bachelors, French Language and Literature, Colorado State University, 1972 Masters, French Language and Literature, Colorado State University, 1974
Hogan, Michael	Associate Professor	Bachelors, Sociology, Univ. of Illinois, 1990 Masters, Sociology, Univ. of Illinois, 1992 Doctorate, Criminology, Florida State University, 1998
Hoke, Kim	Associate Professor	Bachelors, Biology, General, Stanford University, 1994 Doctorate, Neuroscience, Stanford University Medical Center, 2002

Hollenbeck, Eric	Professor	Bachelors, Music - General Performance, University Illinois, 1993 Masters, Music - General Performance, Kent State, 1995 Doctorate, Northwestern University, 2006
Hollingsworth, Angela	Instructor	
Hollingsworth, Sonja	Instructor	Masters, Colorado State University, 2007 Doctorate, Colorado State University, 2011 Masters, University of Northern Colorado, 2018
Hollinshead, Fiona	Associate Professor	Professional, Veterinary Medicine (D.V.M.), University of Sydney, Australia, 1996 Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), University of Sydney, Australia, 2004
Hollis, Megan	Instructor	Bachelors, York College, 2004 Masters, Colorado State University, 2011
Holm, David	Professor	Bachelors, Plant Sciences, General, UNIV OF IDAHO, 1972 Masters, Plant Sciences, General, UNIV OF IDAHO, 1974 Doctorate, Horticulture Services Operations and Management, General, U OF MINNESOTA, 1977
Holt, Ronald	Assistant Professor	Bachelors, Univ of Missouri, 1970 Masters, Colorado State University, 2006
Holt, Timothy	Associate Professor	Bachelors, Chemistry, General, Fort Lewis College, 1980 Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1988
Hoover, Edward	Professor	Professional, Veterinary Medicine (D.V.M.), U OF ILLINOIS, 1967 Masters, Biological Sciences/Life Sciences, Other, OHIO STATE UNIV, 1969 Doctorate, Biological Sciences/Life Sciences, Other, OHIO STATE UNIV, 1970
Hopkins, John	Instructor	Doctorate, Texas Tech, 1997
Horsch, Allison	Instructor	Bachelors, Colorado State University, 2012
Howard, Lahoma	Instructor	Masters, CSU, 2012
Howley, Christopher	Instructor	Masters, Colorado State University, 2018
Hoxmeier, John	Associate Professor	Bachelors, Management Science, U OF NEB - LINC, 1977 Masters, Management Information Systems and Business Data Processing, CO STATE UNIV, 1978 Doctorate, Business, General, UNIV CO - BOULD, 1994
Hoyer, Naomi	Assistant Professor	Bachelors, Biology, General, Mount Holyoke College, 1997 Professional, Veterinary Medicine (D.V.M.), Colorado State University, 2002
Hu, Yuchen	Instructor	Bachelors, Central Univ. of Finance Economics, 2014 Masters, Colorado State University, 2016
Hudnut, Paul	Instructor	Bachelors, Political Science, General, Colorado College, 1980 Professional, Law (LL.B., J.D.), University of Virginia, 1984
Hufbauer, Ruth	Professor	Bachelors, University of California, Berkeley, 1991 Doctorate, Entomology, Cornell University, 1999

Hughes, Kit	Assistant Professor	Bachelors, Art History, Criticism and Conservation, Bucknell University, 2006 Masters, University of Texas at Austin, 2009 Doctorate, University of Michigan - Madison, 2015
Hughes, Shannon	Assistant Professor	Bachelors, Social Work, Florida State University, 2002 Masters, Social Work, Florida State Univeristy, 2004 Doctorate, Social Work, Florida International University, 2010
Huibregtse, Gary	Professor	Bachelors, Fine Arts and Art Studies, Other, U OF WISCONSIN, 1980 Masters, Photography, U OF COLORADO, 1984
Hull, Brian	Instructor	Bachelors, Baylor University, 1992 Masters, Colorado State University, 2010
Hulpke, Alexander	Professor	Doctorate, Mathematics, RWTH Aachen, 1996
Humphrey, Michael	Assistant Professor	
Hunter, Nancy	Associate Professor	Bachelors, History, General, University of Arizona, 1975 Masters, Library Science/Librarianship, University of Arizona, 1991
Hurrell, James	Professor	Bachelors, Earth and Planetary Sciences, University of Indianapolis, 1984 Masters, Atmospheric Sciences and Meteorology, Purdue University, 1986 Doctorate, Atmospheric Sciences and Meteorology, Purdue University, 1990
Huseby, Medora	Assistant Professor	Bachelors, Biochemistry, University of Minnesota, 2004 Bachelors, Chemistry, General, Institue of Technology Univ of Minnesota, 2004 Doctorate, Biochemistry, University of Minnesota, 2009
Hutcheson, Katherine	Instructor	Bachelors, Exercise Sciences/Physiology and Movement Studies, University of Manitoba, 1985 Masters, Exercise Sciences/Physiology and Movement Studies, Northern Arizona University, 1987 Doctorate, Exercise Sciences/Physiology and Movement Studies, University of Northern Colorado, 1997
Hutchins, Zachary	Associate Professor	Bachelors, Brigham Young University, 2005 Masters, University of North Carolina at Chapel Hill, 2008 Doctorate, University of North Carolina at Chapel Hill, 2010
Huyvaert, Kathryn	Professor	Bachelors, Biology, General, Wake Forest University, 1995 Masters, Biology, General, Wake Forest University, 1999 Doctorate, Biology, General, University of Missouri, 2004
Huzieff, Julia	Instructor	Bachelors, University of Brest, France, 2002 Masters, University of Brest / University of Aix-Marseille III, France, 2004
Hyatt, Doreene	Professor	Bachelors, Point Loma Nazarene College, 1989 Certificate, Point Loma Nazarene College, 1989 Doctorate, Microbiology/ Bacteriology, University of Arizona, 1996
Hyllegard, Karen	Professor	Bachelors, Spanish Language and Literature, William Smith College, 1985 Masters, Fashion Merchandising, Oregon State University, 1989 Doctorate, Clothing/ Apparel and Textile Studies, University of Maryland, 1998
Indermaur, Katherine	Instructor	Bachelors, University of North Carolina at Chapel Hill, 2011

Ippolito, Jim	Associate Professor	Bachelors, Agronomy and Crop Science, U OF DELAWARE, 1989 Masters, Agronomy and Crop Science, COLO STATE UNIV, 1991 Doctorate, Soil Sciences, COLORADO STATE UNIVERSITY, 2001
Ipsen, Annabel	Assistant Professor	
Irvin, Maurice	Instructor	Masters, Colorado State University, 2015
Ishiwata, Eric	Associate Professor	Bachelors, Social Sciences, General, Colorado State University, 1997 Doctorate, Political Science, General, University of Hawaii, 2005
Iverson, Terrence	Associate Professor	Bachelors, Rice University, 1998 Masters, University of Wisconsin - Madison, 2006 Doctorate, University of Wisconsin-Madison, 2009
Ivie Jr, Kenneth	Instructor	Bachelors, Basic Medical Sciences, Other, Colorado State University, 2011 Masters, Basic Medical Sciences, Other, Colorado State University, 2012
Izzo, Angelo	Professor	Doctorate, University of Adelaide, 1992
Jablonski, Rebecca	Assistant Professor	Bachelors, History, General, Cornell University, 2003 Masters, Univ of London, 2007 Doctorate, City/Urban, Community and Regional Planning, Cornell University, 2014
Jack, Brian	Visiting Asst Professor	Doctorate, CU Boulder, 2009
Jackson, Jessica	Assistant Professor	Masters, University of California, Santa Cruz, 2013 Doctorate, University of California, Santa Cruz, 2017
Jackson, Mary	Professor	Masters, Medical Biochemistry, ENSA - Rennes - France, 1994 Doctorate, Biochemistry, ENSA - Rennes - France, 1998
Jacobi, Bonnie	Associate Professor	Bachelors, Mount Holyoke College, 1991 Masters, University of Texas, 1995 Doctorate, University of Houston, 2001
Jacobi, Tobi	Professor	Bachelors, Univ. of WI at Steven Point, 1995 Masters, Univ. of IL at Chicago, 1998 Professional, Syracuse University, 2003
Jacobson, Andrew	Instructor	Bachelors, University of Texas, 2004 Masters, Eastman School of Music, 2006
Jaggers, Keith	Instructor	Bachelors, Political Science, General, University of Michigan, 1986 Doctorate, Political Science, General, University of Colorado, 1996
Jahn, Courtney	Associate Professor	Doctorate, Univ of Wisconsin - Madison, 2008
James, Susan	Professor	Bachelors, Metallurgical Engin., CARNEGIE MELLON, 1989 Doctorate, Material Engin., MIT, 1993
Jaramillo, Matthew	Instructor	
Jasmann, Christine	Instructor	Bachelors, Biology, General, University of Washington, 2001 Bachelors, English Language and Literature, General, University of Washington, 2001 Certificate, Education, General, California State University, 2005 Masters, English Language and Literature, General, Colorado State University, 2009

Jathar, Shantanu	Assistant Professor	Bachelors, Govt. College of Engineering, India, 2004 Masters, University of Minnesota, 2007 Doctorate, Carnegie Mellon University, 2012
Jayanty, Sastry	Associate Professor	Bachelors, Chemistry, General, Andhra University, 1988 Masters, Biochemistry, Allahabad University, 1992 Doctorate, Molecular Biology, Pune University, 1998
Jayasumana, Anura	Professor	Bachelors, Electrical, Electronics and Communication Engin., U ON SRILANKA, 1978 Masters, Electrical, Electronics and Communication Engin., MICHIGAN ST, 1982 Doctorate, Electrical, Electronics and Communication Engin., MICHIGAN ST, 1984
Jennings, Louise	Professor	Bachelors, Psychology, General, Bates College, 1984 Masters, Educational/ Instructional Media Tech./Technician, Harvard University, 1987 Doctorate, Education, General, University of California - Santa Barbara, 1996
Jensen, Wayne	Professor	Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1984 Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 1991 Masters, Business Administration and Management, General, Colorado State University, 2005
Jentoft, Kirk	Instructor	Masters, Sam Houston State Univ, 2007
Jeon, Hwayoung	Instructor	Bachelors, Korea Maritime University, 2007 Masters, Sungkyunkwan University, 2011 Masters, Colorado State University, 2017
Jia, Gaofeng	Assistant Professor	Bachelors, Beijing Jiaotong University, 2007 Masters, Beijing Jiaotong University, 2009 Doctorate, University of Notre Dame, 2014
Jianakoplos, Nancy	Professor	Bachelors, Economics, General, SMITH COLLEGE, 1972 Masters, Economics, General, U OF MISSOURI, 1974 Doctorate, Economics, General, OHIO STATE UNIV, 1983
Johns, Nikole	Instructor	Masters, Occupational Therapy, Colorado State University, 2000
Johnson, Brett	Professor	Bachelors, Zoology, General, U OF WISCONSIN, 1983 Masters, Zoology, General, OHIO STATE UNIV, 1986 Doctorate, Zoology, General, U OF WISCONSIN, 1993
Johnson, Emily	Instructor	Bachelors, Iowa State University Doctorate, Colorado State University Masters, Colorado State University
Johnson, Erik	Associate Professor	Bachelors, University of Colorado, 2001 Masters, University of Southern Oregon, 2004 Masters, University of Colorado, Boulder, 2007 Doctorate, University of Colorado, 2013
Johnson, Jerry	Professor	Bachelors, Agronomy and Crop Science, Univ California Davis, 1976 Masters, Agronomy and Crop Science, Washington State Univ, 1989 Doctorate, Plant Breeding and Genetics, Washington State Univ, 1992

Johnson, Laurence	Associate Professor	Bachelors, Management Information Systems and Business Data Processing, N ARIZONA UNIV, 1974 Masters, Business, General, N ARIZONA UNIV, 1978 Doctorate, Accounting, TEXAS TECH UNIV, 1991
Johnson, Merrill	Professor	Bachelors, West Texas State University, 1974 Masters, Arizona State University, 1977 Doctorate, University of Georgia, 1981
Johnson, Robert	Assistant Professor	Bachelors, IIT, 1980 Masters, J of I Chicago, 2008
Johnson, Sarah	Instructor	Bachelors, St. Olaf College, 1978 Bachelors, University of Minnesota, 1983 Masters, Colorado State University, 1989
Johnson, Sarah	Assistant Professor	Doctorate, Florida State University, 2013 Bachelors, University of Vermont Masters, Florida State University
Johnson, Thomas	Professor	Bachelors, Industrial/ Manufacturing Tech./ Technician, Southern Illinois University, 1989 Masters, Business Administration and Management, General, University of Illinois, Chicago, 1991 Masters, Environmental/ Environmental Health Engin., Northwestern University, 1993 Doctorate, Health Physics/Radiologic Health, Purdue University, 1998
Johnson, Zachary	Professor	Bachelors, Landscaping Operations and Management, Colorado State University, 1993 Masters, Landscape Architecture, University of Colorado at Denver, 2003
Johnston, Derek	Professor	Bachelors, McDaniel College, 1993 Masters, American University, 1997 Doctorate, University of Colorado at Boulder, 2001
Johnston, Matthew	Associate Professor	Bachelors, Biology, General, John Carroll University, 1995 Professional, Veterinary Medicine (D.V.M.), University of Pennsylvania, 1999
Johnston, Price	Associate Professor	Bachelors, Mesa State College, 2002 Masters, University of Florida, 2005
Jones, Brian	Master Instructor	Bachelors, Physics, General, CASE WESTERN, 1982 Masters, Physics, General, CORNELL UNIV, 1985
Jones, Elizabeth	Professor	Doctorate, European History, University of Minnesota, 2000
Jones, Kelly	Associate Professor	Bachelors, Biology, General, Meredith College, 2000 Masters, Natural Resources Management and Policy, North Carolina State University, 2005 Doctorate, Forestry and Related Sciences, Other, University of Wisconsin, 2011
Jones, Leah	Instructor	Bachelors, Social Work, %ball state university, 2004 Masters, Social Work, Colorado State University, 2010
Jones, Walton	Professor	Bachelors, USF, 1970 Masters, USF, 1972 Masters, Yale University of Drama, 1975
Julien, Pierre	Professor	Bachelors, Civil Engin., General, Laval University, 1977 Masters, Civil Engin., General, Laval Engineering, 1980 Doctorate, Civil Engin., General, Laval University, 1983
Justice, Peter	Instructor	Masters, Univ of Virginia, 1995

Kacher, Nicholas	Instructor	Bachelors, Wheaton College, 2011 Masters, Colorado State University, 2015
Kading, Rebekah	Assistant Professor	Bachelors, Entomology, University of Delaware, 2000 Masters, Entomology, University of Arkansas, 2002 Doctorate, Molecular Biology, Johns Hopkins Bloomberg School of Public Health, 2007
Kahwaji, Omar	Instructor	Masters, Colorado State University, 2011
Kaiser, Leann	Assistant Professor	Bachelors, Hospitality and Recreation Marketing Operations, General, University of Wyoming, 1999 Masters, Hospitality and Recreation Marketing Operations, General, Arizona State University, 2000 Doctorate, Adult and Continuing Teacher Education, University of Wyoming, 2008
Kalis, Lindsay	Instructor	Bachelors, Human Resources Management, Other, Colorado State University, 2010 Masters, Human Resources Management, Other, Colorado State University, 2013
Kampf, Stephanie	Professor	Bachelors, Geological Sciences, Other, Williams College, 1998 Masters, Geological Sciences, Other, University of Nevada, Reno, 2002 Doctorate, Civil Engin., General, University of Washington, 2006
Kanatous, Shane	Professor	Bachelors, Marine/ Aquatic Biology, L.I.U. at Southampton, 1990 Doctorate, Exercise Sciences/Physiology and Movement Studies, Texas A M University, 1997
Kang, Soo	Professor	Bachelors, Teaching English as a Second Language/Foreign Language, Wonkwang Univ. South Korea, 1996 Masters, Hospitality/ Administration Management, Kansas State University, 1999 Doctorate, Hospitality and Recreation Marketing Operations, General, Kansas State University, 2002
Kannan, Bharadwaj	Assistant Professor	Bachelors, Delhi University, India, 2008 Masters, Christ University India, 2010 Doctorate, University of Colorado, Boulder, 2016
Kanno, Yoichiro	Assistant Professor	Bachelors, Law (LL.B., J.D.), Meiji University, Japan, 2000 Masters, Environmental Science/Studies, Dalhousie University, Canada, 2002 Doctorate, Natural Resources Management and Policy, University of Connecticut, 2010
Karkhoff-Schweizer, Roxann	Associate Professor	Bachelors, Bemidjii State University, 1981 Doctorate, University of North Dakota, Grand Forks, ND, 1988
Kassenbrock, Charles	Assistant Professor	Bachelors, Biochemistry, University of California at Berkeley, 1978 Doctorate, Neuroscience, University of California at San Francisco, 1988 Professional, University of California at San Francisco, 1989
Kasser, Jeffrey	Associate Professor	Bachelors, Philosophy, University of Michigan, 1987 Doctorate, Philosophy, University of Michigan, 1999
Kato, Takamitsu	Associate Professor	Doctorate, Molecular Biology, Colorado State University, 2006

Kawalilak, Lukas	Assistant Professor	Professional, Veterinary Medicine (D.V.M.), Western College of Veterinary Medicine, University of Saskatchewan, 2013
Kawcak, Christopher	Professor	Bachelors, Pre-Veterinary Studies, University of Nevada-Reno, 1988 Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1991 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 1995 Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 1998
Keller, Joshua	Assistant Professor	Bachelors, Emory University Doctorate, University of Washington Masters, Universirty of Washington
Kelly, Eugene	Professor	Bachelors, Range Science and Management, COLO STATE UNIV, 1980 Masters, Agronomy and Crop Science, COLO STATE UNIV, 1984 Doctorate, Soil Sciences, UNIV OF CALIFOR, 1989
Kelly, Kathleen	Professor	Bachelors, Marketing Management and Research, Other, COLO STATE UNIV, 1982 Masters, Marketing Management and Research, Other, COLO STATE UNIV, 1985 Doctorate, Health Professions and Related Sciences, Other, COLO STATE UNIV, 1988
Kennan, Alan	Associate Professor	Bachelors, Cornell University, 1991 Doctorate, University of Wisconsin, Madison, 1997
Kennedy, John	Instructor	Bachelors, University of Iowa Masters, University of Iowa
Kenney, Harry	Professor	Bachelors, Music History and Literature, University of Southern Calif, 1978 Masters, Music Conducting, San Francisco State Univ., 1992
Kent, Suzanne	Assistant Professor	Bachelors, Anthropology, University of Colorado, Boulder, 1994 Masters, Anthropology, Michigan State University, 2005 Doctorate, Anthropology, Michigan State University, 2008
Kesikli, Egemen	Instructor	Bachelors, St Olaf College, 2012 Masters, University of Texas at Austin, 2014 Doctorate, University of Colorado, Boulder, 2017
Keyt, Clara	Instructor	Bachelors, University of West Florida Doctorate, mental, Native American, Social Masters, University of West Florida
Khattab, Mostafa	Professor	Bachelors, Mechanical Engin., University of Helwan, 1976 Masters, University of Helwan, 1981 Doctorate, Engin./ Industrial Management, University of Nebraks-Lincoln, 1989
Khosla, Rajiv	Professor	Bachelors, Agriculture/ Agricultural Sciences, General, University of Allahabad, 1992 Masters, Virginia Tech, 1995 Doctorate, Soil Sciences, Virginia Tech, 1998
Khrebtan-Hoerhager, Julia	Associate Professor	Masters, Univ of Zhytomyr, Ukraine, 2001 Masters, University of Stuffgart, Germany, 2006 Doctorate, University of Denver, 2011

Killingsworth, John	Assistant Professor	Bachelors, University of Nebraska, 2010 Masters, University of Nebraska, 2012 Doctorate, University of Nebraska, 2014
Kim, James	Associate Professor	Bachelors, Music Teacher Education, University of Southern California, 1994 Masters, Music - Voice and Choral/Opera Performance, University of Southern California, 1996 Doctorate, Music - Voice and Choral/Opera Performance, University of Cincinnati, 2003
Kim, Jangyul	Associate Professor	Bachelors, English Literature (British and Commonwealth), Sogang University, 1986 Masters, Public Relations and Organizational Communications, Sogang University, 1995 Doctorate, Mass Communications, University of Florida, 2005
Kim, Joon	Professor	Bachelors, Sociology, New School for Social Research, 1992 Masters, Sociology, Univ. California,Berkeley, 1994 Doctorate, Sociology, Univ. California, Berkeley, 1999
Kim, Kyeoung Hee	Instructor	Bachelors, Kyongsang University, 1995 Masters, Shimane university, 1999
Kim, Ryan	Assistant Professor	
Kim, Seonil	Assistant Professor	Doctorate, New York University, 2011 Bachelors, Chung-Ang University (Seoul Korea) Masters, University og Georgia
King, Melissa	Assistant Professor	Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1997 Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 2011
Kinner, Scott	Instructor	Bachelors, Anderson University, 2002 Masters, Colorado State University, 2008
Kinney, Dana	Visiting Asst Professor	Masters, Colorado State University, 2015
Kipper, Matthew	Professor	Bachelors, Iowa State University, 2000 Doctorate, Iowa State University, 2004
Kirby, Michael	Professor	Bachelors, Mathematics, MA INST OF TECH, 1984 Masters, Mathematics, BROWN UNIV, 1986 Doctorate, Mathematics, BROWN UNIV, 1988
Kirby, Rachel	Assistant Professor	Bachelors, Oberlin College, 1987 Masters, Washington University, 1990 Doctorate, Washington University, 1995
Kirch, Brett	Assistant Professor	Bachelors, Animal Sciences, General, Univ of Nebraska, 1984 Masters, Agricultural Animal Nutrition, Kansas State Univ, 1989 Doctorate, Agronomy and Crop Science, University of Nebraska-Lincoln, 1995 Professional, Veterinary Medicine (D.V.M.), Iowa State University, 2003
Kirkpatrick, Allan	Professor	Bachelors, Mechanical Engin., MASS INST TECH, 1972 Masters, Physics, General, COLL WILL/MARY, 1974 Doctorate, Mechanical Engin., MASS INST TECH, 1981

Kisiday, John	Associate Professor	Bachelors, Bioengineering and Biomedical Engin., Rutgers University, 1994 Masters, Mechanical Engin., University of California Berkley, 1995 Doctorate, Bioengineering and Biomedical Engin., Massachusetts Institute of Technology, 2003
Kissell, Kevin	Instructor	Bachelors, Art History, Criticism and Conservation, Colorado State University, 1997 Masters, Clothing/ Apparel and Textile Studies, Colorado State University, 2000 Masters, Fiber, Textile and Weaving Arts, Colorado State University, 2008
Kitchens, John	Instructor	Masters, Louisiana State University, 1999 Doctorate, University of North Carolina, Chapel Hill, 2007 Masters, Northern Arizona University, 2013
Klein, Julia	Associate Professor	Bachelors, Political Science, General, Cornell University, 1990 Masters, University of California Berkeley, 1995 Doctorate, University of California Berkeley, 2003
Klett, James	Professor	Bachelors, Oranamental Horticulture Operations and Management, OHIO STATE UNIV, 1969 Masters, Horticulture Services Operations and Management, General, U OF ILLINOIS, 1971 Doctorate, Horticulture Services Operations and Management, General, U OF ILLINOIS, 1974
Kling, Robert	Associate Professor	Bachelors, Economics, General, DAVIDSON COLL, 1979 Masters, Economics, General, UNIV OF KANSAS, 1982 Doctorate, Economics, General, UNIV OF KANSAS, 1985
Knapp, Alan	Professor	Bachelors, Biology, General, Idaho State University, 1978 Masters, Botany, General, University of Wyoming, 1981 Doctorate, Botany, General, University of Wyoming, 1988
Knarvik, Nyssa	Assistant Professor	Bachelors, St Lawrence University, 2007 Masters, University of Albany, 2010 Doctorate, University of Albany, 2018
Knight, Andrew	Associate Professor	Bachelors, University of Wisconsin - La Crosse, 2002 Masters, University of Minnesota, 2006 Doctorate, University of North Dakota, 2013
Knight, David	Assistant Professor	Bachelors, Spanish Language Teacher Education, Purdue University, 2001 Masters, Curriculum and Instruction, University of Colorado-Boulder, 2005 Doctorate, Natural Resources Management and Policy, Colorado State University, 2015
Knight, John	Instructor	Bachelors, Chemistry, Other, Eastern New Mexico University, 1979 Masters, Education, Other, Colorado State University, 2003
Knight-Baughman, Rebekah	Instructor	

Knobloch, Katherine	Assistant Professor	Bachelors, Manship School of Mass Communication, Louisiana State U, 2005 Masters, Manship School of Mass Communication, Louisiana State U, 2008 Doctorate, Communications, General, University of Washington, 2012
Knowles, Jennifer	Instructor	Bachelors, English Language and Literature, General, University of Michigan, 2000 Masters, Human Resources Management, Eastern Michigan University, 2006 Doctorate, Organizational Behavior Studies, Colorado State University, 2017
Knowles, Katie	Assistant Professor	Doctorate, History, Other, Rice University, 2014
Kodrich, Kris	Associate Professor	Doctorate, Indiana University, 2000
Koehn, Karen	Instructor	Masters, Education, General, Colorado State University, 1996
Koenig, Gwen	Instructor	Bachelors, Social Work, University of Cincinnati, 1993 Masters, Social Work, University of Cincinnati, 1994
Kogan, Lori	Professor	Bachelors, Psychology, General, Avila College, 1991 Masters, Experimental Psychology, Colorado State University, 1997 Doctorate, Counseling Psychology, Colorado State University, 2002
Kokoska, Mary-Ann	Professor	Bachelors, Fine/Studio Arts, Queen's University, 1982 Masters, Concordia University, 1991
Kokoszka, Piotr	Professor	Masters, Applied Mathematics, General, Wtoclaw Poltechnic, 1988 Doctorate, Applied Mathematics, General, Wtoclaw Polytechnic, 1990 Doctorate, Mathematics, Boston University, 1993
Kondratieff, Boris	Professor	Bachelors, Wildlife and Wildlands Management, TENN TECH UNIV, 1976 Masters, Entomology, VA POLYTECH INS, 1979 Doctorate, Marine/ Aquatic Biology, VA POLYTECH INS, 1982
Koons, David	Associate Professor	Bachelors, Biology, General, Montana State University, 1998 Masters, Fishing And Fisheries Sciences and Management, Montana State University, 2001 Doctorate, Wildlife and Wildlands Management, Auburn University, 2005
Koontz, Stephen	Professor	Bachelors, Agricultural Economics, Virginia polytechnic Institute State University, 1983 Masters, Agricultural Economics, Virginia Polytechnic Inst State University, 1985 Doctorate, Univ of Illinois @ Champaign Urbana, 1991
Kopel, Philip	Assistant Professor	Masters, Mathematics, Tulane, 2010 Doctorate, Mathematics, UC Davis, 2016
Koski, Anthony	Professor	Bachelors, Biology, General, KNOX COLLEGE, 1979 Masters, Agronomy and Crop Science, OHIO STATE UNIV, 1983 Doctorate, Agronomy and Crop Science, OHIO STATE UNIV, 1986

Krafchick, Jennifer	Associate Professor	Bachelors, Drexel University, 1992 Masters, CSU, 2003 Certificate, Colorado State University, 2004 Doctorate, Individual and Family Development Studies, Other, Colorado State University, 2007
Krapf, Diego	Associate Professor	Bachelors, Hebrew University of Jerusalem, 1997 Masters, Hebrew University of Jerusalem, 2000 Doctorate, Hebrew University of Jerusalem, 2004
Kraus, Jennifer	Instructor	Bachelors, Special Education, General, Ohio University, 1997 Masters, Education Administration and Supervision, General, Grand Canyon University, 2007
Kreidenweis-Dandy, Sonia	Professor	Bachelors, Chemical Engin., MANHATTAN COLL, 1983 Masters, Chemical Engin., CAL INST TECH, 1985 Doctorate, Chemical Engin., CAL INST TECH, 1989
Kreider, Jodie	Instructor	Bachelors, Colorado State University, 2001 Masters, Washington University - St Louis, 2004 Doctorate, University of Arizona, 2008
Kreutz, Robert	Instructor	Bachelors, Music Teacher Education, Colorado State University, 1994 Masters, Music Conducting, University of Denver, 1998
Krieg, Annah	Instructor	
Kroll, Stephan	Professor	Bachelors, Mathematics, Other, University of Dortmund (Germany), 1991 Masters, Economics, General, Univ of Wyoming, 1996 Doctorate, Economics, General, Univ of Wyoming, 1999
Krueger, David	Professor	Bachelors, Physics, General, MONTANA STATE U, 1961 Doctorate, Physics, General, U OF WASHINGTON, 1967
Kruh-Garcia, Nicole	Assistant Professor	Bachelors, Biology, General, New York University, 1999 Doctorate, Microbiology/ Bacteriology, Stony Brook University, 2007
Krummel, Amber	Associate Professor	Bachelors, Portland State University, 2001 Doctorate, Chemistry, General, University of Wisconsin - Madison, 2007
Kuhnen, Kevin	Instructor	Bachelors, Colorado State University, 2006 Masters, Colorado State University, 2017
Kuk, Linda	Associate Professor	Bachelors, Social Work, Colorado State University, 1972 Masters, College/ Postsecondary Student Counseling and Personnel Services, Colorado State University, 1973 Doctorate, Higher Education Administration, Iowa State University, 1981
Kummerow, Christian	Professor	Certificate, U OF CA,BERK, 1982 Doctorate, U OF MN, 1987
Kutcher, Lisa	Professor	Bachelors, Chapman University, 1995 Doctorate, University of Colorado, 1999

Kwiatkowski, Lynn	Associate Professor	Bachelors, Anthropology, Univ of Massachusetts, Amherst, 1983 Masters, Anthropology, Univ of California, Berkeley, 1989 Doctorate, Anthropology, Univ of California, Berkeley, 1994
La Belle, Jason	Associate Professor	Doctorate, Anthropology, Southern Methodist University, 2005
Labadie, John	Professor	Bachelors, Engin., General, University of California, Berkeley, 1966 Masters, Water Resources Engin., University of California, Berkeley, 1968 Doctorate, Industrial/ Manufacturing Engin., University of California, Berkeley, 1972
LaGasse, Ashley	Associate Professor	Bachelors, University of Kansas, 2001 Masters, Colorado State University, 2004 Doctorate, University of Kansas, 2009
Laituri, Melinda	Professor	Bachelors, Geography, University of California, Berkeley, 1979 Masters, Geography, California State University, 1985 Doctorate, Geography, University of Arizona, 1993
Lamb, Bryan	Instructor	Bachelors, Psychology, Other, Texas AM, 2009 Masters, Family and Marriage Counseling, Texas State University, 2014
Lambrechts, Nicolaas	Associate Professor	Professional, Veterinary Medicine (D.V.M.), University of Pretoria, South Africa, 1985 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), University of Pretoria, South Africa, 1993
Lana, Susan	Professor	Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1993 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 1997
Landers, Heather	Instructor	Masters, Colorado State University, 2005
Landers, Stuart	Instructor	Bachelors, History, General, University of North Florida, 1990 Certificate, Teaching English as a Second Language/Foreign Language, Univ of Cambridge/Aust TESOL Training CTR, 2001 Masters, Teaching English as a Second Language/Foreign Language, Monterey Inst of Int'l Studies, 2004
Landfester, Petra	Assistant Professor	Bachelors, University of Northern Colorado, 2001 Masters, Colorado State University, 2003 Certificate, University of Colorado Boulder, 2010 Doctorate, UC Boulder, 2012
Landolt, Gabriele	Professor	Professional, Veterinary Medicine (D.V.M.), University of Zurich, Switzerland, 1993 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), University of Zurich, Switzerland, 1995 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), University of Wisconsin-Madison, 2000 Doctorate, Virology, University of Wisconsin-Madison, 2005
Lane, Judith	Senior Instructor	Bachelors, Ithaca College, 1966 Masters, University of Northern Colorado, 1972

Lang, Linda	Assistant Professor	Bachelors, Basic Medical Sciences, Other, Texas A M University, 2002 Professional, Veterinary Medicine (D.V.M.), Texas A M University, 2005 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Washington State University, 2015
Langstraat, Lisa	Associate Professor	Bachelors, Southern Illinois Univ. at Edwardsville, 1985 Masters, Southern Illinois Univ. at Edwardsville, 1987 Doctorate, Purdue University, 1996
Lanning, Shari	Instructor	
Lanz, Megan	Instructor	Bachelors, Music, General, University of North Texas, 2004 Masters, Music, General, University of Nevada Las Vegas, 2006 Doctorate, Music Teacher Education, University of Nevada Las Vegas, 2010
Lappin, Michael	Professor	Bachelors, Veterinary Medicine (D.V.M.), OKLA ST UN, 1977 Professional, Veterinary Medicine (D.V.M.), OKLA ST UN, 1981 Doctorate, Parasitology, UNIV GEORGIA, 1988
LaQuatra, Jeffrey	Instructor	Bachelors, Music - General Performance, The Cleveland Institute of Music, 1992 Masters, Music - General Performance, University of Denver, 1995
LaQuatra, Michelle	Associate Professor	Bachelors, University of New Hampshire, 1994 Masters, University of Colorado, Boulder, 1996 Doctorate, University of Colorado, Boulder, 2002
Lark, Daniel	Assistant Professor	
Larsen, David	Instructor	Masters, Colorado State University, 2007
LaRue, Susan	Professor	Professional, Veterinary Medicine (D.V.M.), U OF GEORGIA, 1977 Masters, Surgical/ Operating Room Technician, COLO STATE UNIV, 1986 Doctorate, Radiation Biology/Radiobiology, COLO STATE UNIV, 1992
Latham, Monica	Assistant Professor	Bachelors, Liberal Arts and Sciences/Liberal Studies, Utah State University, 1994 Masters, Library Science/Librarianship, Emporia State, 2016
Laybourn, Paul	Professor	Bachelors, Biology, General, U OF CALIFORNIA, 1981 Doctorate, Biochemistry, U OF CALIFORNIA, 1989
Layden, Paul	Instructor	Bachelors, Recreation Products/Services Marketing Operations, Colorado State University, 1991 Masters, Recreation Products/Services Marketing Operations, Colorado State University, 1998
Leach, Heather	Assistant Professor	Bachelors, Exercise Sciences/Physiology and Movement Studies, University of South Alabama, 2005 Masters, Exercise Sciences/Physiology and Movement Studies, University of Texas at Arlington, 2008 Doctorate, Exercise Sciences/Physiology and Movement Studies, University of Houston, 2013

Leach, Jan	Professor	Bachelors, Microbiology/ Bacteriology, UNIVERSITY OF NEBRASKA, LINCOLN, 1975 Masters, Microbiology/ Bacteriology, UNIVERSITY OF NEBRASKA, LINCOLN, 1977 Doctorate, Plant Pathology, University of Wisconsin, Madison, 1981
Leal, Francisco	Associate Professor	Doctorate, Washington University, St. Louis, 2007
Lear, Kevin	Professor	Bachelors, Electrical, Electronics and Communication Engin., UNIV COLO BOULD, 1984 Masters, Electrical, Electronics and Communication Engin., STANFORD UNIV, 1985 Doctorate, Electrical, Electronics and Communication Engin., STANFORD UNIV, 1990
Leary, Del	Assistant Professor	Doctorate, Medical Physics/Biophysics, Dalhousie University, 2013
Lechleitner, Elizabeth	Senior Instructor	Bachelors, Colorado State University, 1981 Masters, Colorado State University, 1984
Leclerc, Meghan	Instructor	
Lederer, Naomi	Professor	Bachelors, English Language and Literature, General, Carleton College, 1987 Masters, Library Science/Librarianship, Univ of Illinois, 1988 Masters, English Language and Literature, General, Arizona State University, 1992
Lee, Juhyun	Instructor	Bachelors, Hoseo University, 2007 Masters, Bard College, 2014 Doctorate, Arizona State University
Lee, Wendy	Instructor	Bachelors, Individual and Family Development Studies, General, Colorado State University, 1994 Masters, Social Work, Colorado State University, 2007 Certificate, Unknown, 2008
Lee, YuJung	Assistant Professor	Bachelors, Ewha Womans University, 2004 Masters, Yonsei University, 2007 Doctorate, University of California, Los Angeles, 2015
Lefsky, Michael	Professor	Bachelors, Environmental Science/ Studies, Bard College, 1988 Doctorate, University of Virginia, 1997
Legare, Marie	Associate Professor	Masters, Montana State University, 1983 Professional, Veterinary Medicine (D.V.M.), Texas AM, 1991 Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), Texas AM, 1995
Lehene, Marius	Professor	Bachelors, Economics, General, Babes-Bolyai University, 1996 Masters, Fine/ Studio Arts, Southern Methodist University, 2001
Leisz, Stephen	Associate Professor	Bachelors, American Studies/Civilization, Georgetown University, 1986 Masters, Environmental Science/Studies, University of Wisconsin-Madison, 1996 Doctorate, Geography, University of Copenhagen, 2007
Lenaerts, Anne	Professor	Bachelors, University of Gent, Belgium, 1988 Doctorate, University of Gent, Belgium, 1996

Lenk, Margarita	Associate Professor	Bachelors, Accounting, U OF C FLORIDA, 1981 Masters, Accounting, U OF N CAROLINA, 1987 Doctorate, Accounting, U OF S CAROLINA, 1991
Leonard, Miriam	Instructor	Bachelors, Elementary Teacher Education, University of Northern Colorado, 1982 Masters, Teacher Education, Specific Academic and Vocational Program, Colorado State University, 1992
Lessor, Edward	Senior Instructor	Bachelors, University of Chicago, 1989 Masters, Florida State University, 2002
Levalley, Stephen	Assistant Professor	Bachelors, Animal Sciences, General, COLO STATE UNIV, 1976 Masters, Agricultural Animal Breeding and Genetics, COLO STATE UNIV, 1978 Doctorate, COLORADO STATE UNIVERSITY, 1999
Level, Allison	Professor	Bachelors, Public Administration, University of Arkansas, 1981 Masters, Higher Education Administration, Kent State University, 1985 Masters, Emporia State University, 1990
Levin, Jennifer	Senior Instructor	Bachelors, University College London, UK, 2004 Masters, Colorado State University, 2009
Levinger, Nancy	Professor	Bachelors, Physics, Other, NORTHWESTERN UNIVERSITY, 1983 Doctorate, Chemical and Atomic/Molecular Physics, UNIVERSITY OF COLORADO BOULDER, 1990
Levy, Ellen	Associate Professor	Bachelors, Yale University, 1986 Doctorate, Ohio State University, 2002
Lewis, Angela	Assistant Professor	Bachelors, Social Sciences, General, University of Northern Colorado, 2000 Masters, Curriculum and Instruction, University of Wyoming, 2007 Doctorate, Curriculum and Instruction, University of Wyoming, 2016
Lewis, Howard	Instructor	Bachelors, Parks, Recreation and Leisure Studies, Colorado State University, 1980 Masters, Occupational Safety and Health Tech./Technician, West Virginia University, 1983 Doctorate, Curriculum and Instruction, University of Southern California, 1992
Li, Hsueh-Hsiang	Assistant Professor	Bachelors, National Taiwan University, 1995 Associates, California State Univ, 2007 Doctorate, Univesity of Wisconsin, Madison, 2013
Li, Kaigang	Assistant Professor	Bachelors, Biology Teacher Education, Anhui Normal University, 1993 Masters, Exercise Sciences/Physiology and Movement Studies, China Institute of Sport Science, 1996 Doctorate, Health and Physical Education/ Fitness, Other, Indiana University, 2010
Li, Yan	Associate Professor	Bachelors, Materials Science, Donghua University, Shanghai, 2000 Masters, Materials Science, Donghua University, Shanghai, 2003 Doctorate, Textile Sciences and Engin., Cornell University, 2009

Light, Elinor	Instructor	Bachelors, Colorado State University, 2006 Masters, Communications, General, Colorado State University, 2009 Doctorate, Communications, General, University of Utah, 2015
Lindenbaum, John	Assistant Professor	Bachelors, International Relations and Affairs, Princeton University, 1999 Doctorate, Geography, University of California, Berkeley, 2009
Linder, Sarah	Instructor	Bachelors, Colorado State University, 2016
Lindsay, James	Professor	Doctorate, History, General, University of Wisconsin - Madison, 1994
Lipker, Roger	Senior Instructor	Bachelors, Colorado State University Masters, University of Colorado
Little, Ann	Professor	Bachelors, History, General, Bryn Mawr, 1990 Masters, American (United States) History, University of Pennsylvania, 1991 Doctorate, American (United States) History, University of Pennsylvania, 1996
Liu, Jiangguo	Professor	Bachelors, Mathematics, Wuhan University, 1983 Masters, Mathematics, University of South Carolina, 1999 Professional, Mathematics, University of South Carolina, 2001
Livingston, Marie Leigh	Instructor	Bachelors, Utah State Univ, 1977 Masters, Un iv. of Arizona, 1979 Doctorate, Colorado State Univ, 1982
Lockwood, Dale	Assistant Professor	
Lockwood, James	Assistant Professor	Bachelors, David Lipscomb University, 2004 Doctorate, University of South Carolinia, 2013
Lodha, Neha	Assistant Professor	Bachelors, Electrical, Electronic and Communications Engin. Tech./Tec, DA-IICT, India, 2005 Doctorate, Exercise Sciences/Physiology and Movement Studies, University of Florida, 2011
Long, Marilee	Professor	Bachelors, Journalism, COLO STATE UNIV, 1981 Masters, Journalism and Mass Communication, Other, U OF WISCONSIN, 1986 Doctorate, Mass Communications, U OF WISCONSIN, 1991
Long, Ziyu	Assistant Professor	Masters, Organizational Behavior Studies, Purdue University, 2011 Doctorate, Organizational Behavior Studies, Purdue, 2015 Bachelors, Communication University of China
Loomis, Jayne	Instructor	Bachelors, Psychology, General, California State University - Northridge, 1975 Masters, Education, General, Colorado State University, 1982
Loomis, John	Professor	Bachelors, Economics, General, CAL ST UNIV NRG, 1975 Masters, Economics, General, CAL ST UNIV NRG, 1976 Doctorate, Economics, General, COLO STATE UNIV, 1983
Lopes, Tobin	Assistant Professor	Bachelors, Mathematics, Claremont Mckenna College, 1993 Masters, Education, General, Colorado State University, 2002 Doctorate, Education Administration and Supervision, General, Penn. State University, 2006

Lopez Ramirez, Maria del Carmen	Senior Instructor	Bachelors, Colorado State University, 2009 Masters, Colorado State University, 2012
Lopez-Cabrales, Maria	Professor	Bachelors, Spanish Language and Literature, Universidad de Cadiz, 1990 Masters, Spanish Language and Literature, University of Pittsburgh, 1993 Certificate, Latin American Studies, University of Pittsburgh, 1995 Doctorate, Spanish Language and Literature, University of Pittsburgh, 1996
Luft, Gregory	Professor	Bachelors, Journalism, COLO STATE UNIV, 1980 Masters, Broadcast Journalism, AMERICAN UNIV, 1984
Luna, Jessie	Assistant Professor	
Lundberg, Thomas	Professor	Bachelors, Painting, U OF IOWA, 1975 Masters, Clothing/ Apparel and Textile Studies, INDIANA UNIV, 1979
Luo, Jie	Associate Professor	Bachelors, Fudan University, 1995 Masters, Fudan University, 1998 Doctorate, Univ of Connecticut, 2002
Luong, Gloria	Assistant Professor	Bachelors, Univeristy of California, Riverside, 2006 Masters, Univeristy of California, Irvine, 2008 Doctorate, University of California, Irvine, 2012
Lynham, Susan	Associate Professor	Bachelors, Business/ Managerial Economics, University of Stellenbosch, SA, 1980 Masters, Organizational Behavior Studies, University of Minnesota, 1992 Masters, Education, Other, Univ of Minnesota, 1997 Doctorate, Education, Other, University of Minnesota, 2000
Lyons, Michael	Assistant Professor	Bachelors, Marquette University, 1984 Masters, Marquette University, 1987 Doctorate, Purdue University, 1992
Ma, Kaka	Assistant Professor	Bachelors, University of Science and Technology, 2006 Doctorate, UC Davis, 2010
Maaland, Kristina	Instructor	Masters, Colorado State University, 2007
MacDonald, Bradley	Professor	Bachelors, Political Science, General, UNC CHAPEL HILL, 1981 Masters, Political Science and Government, Other, UCLA, 1987 Doctorate, Political Science and Government, Other, UCLA, 1991
Macdonald, John	Associate Professor	Bachelors, Iowa State University, 1999 Bachelors, Iowa State University, 1999 Doctorate, University of Maryland, 2008
MacFarland, Kerry	Assistant Professor	Bachelors, Chemistry, General, Williams College, 1991 Doctorate, Biochemistry, University of Wisconsin Madison, 1996
Maciejewski, Anthony	Professor	Bachelors, OHIO STATE UNIV, 1982 Masters, OHIO STATE UNIV, 1984 Doctorate, OHIO STATE UNIV, 1987
Macilroy, Kelsea	Instructor	Masters, Colorado State University, 2014
MacKenzie, Matthew	Professor	Bachelors, Philosophy, Fort Lewis College, 1995 Masters, Philosophy, University of Hawaii Manoa, 1998 Doctorate, Philosophy, University of Hawaii, 2003

MacNeill, Amy	Associate Professor	Bachelors, Chemistry, General, University of Florida, 1994 Professional, Veterinary Medicine (D.V.M.), University of Florida, 1998 Doctorate, Virology, University of Florida, 2005
MacPhail, Catriona	Professor	Bachelors, Biology, General, Rice University, 1992 Professional, Veterinary Medicine (D.V.M.), Texas A M University, 1996 Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 2007
MacPhee, David	Professor	Bachelors, Psychology, General, COLL OF IDAHO, 1976 Masters, Developmental and Child Psychology, PURDUE UNIV, 1978 Doctorate, Developmental and Child Psychology, U OF N CAROLINA, 1984
MacTaggart, Ryan	Instructor	Bachelors, History Teacher Education, Colorado State University, 2012 Masters, Health Professions and Related Sciences, Other, University of California, PA, 2013
Madl, James	Associate Professor	Bachelors, Biology, General, LK SUPERIOR ST, 1975 Masters, Genetics, Plant and Animal, U OF MINNESOTA, 1979 Doctorate, University of Minnesota, 1983 Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), U OF MINNESOTA, 1987
Magee, Christianne	Assistant Professor	Bachelors, Worcester Polytechnic Institute, 2000 Doctorate, Tufts University Cummings School of Veterinary Medicine, 2004 Masters, Colorado State University, 2007 Doctorate, Colorado State University, 2010
Magloughlin, Jerry	Associate Professor	Bachelors, Geology, University of Minnesota, Duluth, 1983 Masters, Geology, University of Washington, 1986 Doctorate, Geology, University of Minnesota, 1993
Magunda, Forgivemore	Assistant Professor	Doctorate, Washington State University, 2016
Magzamen, Sheryl	Associate Professor	Bachelors, Cornell University, 1996 Masters, Emory University, Rollins School of Public Health, 1997 Doctorate, University of California, Berkely, School of Public Health, 2007
Mahmoud, Hussam	Associate Professor	Bachelors, University of Minnesota, 2001 Masters, University of Minnesota, 2003 Doctorate, University of Illinois, Urbana, 2011
Mahoney, S	Assistant Professor	Bachelors, Social Work, CREIGHTON UNIV, 1983 Masters, Sociology, COLO STATE UNIV, 1995 Doctorate, Colorado State University, 2006
Makela, Carole	Professor	Bachelors, Home Economics Teacher Education (Vocational), U OF WISCONSIN, 1964 Masters, Consumer Economics and Science, COLO STATE UNIV, 1968 Doctorate, Educational Evaluation and Research, UNIV OF N COLO, 1977

Malaiya, Yashwant	Professor	Masters, Physics, General, SAUGOR U, 1971 Masters, Electrical and Electronic Engin.-Related Technol./Technician, BITS INDIA, 1974 Doctorate, Electrical, Electronics and Communication Engin., UTAH STATE UNIV, 1978
Malander, Layla	Instructor	Bachelors, English Language and Literature, General, Haifa University (Israel), 1982 Masters, Pastoral Counseling and Specialized Ministries, Southern Baptist Theological Seminary, 1997
Malcolm, Matthew	Associate Professor	Bachelors, Occupational Therapy, State University of New York, 1996 Doctorate, University of Florida, 2003
Malin, Stephanie	Associate Professor	Bachelors, Truman State University, 2004 Masters, Utah State University, 2007 Doctorate, Utah State University, 2011
Maline, Mathew	Instructor	Bachelors, University of Nebraska, 2003 Masters, Colorado State University, 2005
Malinin, Laura	Associate Professor	Bachelors, Architecture, Rice University, 1990 Masters, Educational/Instructional Media Tech./Technician, University of Texas Brownsville, 2005 Doctorate, Architecture and Related Programs, Other, University of Colorado, 2013
Mallette, Dawn	Assistant Professor	Doctorate, Philosophy, Colorado State University, 2000
Mallette, Paul	Associate Professor	Bachelors, Tech. Teacher Education/Industrial Arts Teacher Education, FT HAYS STATE, 1980 Masters, Business Administration and Management, General, FT HAYS STATE, 1984 Doctorate, Business Management and Administrative Services, Other, U OF NEBRASKA, 1988
Maloney, Eric	Professor	Bachelors, Physics, General, Univ of ILL, 1994 Doctorate, Atmospheric Sciences and Meteorology, Univ of WA, 2000
Mama, Khursheed	Professor	Professional, Veterinary Medicine (D.V.M.), Washington State University, 1989
Manfredi, Zo	Instructor	Masters, Arizona State University, 2010 Doctorate, University of North Texas, 2015 Bachelors, University of Puget Sound
Manfredo, Michael	Professor	Bachelors, Anthropology, PENN STATE UNIV, 1973 Masters, Parks, Recreation and Leisure Studies, PENN STATE UNIV, 1976 Doctorate, Parks, Recreation, Leisure and Fitness Studies, Other, COLO STATE UNIV, 1979
Manning, Dale	Associate Professor	Bachelors, Business Administration and Management, General, UNC-CH, 2005 Bachelors, Environmental Science/Studies, UNC-CH, 2005 Doctorate, Agricultural Economics, UC - Davis, 2013

Manning, Kenneth	Professor	Bachelors, Business Administration and Management, General, Colorado State University, 1986 Masters, Business Marketing and Marketing Management, University of Colorado, Boulder, 1989 Doctorate, Business Marketing and Marketing Management, University of South Carolina, 1994
Manning, Steven	Instructor	
Mansfield, Michael	Instructor	Bachelors, Auburn University, 1986 Masters, University of South Alabama, 1998 Doctorate, University of Alabama, 2005
Mao, KuoRay	Assistant Professor	Bachelors, California State University-Fullerton, 2004 Masters, University of Kansas, 2009 Doctorate, University of Kansas, 2015
Marchant, Tasha	Instructor	
Marchese, Anthony	Professor	Bachelors, Rensselaer Polytechnic Inst, 1989 Masters, Rensselaer Polytechnic Inst, 1992 Doctorate, Princeton University, 1996
Marconi, Mario	Professor	Masters, Electrical, Electronics and Communication Engin., UNIV DE BUENOS, 1980 Doctorate, Electrical, Electronics and Communication Engin., UNIV DE BUENOS, 1985
Maresh, Ryan	Assistant Professor	Bachelors, U.S. Air Force Academy Doctorate, Colorado State University Masters, Colorado State Unviersity
Margolf, Diane	Professor	Bachelors, History, General, POMONA COLLEGE, 1982 Masters, History, General, YALE UNIV, 1985 Doctorate, History, General, YALE UNIV, 1990
Marin, Melanie	Instructor	
Markman, Gideon	Professor	Bachelors, University of Colorado, 1994 Doctorate, University of Colorado, 1999
Markus, Steven	Assistant Professor	Doctorate, Microbiology/ Bacteriology, New York University, 2003
Marolf, Angela	Associate Professor	Bachelors, Biology, General, University of Colorado, 1996 Professional, Veterinary Medicine (D.V.M.), Colorado State University, 2002
Marques, Luciana	Instructor	Doctorate, University of Colorado Boulder, 2017
Marsh, Rebecca	Instructor	Bachelors, Communications, General, Texas Lutheran University, 1991 Masters, University of Texas at San Antonio, 2008
Martell, Kristen	Instructor	Bachelors, Equestrian/ Equine Studies, Horse Management and Training, Colorado State University, 2013 Masters, Colorado State University, 2015
Martey, Rosa	Professor	Associates, Communications, General, Y, 2005
Martin Quijada, Carmen	Instructor	Bachelors, Universidad Finis Terrae, 2011 Masters, Ohio University, 2013 Doctorate, Purdue University, 2018

Martin, Jennifer	Assistant Professor	Bachelors, Animal Sciences, General, Texas Tech University, 2007 Masters, Animal Sciences, General, Texas Tech University, 2010 Doctorate, Texas Tech University, 2014
Martin, Kelly	Professor	Bachelors, Gonzaga Univ., 1999 Masters, Creighton Univ., 2002 Doctorate, Washington State Univ., 2007
Martin, Michael	Associate Professor	Bachelors, University of Illinois at Urbana/Champaign, 2005 Masters, University of Illinois at Urbana/Champaign, 2007 Doctorate, University of Missouri, 2013
Martin, William	Instructor	Bachelors, University of Colorado
Martinez, Doreen	Assistant Professor	Bachelors, Psychology, General, Mansfield University, 1987 Masters, Exercise Sciences/Physiology and Movement Studies, West Virginia University, 1988 Doctorate, Sociology, Syracuse University, 2003
Martonis, Amy	Instructor	Bachelors, Social Work, Asbury University, 1999 Masters, Social Work, University of Kentucky, 2005
Marvel, Sarah	Instructor	
Marvin, William	Associate Professor	Bachelors, University of Denver, 1985 Doctorate, Univ. of Minnesota, 1998
Marx, Nicholas	Associate Professor	Bachelors, Communications, Other, University of Wisconsin Mad, 2003 Masters, Communications, Other, University of Texas at Austin, 2006 Doctorate, Communications, Other, University of Wisconsin-Madison, 2012
Masciarelli, Kyla	Instructor	Bachelors, Elementary Teacher Education, College of Charleston, 2007 Masters, Teaching English as a Second Language/Foreign Language, Colorado State University, 2013
Masden, Dana	Senior Instructor	Bachelors, Miami University, 2005 Masters, Colorado State University, 2008
Mason, Gary	Associate Professor	Bachelors, Colorado State University, 1980 Professional, Veterinary Medicine (D.V.M.), Texas AM University, 1988 Masters, Texas AM University, 1989 Doctorate, University of Tennessee-Knoxville, 1999
Mathiason, Candace	Associate Professor	Bachelors, Microbiology/Bacteriology, University of Wyoming, 1983 Masters, Parasitology, University of Wyoming, 1987 Doctorate, Pathology, Human and Animal, Colorado State Univeristy, 2010
Matthews, David	Instructor	Bachelors, Computer Science, University of Nebraska, 1979 Masters, Computer Science, Colorado State University, 2013
Mayer, Adam	Assistant Professor	
Maynard, Michael	Professor	Bachelors, College of William and Mary, 1993 Masters, University of Denver, 2002 Doctorate, University of Connecticut, 2007

Mayo, Christie	Assistant Professor	Bachelors, Pre-Veterinary Studies, Clemson University, 2003 Professional, Veterinary Medicine (D.V.M.), Univeristy of Georgia, 2006 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 2010 Doctorate, Pathology, Human and Animal, University of California, Davis, 2012
Mazurana, Amber	Instructor	Bachelors, Butler University, 1999
McConnell, Ross	Associate Professor	Doctorate, Computer Science, University of Colorado, 1994
McCue, Patrick	Professor	Bachelors, Biology, General, S U NY POTSDAM, 1978 Professional, Veterinary Medicine (D.V.M.), U CA, DAVIS, 1986 Doctorate, Pathology, Human and Animal, U CA, DAVIS, 1993
McCullagh, Martin	Assistant Professor	Bachelors, Emory University, 2005 Doctorate, Northwestern University, 2010
McFarlane, Zachary	Instructor	Bachelors, University of Northern Colorado Masters, Colorado State University
McGilvray, Kirk	Assistant Professor	
McGoldrick, Peter	Instructor	Masters, East Asian Studies, Cornell University, 1996
McGrath, Daniel	Assistant Professor	Bachelors, Geology, Bowdoin College, 2006 Masters, Geography, University of Colorado Boulder, 2009 Doctorate, Geography, University of Colorado Boulder, 2013
McGrath, Stephanie	Assistant Professor	Professional, Michigan State University, 2006
McGrew, Ashley	Assistant Professor	Bachelors, Biological Sciences/Life Sciences, Other, University of Northern Colorado, 2004 Doctorate, Pathology, Human and Animal, Colorado State University, 2011 Doctorate, Veterinary Medicine (D.V.M.), Colorado State University, 2013
McGuire, John	Assistant Professor	Masters, Florida State University, 2001
McHale, Melissa	Associate Professor	Bachelors, Ecology, Rutgers University, 1998 Doctorate, Ecology, Colorado State Uniersity, 2007
McHugh, Tommibeth	Instructor	Bachelors, Individual and Family Development Studies, General, Colorado State University, 1989 Masters, Education, General, Mills College, 1998
McIlwraith, C	Professor	Bachelors, Veterinary Medicine (D.V.M.), MASSEY UNIV, 1971 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), PURDUE UNIV, 1977 Doctorate, Biological Sciences/Life Sciences, Other, PURDUE UNIV, 1979
McIvor, David	Associate Professor	Bachelors, Political Science, General, Western Washington University, 2002 Masters, Political Science and Government, Other, Duke University, 2006 Doctorate, Political Science and Government, Other, Duke University, 2010
McKay, John	Professor	Bachelors, Biology, General, SUNY Albany, 1995 Doctorate, Ecology, University of Montana, 2001

McKee, Patrick	Professor	Bachelors, Philosophy, GONZAGA UNIV, 1961 Masters, Philosophy, U OF MARYLAND, 1964 Doctorate, Philosophy, U OF MARYLAND, 1972
McKenna, Kelly	Assistant Professor	Bachelors, Communications, General, Colorado State University, 1996 Masters, Human Resources Management, Other, Colorado State University, 2012 Doctorate, Educational/ Instructional Media Tech./Technician, University of Northern Colorado, 2016
McKita, Richard	Senior Instructor	Bachelors, Philosophy, West Virginia Wesleyan College, 1977 Masters, Philosophy, Duquesne University, 1987
McLaughlin, Kenneth	Professor	Doctorate, Mathematics, New York University, 1994 Bachelors, Mathematics, New York University
McLean, Jennifer	Associate Professor	Bachelors, Biology, General, Concordia College, Moorhead, MN, 1996 Doctorate, Microbiology/ Bacteriology, Colorado State University, 2003
McLemore, Holly	Instructor	Bachelors, Speech-Language Pathology, Metropolitan State College of Denver, 2006 Masters, Education Administration and Supervision, General, Colorado State University, 2008
McNally, Andrew	Assistant Professor	Bachelors, University of Cambridge, 2003 Masters, University of Cambridge, 2003 Doctorate, University of Cambridge, 2011 Masters, University of Cambridge, 2011
McNeil, Michael	Professor	Bachelors, Chemistry, General, ALLEGHENY COLL, 1969 Masters, Chemistry, Other, MA INST OF TECH, 1972 Doctorate, Chemistry, General, U OF COLORADO, 1984
McShane, Kathleen	Professor	Bachelors, Philosophy, Northwestern University, 1993 Doctorate, Philosophy, University of Michigan, 2002
Mead, Angela	Instructor	Bachelors, Social Work, Colorado State University, 1984 Masters, Social Work, University of Denver, 1990
Means, Morgann	Instructor	Bachelors, Colorado Mesa University, 2010 Masters, Colorado State University, 2013
Medford, June	Professor	Bachelors, University of Maryland, 1980 Doctorate, Biology, General, Yale University, 1986
Mehany, Mohammed	Assistant Professor	Bachelors, Construction and Building Finishers and Managers, Other, Arab Academy for Science and Technology, Egypt, 2007 Masters, Colorado State University, 2009 Doctorate, Civil Engin., Other, Colorado State Univeristy, 2014
Meier, Zachariah	Instructor	Bachelors, Mathematics, Colorado State University, 2006

Melby, Christopher	Professor	Bachelors, Physical Education Teaching and Coaching, COLO STATE UNIV, 1973 Masters, Nutritional Sciences, University Northern Colorado, 1976 Doctorate, Foods and Nutrition Science, LOMA LINDA UNIV, 1982 Masters, Foods and Nutrition Science, LOMA LINDA UNIV, 1982
Melhem, Lisa	Instructor	Bachelors, Business Administration and Management, General, University of Florida: Gainesville, 2006 Masters, Business Administration and Management, Other, Colorado State Universtiy, 2010
Meltz, Jackie	Instructor	
Melzer, Susan	Assistant Professor	Bachelors, Colorado State University, 2002 Masters, Univ. of CO, Boulder, 2004 Doctorate, Colorado State University, 2009
Memoli, Amanda	Instructor	Bachelors, Penn State University, 2007 Masters, Colorado State University, 2015
Menoni, Carmen	Professor	Bachelors, Physics, General, UNIV OF ROSARIO, 1978 Doctorate, Physics, General, COLO STATE UNIV, 1987
Mentele, Mallory	Instructor	Bachelors, Chemistry, General, Gonzaga University, 2005 Masters, Chemistry, Other, University of California Irvine, 2008 Doctorate, Analytical Chemistry, Colorado State University, 2012
Mercurio, Zachary	Instructor	Bachelors, Educational/ Instructional Media Design, James Madison University, 2006 Masters, Higher Education Administration, Colorado State University, 2006
Merline, Anne	Senior Instructor	Bachelors, Elementary, Middle and Secondary Education Administration, New England College, 1985 Masters, Liberal Arts and Sciences/ Liberal Studies, Boston University, 1990 Doctorate, Higher Education Administration, Boston University, 1998
Merriman, Leslie	Instructor	
Merritt, Paul	Instructor	
Metcalf, Jessica	Associate Professor	Doctorate, University of Colorado, 2007
Meyer, Andrew	Instructor	
Meyer, Andrew	Instructor	Bachelors, University of Iowa, 1976 Masters, University of Iowa, 1978
Meyer, Carolyn	Assistant Professor	Bachelors, University of Kentucky College of Agriculture Doctorate, University of Kentucky College of Agriculture
Meyer, Cathleen	Instructor	Masters, University of Washington, 1984
Meyer, Linda	Associate Professor	Bachelors, History, General, Colorado State University, 1995 Masters, Colorado State University, 2000
Meyer, Mary	Professor	Bachelors, Physics, General, University of Wyoming, 1983 Masters, Mathematics, University of Wyoming, 1986 Doctorate, Mathematical Statistics, University of Michigan, 1996
Meyers-Bass, Elizabeth	Senior Instructor	Masters, Communications, General, Colorado State University, 2003

Middlesworth, Kristin	Instructor	Masters, Colorado State University, 2015
Mies, Kassy	Assistant Professor	Bachelors, Chemistry, General, Randoph Macon College, 2002 Doctorate, Chemistry, General, Duke University, 2007
Miles, Brenda	Instructor	Masters, Social Work, University of Tennessee, 1977
Milholland, Eric	Assistant Professor	Bachelors, Colorado State University Bachelors, Colorado State University Masters, Colorado State University
Milholland, Michelle	Instructor	Bachelors, Univeristy of Wisconsin Masters, Colorado State University
Miller, Carrie	Instructor	
Miller, Diane	Instructor	Bachelors, Montana State University, 1975 Masters, Montana State University, 1986
Miller, Howard	Assistant Professor	Bachelors, Eckerd College, 2005 Masters, University of Pittsburgh, 2011 Doctorate, University of Pittsburgh, 2015
Miller, Jeffrey	Associate Professor	Bachelors, General Studies, University of Kansas, 1983 Associates, Culinary Arts/Chef Training, New England Culinary Institute, 1986 Masters, Hotel/ Motel and Restaurant Management, Kansas State University, 1995 Doctorate, Education, General, Colorado State University, 2006
Miller, Kiley	Instructor	Masters, Colorado State University, 2017
Miller, Margaret	Instructor	Bachelors, Indiana University, 1978 Masters, University of Wisconsin, 1985
Miller, Nancy	Professor	Bachelors, Fashion Merchandising, University of Nebraska-Lincoln, 1976 Masters, Fashion Design and Illustration, University of Nebraska-Lincoln, 1979 Doctorate, Fashion Merchandising, University of Nebraska-Lincoln, 1994
Miller, Patrick	Instructor	Bachelors, Agronomy and Crop Science, Purdue University, 1986 Masters, Agronomy and Crop Science, Texas A M University, 1989 Doctorate, Plant Sciences, Other, Colorado State University, 1998
Minas, Ioannis	Assistant Professor	Bachelors, Agriculture/ Agricultural Sciences, Other, Aristotle University Thessaloniki, 2007 Masters, Aristotle University Thessaloniki, 2010 Doctorate, Horticulture Science, Aristotle University Thessaloniki, 2014
Miranda, Jeanne	Professor	Bachelors, Mathematics, UNIV OF TEXAS, 1974 Doctorate, Mathematics, MIT, 1980
Mitchell, John	Associate Professor	Bachelors, Weber State University, 2001 Masters, Indiana University, 2004 Doctorate, Indiana University, 2006
Mitchell, Laurie-Ann	Instructor	Bachelors, Colorado State University, 1997 Masters, Colorado State University, 1998
Mitchell, Todd	Assistant Professor	Bachelors, Oberlin College, 1996 Masters, Colorado State University, 2002
Miyake, Garret	Associate Professor	Bachelors, Chemistry, General, Pacific University, 2005 Doctorate, Inorganic Chemistry, Colorado State University, 2011

Mohr, Gina	Associate Professor	Doctorate, University of Colorado, 2009
Monnet, Eric	Professor	Professional, Veterinary Medicine (D.V.M.), Ecoleveterinouire, Maisons, France, 1988 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 1996 Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 1997
Monnier, Patrick	Instructor	Bachelors, Psychology, General, University of California, Santa Barbara, 1994 Masters, Industrial and Organizational Psychology, Wright State University, 1996 Doctorate, Psychology, Other, Wright State University, 1999
Montgomery Moore, Frances	Instructor	Masters, Colorado State University, 2015
Montgomery, Taiowa	Associate Professor	Bachelors, Oregon State University, 2002 Doctorate, Oregon State University, 2008
Mooney, Daniel	Assistant Professor	Bachelors, Agricultural Economics, Michigan State University, 2001 Masters, Agricultural Economics, University of Wisconsin-Madison, 2007 Doctorate, University of Wisconsin-Madison, 2017
Mooney, Kristin	Instructor	Bachelors, Psychology, General, Stanford University, 1988 Masters, Social Work, University of DEnver, 1991
Mooney, Michael	Assistant Professor	Bachelors, Massachusetts Institute of Technology, 2008 Masters, Princeton, 2010 Doctorate, Princeton University, 2014
Moore, A	Assistant Professor	Bachelors, Animal Sciences, General, Brigham Young University, 2000 Professional, Veterinary Medicine (D.V.M.), Purdue University, 2006
Moore, Emily	Associate Professor	Bachelors, Art History, Criticism and Conservation, Swarthmore College, 2001 Masters, English Creative Writing, West Virginia University, 2004 Masters, Art History, Criticism and Conservation, University of California, Berkeley, 2007 Doctorate, Art History, Criticism and Conservation, University of California, Berkeley, 2012
Moore, Janice	Professor	Bachelors, Biology, General, RICE UNIV, 1970 Masters, Zoology, General, UNIV OF TEXAS, 1974 Doctorate, Biology, General, UNIV OF NM, 1981
Moore, John	Professor	Bachelors, Zoology, General, University of California-Santa Barbara, 1978 Masters, Zoology, General, Michigan State University, 1981 Doctorate, Zoology, General, Colorado State University, 1986 Masters, Mathematical Statistics, Colorado State University, 1996
Morasch, Nathalie	Instructor	Bachelors, Lancaster University, 2002 Masters, University of Illinois, 2004 Doctorate, University of Illinois, 2011
Moreno Cubillos, Laura	Assistant Professor	Doctorate, Engin., Other, University of Texas at Dallas, 2016

Moreno, Julie	Assistant Professor	Bachelors, Texas AM, College Station, 2004 Doctorate, Cell and Molecular Biology, Other, Colorado State University, 2009
Morgan, Emily	Assistant Professor	Bachelors, Denison University, 2000 Masters, University of North Carolina, Greensboro, 2007
Morgan, Lisa	Instructor	Bachelors, Middlebury College, 1981
Morrison, Ryan	Assistant Professor	Bachelors, WA State university, 2005 Masters, WA State university, 2006 Doctorate, University of NM, 2014
Morrow, Sean	Instructor	Bachelors, Texas Tech University, 2017 Masters, Texas Tech University, 2019
Morse, Jennifer	Senior Instructor	Bachelors, Bowdoin College, 2002 Masters, University of Colorado Boulder, 2007 Doctorate, University of Illinois Chicago, 2013
Moseman, Eleanor	Associate Professor	Bachelors, German Language and Literature, University of North Carolina at Chapel Hill, 1995 Masters, Art History, Criticism and Conservation, Bryn Mawr College, 2000 Doctorate, Art History, Criticism and Conservation, Bryn Mawr College, 2006
Moss, Steven	Instructor	Bachelors, Liberal Arts and Sciences/ Liberal Studies, State University of New York Buffalo, 1973 Masters, Social Work, University of Denver, 1978
Most, David	Associate Professor	Masters, Biostatistics, UNC-Chapel Hill, 1993 Masters, Sociology, Johns Hopkins University, 1994 Doctorate, Educational Statistics and Research Methods, UCLA, 2002
Mueller, Jennifer	Professor	Bachelors, Mathematics, University Nebraska - Lincoln, 1991 Masters, Mathematics, University Nebraska - Lincoln, 1993 Doctorate, Mathematics, University of Nebraska - Lincoln, 1997
Mueller, Rachel	Professor	Bachelors, Biology, General, University of California Berkeley, 1995 Doctorate, Biology, General, University of California Berkeley, 2005
Mumford, Troy	Associate Professor	Bachelors, Brigham Young University, 1996 Doctorate, Purdue University, 2002
Mumme, Stephen	Professor	Bachelors, Political Science, General, ARIZONA ST U, 1973 Masters, Political Science, General, ARIZONA ST U, 1975 Doctorate, Political Science, General, U OF ARIZONA, 1981
Munoz Amatriain, Maria	Assistant Professor	Bachelors, University of Salamanca, 2002 Doctorate, University of Zaragosa, 2007
Munoz Gutierrez, Juan	Assistant Professor	Doctorate, Washington Sate University, 2015
Munoz, Susana	Associate Professor	Bachelors, Political Science, General, Iowa State University, 1995 Masters, Higher Education Administration, Colorado State University, 2000 Doctorate, Higher Education Administration, Iowa State, 2008
Munsky, Brian	Assistant Professor	Bachelors, Penn State, 2000 Masters, Penn State University, 2002 Doctorate, UC Santa Barbara, 2008
Murillo, Cynthia	Instructor	Doctorate, University of New Mexico, 2008
Murray, Adam	Instructor	
Murray, Erin	Instructor	

Mushinski, David	Professor	Bachelors, The College of William and Mary, 1979 Professional, University of Virginia School of law, 1983 Masters, University of Wisconsin, Madison, 1994 Doctorate, University of Wisconsin, Madison, 1996
Myers, Brent	Assistant Professor	Bachelors, University of Oklahoma, 2004 Doctorate, University of Oklahoma Health Science Center, 2010
Myers, Emma	Instructor	Bachelors, Individual and Family Development Studies, General, Colorado State University, 2012 Masters, Counseling Psychology, Alaska Pacific University, 2012 Doctorate, Psychology, Other, Institute for Advanced Study of Human Sexuality, 2015
Myles, Matthew	Instructor	Bachelors, Psychology, General, University of Boulder, 1998 Masters, Social Work, Colorado State University, 2006
Myrick, Christopher	Professor	Bachelors, Natural Resources Management and Policy, Universty of California Berkeley, 1992 Masters, Ecology, University of California Davis, 1996 Doctorate, Ecology, University of California Davis, 1998
Nachappa, Punya	Assistant Professor	Doctorate, Kansas State University, 2008
Nagel, Linda	Professor	Bachelors, Biology, General, South Dakota State University, 1994 Masters, Natural Resources Conservation, General, Washington State University, 1997 Doctorate, Forestry, General, University of Montana, 2000
Nagy, Kelsi	Instructor	Bachelors, English Language and Literature, General, Colorado State University, 2000 Masters, Philosophy, Colorado State University, 2005 Masters, Caisius College, 2013
Nair, Sharmini	Instructor	Bachelors, Law and Legal Studies, Other, University of London, United Kingdom, 1997 Masters, Law and Legal Studies, Other, Malaya University, Malaysia, 2002
Nalam, Vamsi	Assistant Professor	Masters, Oregon State University, 2004 Doctorate, University of North Texas, 2012
Narayanan Nair, Mahesh	Assistant Professor	Bachelors, Kerala Agricultural University, 2009 Masters, University of Kentucky, 2012 Doctorate, University of Kentucky, 2017
Naug, Dhruba	Professor	Bachelors, Zoology, General, University of Delhi, 1990 Masters, Zoology, General, University of Delhi, 1992 Doctorate, Ecology, Indian Institute of Science, 1999
Neilson, James	Associate Professor	Bachelors, Lehigh University, 2006 Doctorate, University of California - Santa Barbara, 2011
Nekrasova Beker, Tatiana	Assistant Professor	Doctorate, Northern Arizona University, 2011
Nelson, Bradley	Assistant Professor	
Nelson, Christina	Instructor	
Nelson, Peter	Associate Professor	Bachelors, Princeton University, 2003 Doctorate, University of California, Berkeley, 2010

Nelson-Ceschin, Tracy	Professor	Bachelors, Athletic Training and Sports Medicine, Colorado State University, 1991 Masters, Public Health Education and Promotion, University of Northern Colorado - Greeley, 1993 Doctorate, Physiological Psychology/ Psychobiology, Penn State, 1998
Neophytou, Andreas	Assistant Professor	Bachelors, Neuroscience, Colorado College, 2006 Masters, Public Health, General, Cyprus International Institute for the Environment and Public Health, 2008 Doctorate, Epidemiology, Harvard T.H. Chan School of Public Health, 2013
Nett, Torrance	Professor	Bachelors, Animal Sciences, General, MONTANA STATE U, 1968 Doctorate, Physiology, Human and Animal, WASHINGTON ST U, 1972
Neuwald, Jennifer	Assistant Professor	Bachelors, Zoology, Other, Washington University, 1995
Newman, Jennifer	Instructor	
Newman, Steven	Professor	Bachelors, Parks, Recreation and Leisure Facilities Management, MONTANA STATE U, 1977 Masters, Horticulture Science, U NEBRAKA-LINC, 1981 Doctorate, Horticulture Science, TEXAS AM, 1985
Nichols, Kimberly	Assistant Professor	Associates, Liberal Art and Sciences, General Studies and Humanities, West Valley College, 1992 Associates, Social Sciences, General, West Valley College, 1992 Bachelors, Anthropology, Univ of CA at Santa Cruz, 1995 Masters, Anthropology, Univ of CO at Boulder, 1998
Nickoloff, Jac	Professor	Bachelors, Biochemistry, University of California, Santa Barbara, 1978 Doctorate, Biochemistry, University of Colorado, 1984
Nielsen, Aaron	Assistant Professor	Bachelors, Electrical and Electronic Engin.-Related Technol./ Technician, Colorado State University, 2007 Masters, Electrical and Electronic Engin.-Related Technol./ Technician, University of Colorado - Boulder, 2008 Masters, Applied Mathematics, General, University of Colorado - Denver, 2012 Doctorate, Applied Mathematics, General, University of Colorado, Denver, 2018
Niemann, Jeffrey	Professor	Bachelors, University of Colorado, 1993 Masters, Massachusetts Institute of Technology, 1997 Doctorate, Massachusetts Institute of Technology, 2001
Niemiec, Rebecca	Assistant Professor	Bachelors, Biology, General, Dartmouth College, 2013 Doctorate, Environmental Science/ Studies, Stanford University, 2018

Niesent, Annetta	Instructor	Bachelors, Criminal Justice/Law Enforcement Administration, University of Phoenix, 2009 Masters, Educational Psychology, University of Phoenix, 2011
Nikdast, Mahdi	Assistant Professor	Bachelors, Azad University of Najafabad, Iran, 2009 Doctorate, Hong Kong university of Science Technology, 2014
Niles, Gene	Associate Professor	Bachelors, Agricultural Animal Nutrition, Oklahoma State University, 1972 Professional, Veterinary Medicine (D.V.M.), Oklahoma State Univeristy, 1975 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Oklahoma State University, 2002
Nishimura, Erin	Assistant Professor	Doctorate, Biology, General, UC Berke, 2010
Nishimura, Marc	Assistant Professor	
Nissen, Scott	Professor	Bachelors, Botany, General, University of Montana, 1975 Masters, Agronomy and Crop Science, University of Nevada, 1978 Doctorate, Agronomy and Crop Science, Montana State University, 1986
North, Kurtis	Senior Instructor	Bachelors, Colorado State University, 1999 Masters, Communications, General, Colorado State University, 2001 Certificate, ITC-International Training, 2004
Norton, Andrew	Professor	Doctorate, Entomology, University of California, Berkeley, 1995
Notaros, Branislav	Professor	Bachelors, University of Belgrade, 1988 Masters, University of Belgrade, 1992 Doctorate, University of Belgrade, 1995
Notaros, Olivera	Instructor	Bachelors, Univ of Belgrade, 1989 Masters, Univ of Belgrade, 1993
Nout-Lomas, Yvette	Associate Professor	Professional, Veterinary Medicine (D.V.M.), Utrecht University, 1999 Doctorate, Neuroscience, The Ohio State University, 2006
Nowacki, Jeffrey	Assistant Professor	Bachelors, University of New Mexico, 2005 Masters, University of New Mexico, 2009 Doctorate, University of New Mexico, 2014
Nowak, Kristine	Assistant Professor	Bachelors, Psychology, Other, Whitman College, 2007 Masters, Library Science, Other, University of Kentucky, 2011
Nyborg, Jennifer	Professor	Bachelors, Biochemistry, U OF CALIFORNIA, 1981 Doctorate, Biochemistry, U OF CALIFORNIA, 1986
O'Connor, Benjamin	Instructor	Bachelors, New Mexico State
O'Dell, Gretchen	Assistant Professor	Bachelors, Carleton College, 2000 Masters, University of Wisconsin, 2003 Doctorate, University of Wisconsin, 2009
O'Fallon, Elsbeth	Assistant Professor	
O'Leary, Joseph	Professor	Bachelors, Forest Management, University of New Brunswick, 1969 Masters, Forestry, General, Yale University, 1971 Doctorate, Natural Resources Conservation, General, University of Washington, 1974
O'Reilly, Michael	Instructor	Bachelors, Construction and Building Finishers and Managers, Other, Virginia Polytechnic Institute, 1979 Masters, Civil Engin., General, University of South Carolina, 1987

Ocheltree, Troy	Associate Professor	Bachelors, Biology, General, University of Minnesota-Morris, 1997 Masters, Forestry and Related Sciences, Other, University of Idaho, 2002 Doctorate, Agronomy and Crop Science, Kansas State University, 2012
Ode, Paul	Professor	Bachelors, Biology, General, Earlham College, 1986 Masters, Entomology, Univ Wisconsin - Madison, 1990 Doctorate, Entomology, Univ Wisconsin - Madison, 1994
Odonnell-Allen, Cindy	Professor	Bachelors, Univ. of Oklahoma, 1987 Masters, Univ. of Oklahoma, 1994 Doctorate, Univ. of Oklahoma, 1999
Oehlerts, Beth	Associate Professor	Bachelors, History, General, California State Univ, Northridge, 1979 Masters, Library Science/Librarianship, Clark Atlanta University, 1993
Ogle, Jennifer	Professor	Bachelors, Clothing/ Apparel and Textile Studies, Iowa State University, 1993 Masters, Family and Community Studies, University of Illinois-Champaign, 1995 Doctorate, Clothing/ Apparel and Textile Studies, Iowa State University-Ames, 1999
Ogle, Stephen	Professor	Bachelors, Emory University, Atlanta, GA, 1992 Masters, University of Wyoming, 1995 Doctorate, University of Wyoming, 2000
Olbina, Svetlana	Associate Professor	Bachelors, Architecture, University of Belgrade, 1990 Masters, Architecture, University of Belgrade, 2000 Doctorate, Construction/Building Tech./Technician, Virginia Tech, 2005
Oling, Lori	Assistant Professor	Bachelors, History, General, University of Colorado, Boulder, 1987 Masters, Library Science, Other, University of Illinois, Urbana-Champaign, 1990
Oliver, Graeme	Instructor	Bachelors, Royal Northern College of Music, 2002 Masters, Eastman School of Music, 2004
Olivier, Chad	Instructor	
Olivo-Delgado, Carlos	Assistant Professor	Bachelors, Chemistry, General, Universidad del Turabo, Gurabo, PR, 2001 Masters, Environmental Science/Studies, Universidad del Turabo, Gurabo, PR, 2003 Doctorate, Curriculum and Instruction, University of Puerto Rico, San Juan, PR, 2007
Olsen, Daniel	Professor	Bachelors, EAstern Oregon State College, 1987 Masters, Oregon State University, 1990 Doctorate, C.S.U, 1999
Olson, Kenneth	Professor	Bachelors, Zoology, General, N CAROLINA ST U, 1974 Masters, Microbiology/ Bacteriology, COLO STATE UNIV, 1984 Doctorate, Microbiology/ Bacteriology, COLO STATE UNIV, 1990
Olson, Kevin	Instructor	Masters, University of Colorado, 2017
Olver, Christine	Professor	Bachelors, University of North Carolina, Chapel Hill, 1983 Professional, Ohio State University, 1987 Doctorate, Ohio State University, 1994

Omur-Ozbek, Pinar	Associate Professor	Bachelors, Middle East Technical University, Ankara, Turkey, 2002 Masters, Virginia Tech, 2004 Doctorate, Virginia Tech, 2008
Ooi, Natalie	Assistant Professor	Bachelors, Parks, Recreation, Leisure and Fitness Studies, Other, Monash University, 2006 Bachelors, Business, General, Monash University, 2008 Doctorate, Business/ Managerial Economics, Monash University, Berwick VIC, 2013
Opler, Paul	Professor	Masters, Entomology, University of California State at San Jose, 1965 Doctorate, Entomology, Univsity of California, 1970
Opp, Jaclyn	Professor	Doctorate, University of Louisville, 2007
Oprea, Iuliana	Associate Professor	Professional, Mathematics, INLN-CNRS, Nice, France, 1994
Opsal, Tara	Associate Professor	Doctorate, University of Colorado, 2009 Bachelors, University of Colorado
Opsomer, Jean	Professor	Masters, Business Management and Administrative Services, Other, Katholieke Universteit Leuven, 1986 Masters, Business Administration and Management, Other, University of Chicago, 1987 Doctorate, Operations Management and Supervision, Cornell University, 1995
Ordway, Diane	Associate Professor	Bachelors, Colorado State University, 1992 Doctorate, Univ of London, School of Hygiene Trop Med, 2000
Orsi, Jared	Professor	Doctorate, History, General, University of Wisconsin, 1999
Orswell, Nicole	Instructor	Bachelors, English Teacher Education, University of Northern Colorado, 1993 Masters, Education, General, University of Phoenix, 1999
Ortega, Francisco	Assistant Professor	
Ortega, Lilyana	Assistant Professor	Bachelors, University of Illinois at Urbana, 2008 Masters, Michigan State University, 2010 Doctorate, University of Illinois at Urbana-Champaign, 2014
Orton, E Christopher	Professor	Professional, Veterinary Medicine (D.V.M.), WASHINGTON ST U, 1978 Masters, Physiology, Human and Animal, OHIO STATE UNIV, 1982 Doctorate, Physiology, Human and Animal, COLO STATE UNIV, 1989
Osborne, Erika	Associate Professor	Bachelors, Fine/Studio Arts, University of Utah, 2000 Masters, Fine/Studio Arts, University of New Mexico, 2005
Osborne, George	Instructor	Bachelors, History, General, University of Colorado, 1978 Masters, Education Administration and Supervision, General, Colorado State University, 2003
OToole, Timothy	Instructor	Bachelors, University of Vermont, 1982 Masters, Rensselaer Polytechnic Institute, 1987 Masters, Northwestern University, 1993
Owens, David	Instructor	Masters, University of Southern California, 1982 Masters, Naval Postgraduate School, 1984 Masters, University of Colorado-Colorado Springs, 1998

Ozbek, Mehmet	Associate Professor	Bachelors, Civil Engin., General, Middle East Technical University, 2002 Masters, Civil Engin., General, Virginia Tech, 2004 Doctorate, Civil Engin., General, Virginia Tech, 2007
Pabilonia, Kristy	Associate Professor	Bachelors, University of Colorado, 1996 Professional, Colorado State University, 2002 Doctorate, Microbiology/ Bacteriology, Colorado State University, 2012
Packer, Rebecca	Associate Professor	Bachelors, Animal Sciences, Other, Bucknell University, 1993 Masters, Zoology, Other, North Carolina State University, 1995 Professional, Veterinary Medicine (D.V.M.), North Carolina State University, 2001
Page, Rodney	Professor	Bachelors, Chemistry, General, University of Colorado, 1975 Masters, Physiology, Human and Animal, Georgetown University, 1977 Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1981
Pagliassotti, Michael	Professor	Bachelors, Biology, General, California State University, 1982 Masters, Exercise Sciences/Physiology and Movement Studies, California State University, 1983 Doctorate, Exercise Sciences/Physiology and Movement Studies, Univ of Southern California, 1988
Pallickara, Shrideep	Professor	Bachelors, Electrical, Electronics and Communication Engin., Bombay University, 1994 Masters, Computer Engin., Syracuse University, 1998 Doctorate, Computer Engin., Syracuse University, 2001
Palmer, Ross	Professor	Bachelors, Pre-Veterinary Studies, Kansas State University, 1982 Doctorate, Veterinary Medicine (D.V.M.), Kansas State University, 1984 Masters, Medical Physiology, University of Georgia, 1989
Paltrinieri, Lorella	Senior Instructor	Bachelors, English Language and Literature/Letters, Other, Italian School of Languages, 1991
Panetta, Holly	Instructor	Bachelors, Journalism, Colorado State University, 1997 Doctorate, Law (LL.B., J.D.), University of Denver, 2003
Pante, Michael	Associate Professor	Bachelors, Anthropology, Rutgers University, 2001 Masters, Agricultural Business and Management, General, Rutgers University, 2006 Doctorate, Anthropology, Rutgers University, 2010
Papadopoulos, Christos	Professor	Certificate, Engin. Science, Higher Technical Institute, Cyprus, 1983 Bachelors, Computer Science, Queens College (CUNY), 1989 Masters, Computer Science, Washington University of St. Louis, 1992 Doctorate, Computer Science, Washington University in St. Louis, 1999

Paradise, Makie	Senior Instructor	Masters, Colorado State University, 2000
Park, Juyeon	Associate Professor	Bachelors, Clothing/ Apparel and Textile Studies, Seoul National University, 1997 Masters, Clothing/ Apparel and Textile Studies, Iowa State University, 2000 Doctorate, Clothing/ Apparel and Textile Studies, University of Minnesota, 2008
Park, Young Eun	Assistant Professor	
Parker, Erica	Senior Instructor	Masters, Alaska University Masters, Stephens College
Parks, Elizabeth	Assistant Professor	Bachelors, Creighton University, 2003 Masters, Gallaudet Univrsity, 2006 Masters, Communications, General, University of Washington, 2013 Doctorate, Communications, General, University of Washington, Seattle, 2017
Partridge, Craig	Professor	Bachelors, History, General, Harvard University, 1983 Masters, Computer Science, Harvard University, 1988 Doctorate, Computer Science, Harvard University, 1992
Paschke, Mark	Professor	Bachelors, Forestry Sciences, University of Illinois at Urbana-Champaign, 1986 Masters, Forestry, General, University of Illinois at Urbana-Champaign, 1989 Doctorate, Biology, General, University of Illinois, 1993
Pasricha, Sudeep	Professor	Doctorate, UC Irvine, 2008
Patel, Amit	Assistant Professor	Doctorate, Computer Science, Duke University, 2010
Paton, Robert	Associate Professor	Masters, University of Cambridge, 2004 Doctorate, University of Cambridge, 2008
Patton, Carl	Instructor	Bachelors, Physics, General, MA INST OF TECH, 1963 Masters, Electrical, Electronics and Communication Engin., CA INST OF TECH, 1964 Doctorate, Electrical, Electronics and Communication Engin., CA INST OF TECH, 1967
Paulson, Joelle	Instructor	Masters, Colorado State University, 2014
Paustian, Keith	Professor	Bachelors, Forestry Sciences, Colorado State University, 1977 Masters, Forestry Sciences, Colorado State University, 1980 Doctorate, Ecology, SWEDISH UNIVERSITY OF AGRICULTURAL SCIENCES, 1987
Pawliuk, Christine	Assistant Professor	Bachelors, Economics, General, Simmons College, 2005 Masters, Library Science/Librarianship, University of Hawaii, 2007 Masters, Business Administration and Management, General, University of Hawaii, 2012
Payant, Nathan	Instructor	Bachelors, Music Teacher Education, Northern State University, 2003 Masters, Music Conducting, Colorado State University, 2009 Doctorate, Music Conducting, University of Colorado, Boulder, 2019

Payne, Sarah	Associate Professor	Bachelors, History, General, Nebraska Wesleyan University, 1998 Masters, American (United States) History, University of Wyoming, 2001 Doctorate, American (United States) History, University of New Mexico, 2010
Peairs, Frank	Professor	Bachelors, Biology, General, ALLEGHENY COLL, 1971 Masters, Entomology, UNIV OF MASS, 1974 Doctorate, Entomology, CORNELL UNIV, 1977
Pearce, Stephen	Assistant Professor	Bachelors, University of Leeds, 2003 Masters, University of Sussex, 2005 Doctorate, Plant Sciences, General, University of Bristol, 2009
Peccoud, Jean	Professor	Masters, Univ of Paris Orsay, 1987 Doctorate, Univ Joseph Foyser, 1991
Peck, Lee Anne	Assistant Professor	Doctorate, Ohio University
Peckinpaugh, Meghan	Visiting Asst Professor	Bachelors, Colorado State University, 2010
Pedros-Gascon, Antonio	Associate Professor	Bachelors, University of Coruna, 2002 Doctorate, Ohio State University, 2007 Masters, Ohio State University, 2007
Peebles, Christie	Associate Professor	Bachelors, Texas Tech University, 2002 Doctorate, Rice University, 2008
Peel, Jennifer	Professor	Bachelors, Biochemistry, The Pennsylvania State University, 1996 Masters, Epidemiology, Emory University School of Public Health, 1998 Doctorate, Epidemiology, Emory University, 2003
Peel, Richard	Instructor	Bachelors, Animal Sciences, General, Angelo State University, 1987 Masters, Animal Sciences, Other, Texas AM University, 1997 Doctorate, Animal Sciences, Other, Texas AM University, 2000
Peers, Graham	Associate Professor	Bachelors, University of British Columbia, 1997 Doctorate, McGill University, 2005
Peersen, Olve	Professor	Bachelors, Biological Sciences/Life Sciences, Other, Carnegie Mellon University, 1988 Doctorate, Biophysics, Yale University, 1994
Peila-Shuster, Jacqueline	Assistant Professor	Bachelors, Occupational Therapy, Colorado State University, 1991 Masters, Education, General, Colorado State University, 2004 Doctorate, Counselor Education Counseling and Guidance Services, Colorado State University, 2011
Pena, Anita	Professor	Bachelors, The Johns Hopkins Univ, 2001 Masters, Stanford Univ, 2004 Doctorate, Stanford Univ, 2007
Pendergast, Seth	Assistant Professor	Bachelors, Southeastern University, 2008 Masters, Florida State University, 2014 Doctorate, University of Utah, 2018
Penny, Orly	Instructor	Bachelors, Psychology, General, Univeristy of Colorado at Colorado Springs, 1987 Masters, Teaching English as a Second Language/Foreign Language, Colorado State University, 2004

Perera, Rushika	Associate Professor	Bachelors, Biology, General, Goshen College, 1995 Bachelors, Chemistry, General, Goshen College, 1995 Doctorate, Biological Sciences/Life Sciences, Other, Purdue University, 2002
Pergolotti, Mackenzi	Assistant Professor	Bachelors, Russell Sage College, 2001 Masters, The Sage Graduate School, 2002 Doctorate, University fo North Carolina @ Chapel Hill, 2013
Perkins, Natalie	Instructor	Masters, Colorado State University, 1997
Perkins, Tracy	Instructor	Bachelors, Rice University, 1987 Masters, Univ of Colorado, 1992 Doctorate, Univ of Wisconsin, 1997
Perry, Gregory	Professor	Bachelors, Agricultural Economics, Utah State University, 1981 Masters, Agricultural Economics, Utah State University, 1982 Doctorate, Agricultural Economics, Texas A M, 1986
Perry, Richard	Instructor	
Persch, Andrew	Assistant Professor	Doctorate, The Ohio State University, 2014
Petach, Luke	Instructor	Bachelors, George Fox University, 2014 Masters, Colorado State University, 2016
Peterson, Charles	Instructor	Bachelors, University of Northern Colorado, 1971
Peterson, Christopher	Professor	Bachelors, Mathematics, Haverford College, Haverford PA, 1985 Masters, Mathematics, Duke University, 1989 Doctorate, Mathematics, Duke University, 1994
Petro, John	Professor	Bachelors, University of Wisconsin, Parkside, 1978 Masters, University of Wisconsin, Madison, 1994 Doctorate, Colorado State University, 2011
Pezeshki, Ali	Associate Professor	Bachelors, Tehran University, 1999 Masters, Tehran University, 2001 Doctorate, C.S.U., 2004
Phillips, Rebecca	Associate Professor	Bachelors, The Florida State University, 1995 Masters, University of South Florida, 2001 Doctorate, Louisiana State University, 2007
Pieplow, Sarah	Instructor	Masters, Colorado State University, 2013
Pierce, Jeffrey	Associate Professor	Bachelors, Chemical Engin., Northeastern University, Boston, Ma., 2003 Doctorate, Chemical Engin., Carnegie Mellon, Pittsburg, Pa., 2008
Pierce, John	Assistant Professor	Bachelors, Westfield State University, 1990 Masters, Eastman School of Music, 1994 Doctorate, University of Connecticut, 2013
Pierro, Evelyn	Instructor	Bachelors, English Language and Literature, General, Colorado State University, 1993 Masters, German Language and Literature, Colorado State University, 2000 Masters, Teaching English as a Second Language/Foreign Language, Colorado State University, 2000
Pilon, Marinus	Professor	Bachelors, Biology, General, Utrecht University, 1987 Masters, Biology, General, Utrecht University, 1987 Doctorate, Molecular Biology, Utrecht University, 1992

Pilon-Smits, Elizabeth	Professor	Masters, Utrecht University, 1987 Doctorate, Biology, General, Utrecht University, 1992
Pinaud, Olivier	Associate Professor	Doctorate, Applied Mathematics, General, Universate Toulouse III, France, 2003 Doctorate, Applied Mathematics, General, Universite Lyon 1, France, 2010
Pinedo, Pablo	Associate Professor	Professional, Veterinary Medicine (D.V.M.), University of Chile, 1993 Doctorate, University of Florida, 2008
Pippen, John	Assistant Professor	Bachelors, Tennessee Technological University, 2006 Masters, University of Tennessee, 2009 Doctorate, University of Western Ontario, 2015
Pitzulo, Carrie	Instructor	Bachelors, Youngtown State University, 1997 Masters, Ohio University, 2000 Doctorate, City University of New York Graduate Center, 2008
Piyaratne, Panduka	Assistant Professor	
Plastini, John	Assistant Professor	Bachelors, Fine/Studio Arts, University of California, Santa Cruz, 2008 Masters, Printmaking, Tyler School of Art, 2012
Plaza, Marizza	Instructor	Bachelors, University of Texas, 2001 Professional, J Ruben Clark Law School, 2004 Masters, University of Texas, 2012
Podell, Brendan	Assistant Professor	Bachelors, Microbiology/ Bacteriology, Colorado State University, 2003 Doctorate, Veterinary Medicine (D.V.M.), Colorado State University, 2008 Certificate, Colorado State University, 2011 Doctorate, Pathology, Human and Animal, Colorado State University, 2014
Poerbonegoro, Anna	Instructor	Bachelors, Parahyangan Catholic University, Indonesia, 1990 Masters, University of Hawaii, 1999
Poff, N	Professor	Bachelors, Biology, General, Hendrix College, 1978 Masters, Environmental Science/Studies, Indiana University, 1984 Doctorate, Biology, General, Colorado State University, 1989
Pohlmann, Marcus	Instructor	Bachelors, Cornell College, 1972 Masters, Columbia University, 1974 Masters, Columbia University, 1975 Doctorate, Columbia University, 1976
Pokatilova, Ludmila	Instructor	Masters, English Language and Literature/Letters, Other, Gorky State University of Linguistics, Gorky, Russia, 1974 Doctorate, Foreign Languages Teacher Education, Tajik State University, Dushanbe, Tajikistan, 1989
Pooler, Sarah	Senior Instructor	Bachelors, Colorado State University

Poon, OiYan	Associate Professor	Doctorate, Ethnic and Cultural Studies, Other, University of California-Los Angeles, 2010 Bachelors, Business Marketing and Marketing Management, Boston College Certificate, Asian Studies, University of CA - Los Angeles Masters, Higher Education Administration, Univ of Georgia
Popat, Ketul	Associate Professor	Bachelors, M.S. University - India, 1998 Masters, Illinois Inst of Tech, 2000 Doctorate, Universit of Illinois at Chicago, 2003
Popichak, Katriana	Instructor	Bachelors, Microbiology/ Bacteriology, Colorado State University, 2011 Masters, Cell and Molecular Biology, Other, Colorado State University, 2018
Potterf, Jebadiha	Instructor	Masters, Utah State University
Pouchet, Louis-Noel	Associate Professor	Doctorate, INRIA Saclay, 2010
Powers, Jaye	Instructor	Bachelors, University of Colorado Masters, Colorado State University
Powers, Laura	Instructor	Masters, University of Illinois at Chicago, 1999
Prabhu, Vinayak	Assistant Professor	
Prasad, Ashok	Associate Professor	Bachelors, St Stephens College, New Dehli, 1985 Masters, Delhi School of Economics, 1988 Masters, Brandeis University, 2004 Doctorate, Brandeis University, 2006
Prenni, Jessica	Associate Professor	Doctorate, Analytical Chemistry, University of Colorado, 2002
Pries, Rachel	Professor	Bachelors, Mathematics, Brown University, 1994 Doctorate, Mathematics, University of Pennsylvania, 2000
Prieto, Amy	Professor	Bachelors, Williams College, 1996 Doctorate, Inorganic Chemistry, University of California Berkeley, 2001
Prince, Eric	Professor	Bachelors, University of Leeds, 1980 Doctorate, University of Ulster, Northern Ireland, 1995
Prince, Mark	Assistant Professor	Bachelors, Psychology, General, Columbia University, 2002 Masters, Psychology, General, San Diego State University, 2007 Doctorate, Clinical Psychology, Syracuse University, 2014 Masters, Mathematical Statistics, Syracuse University, 2014
Proctor, Jeremy	Senior Instructor	Bachelors, Colorado State University, 2002 Masters, Colorado State University, 2006
Prytherch, Benjamin	Senior Instructor	Bachelors, Mathematical Statistics, Colorado State University, 2008 Masters, Mathematical Statistics, Colorado State University, 2013
Purdy, Andrea	Assistant Professor	Bachelors, International Relations and Affairs, Wichita State University, 1978 Bachelors, Spanish Language and Literature, Wichita State University, 1978 Masters, Spanish Language and Literature, Texas Tech University, 1981 Doctorate, Texas Tech University, 1987
Puttlitz, Christian	Professor	Bachelors, Michigan State University, 1992 Masters, Clemson University, 1993 Doctorate, University of Iowa, 1999

Qian, Yaling	Professor	Bachelors, Biology, General, Hangzhou Teacher's College, 1981 Masters, Botany, General, Nanjing Agricultural University, 1988 Doctorate, Horticulture Science, Kansas State University, 1996
Quick, Donald	Assistant Professor	Doctorate, Education, General, Colorado State University, 2000
Quillmann, Ursula	Assistant Professor	Associates, Mathematics, Gavilan Community College, 1988 Masters, Geology, University of Colorado at Boulder, 2006 Doctorate, Geology, University of Colorado at Boulder, 2014
Quinn, Jason	Associate Professor	Bachelors, Colorado State University, 2002 Masters, Colorado State University, 2004 Doctorate, Colorado State University, 2011
Quirk, Kelley	Assistant Professor	Bachelors, Central Michigan University, 2006 Masters, Central Michigan Univeristy, 2010 Doctorate, University of Louisville, 2014
Quirk, Phillip	Assistant Professor	Bachelors, University Wisconsin Milwaukee, 1991 Masters, Colorado State University, 1996 Doctorate, Colorado State University, 1999
Raadik Cottrell, Jana	Instructor	Bachelors, Art, General, Tallinn University, 1989 Masters, Parks, Recreation and Leisure Studies, Wageningen University, 2005 Doctorate, Natural Resources Conservation, General, Colorado State University, 2010
Racey, Noah	Assistant Professor	Bachelors, The Boston Conservatory
Radford, Donald	Professor	Bachelors, Mechanical Engin., U BRITISH COLUM, 1980 Masters, Metallurgical Engin., U BRITISH COLUM, 1982 Doctorate, Material Engin., RENSSELAER POLY, 1987
Raguet-Schofield, Melissa	Instructor	Doctorate, Anthropology, University of Illinois, 2010
Raines, Karen	Assistant Professor	Masters, University of Texas at Arlington, 1985 Doctorate, CSU, 1990
Rajopadhye, Sanjay	Professor	Doctorate, Computer Science, University of Utah, 1986
Ramchander, Sanjay	Professor	Bachelors, Nizam College, Osmania University, 1988 Masters, Saint Louis University, 1990 Doctorate, Cleveland State University, 1995
Ramesh Kannan, Anandha Sudhan	Instructor	Bachelors, SSN College of Engineering Masters, Colostate State Univerity
Ramirez, Jorge	Professor	Bachelors, Civil Engin., General, National Universidad de Columbia, Medellin, 1981 Masters, Civil Engin., General, Massachusetts Institute of Technology, 1982 Doctorate, Civil Engin., General, Massachusetts Institute of Technology, 1988
Ramsdell, Howard	Associate Professor	Bachelors, Chemistry, General, POMONA COLLEGE, 1973 Doctorate, Biochemistry, OREGON STATE U, 1986

Randall, David	Professor	Bachelors, Aerospace, Aeronautical and Astronautical Engin., OHIO ST UNIV, 1971 Masters, Aerospace, Aeronautical and Astronautical Engin., OHIO ST UNIV, 1971 Doctorate, Atmospheric Sciences and Meteorology, UNIV OF CALIF, 1976
Randall, Elissa	Associate Professor	Bachelors, History, General, Univ. of North Carolina-Chapel Hill, 1993 Professional, Veterinary Medicine (D.V.M.), VA-MD Regional College of Veterinary Medicine, 2001 Masters, Colorado State University, 2005
Rankin, Frederick	Professor	Bachelors, University of Florida, 1988 Doctorate, Texas A M, 1999
Rao, Sangeeta	Assistant Professor	Bachelors, Veterinary Medicine (D.V.M.), ANGR Agricultural University, Hyderabad, India, 1994 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), ANGR Agricultural University, Hyderabad, India, 1996 Doctorate, Epidemiology, University of Illinois-Urbana, 2008
Rapley, Eric	Assistant Professor	Bachelors, Kansas State University, 1996 Masters, Oklahoma State University, 2011 Doctorate, Oklahoma State University, 2013
Rappe, Anthony	Professor	Bachelors, Chemistry, General, University of Puget Sound, 1974 Doctorate, Chemistry, General, California Institute of Technology, 1980
Rasmussen, Kristen	Assistant Professor	Bachelors, Atmospheric Sciences and Meteorology, University of Miami, 2007 Bachelors, Music, General, University of Miami, 2007 Masters, Atmospheric Sciences and Meteorology, University of Washington, 2011 Doctorate, Atmospheric Sciences and Meteorology, University of Washington, 2014
Rassti, Roxanne	Instructor	Bachelors, Psychology, General, Drury University, 2007 Masters, Counseling Psychology, Colorado State University, 2012 Doctorate, Counseling Psychology, Colorado State University, 2014
Rathburn, Sara	Associate Professor	Bachelors, Geology, Colorado State University, 1985 Masters, Geology, University of Arizona, 1989 Doctorate, Geology, Colorado State University, 2001
Rathmann, Conrad	Instructor	Bachelors, Architecture, Georgia Tech, 1995 Masters, Architecture, Clemson, 2000
Ratliff, Catherine	Instructor	Bachelors, University of South Florida, 2002 Masters, Illinois State University, 2008 Doctorate, Illinois State University, 2015
Rattenborg, Karen	Assistant Professor	Bachelors, Individual and Family Development Studies, General, Colorado State University, 1987 Masters, Individual and Family Development Studies, General, Colorado State University, 1991 Doctorate, Individual and Family Development Studies, General, Colorado State University, 2009
Ravishankara, Akkihebbal	Professor	Bachelors, University of Mysore, India, 1968 Masters, University of Mysore, India, 1970 Doctorate, University of Florida, 1975

Rawlinson, Jennifer	Associate Professor	Bachelors, Animal Sciences, General, Cornell University, 1995 Professional, Veterinary Medicine (D.V.M.), Cornell University, 1998
Ray, Indrajit	Professor	Doctorate, Information Sciences and Systems, George Mason University, 1997
Ray, Indrakshi	Professor	Doctorate, George Mason University, 1997
Raynolds, Laura	Professor	Bachelors, Sociology, BOWDOIN COLLEGE, 1981 Masters, Social Sciences and History, Other, CORNELL UNIV, 1987 Doctorate, Social Sciences and History, Other, CORNELL UNIV, 1993
Reardon, Kenneth	Professor	Bachelors, Chemical Engin., UNIV OF PENN, 1981 Masters, Chemical Engin., CALIF INST TECH, 1983 Doctorate, Chemical Engin., CALIF INST TECH, 1987
Reddy, Anireddy	Professor	Bachelors, Botany, General, NG COLLEGE, 1976 Masters, Botany, General, KAKATIYA UNIV, 1979 Doctorate, Molecular Biology, JAWAHARLAL NEHR, 1984
Redmond, Miranda	Assistant Professor	Bachelors, Environmental Science/ Studies, University of CA Berkeley, 2009 Doctorate, Ecology, University of Colorado Boulder, 2015
Reedy, Julia	Instructor	Bachelors, University of Delaware, 2013
Reeve, Andrea	Instructor	Masters, Curriculum and Instruction, Western Kentucky University, 1970
Regan, Daniel	Assistant Professor	Bachelors, Biology, General, University of Georgia, 2007 Professional, Veterinary Medicine (D.V.M.), University of Georgia, 2011
Reid, Louann	Professor	Bachelors, English Language and Literature, General, LINFIELD COLLEG, 1974 Masters, English Teacher Education, Washington State University, 1977 Doctorate, English Teacher Education, New York University, 1991
Reid, Robin	Professor	Bachelors, Zoology, General, Duke University, 1979 Masters, Botany, General, University of Washington, 1983 Doctorate, Range Science and Management, Colorado State University, 1992
Reilly, Kristen	Senior Instructor	Bachelors, McDaniel College, 1999 Masters, Colorado State University, 2005
Reiser, Raoul	Associate Professor	Bachelors, Mechanical Engin., Cornell University, 1991 Masters, Exercise Sciences/Physiology and Movement Studies, University of Texas, 1993 Doctorate, Mechanical Engin., Colorado State University, 2000
Reisfeld, Bradley	Professor	Bachelors, Chemical Engin., University of California - Davis, 1984 Masters, Chemical Engin., Pennsylvania State University, 1986 Doctorate, Chemical Engin., Northwestern University, 1990
Reising, Steven	Professor	Bachelors, Washington Univ in St. Louis, 1989 Masters, Washington Univ in St. Louis, 1991 Doctorate, Stanford University, 1998

Reist, Noreen	Professor	Bachelors, Physiology, Human and Animal, Univ. of California at Berkeley, 1982 Doctorate, Neuroscience, Stanford University, 1990
Rettig, Patricia	Associate Professor	Bachelors, English Language and Literature, General, Wittenberg University, 1996 Masters, Library Science/Librarianship, University of Maryland, 1998
Reuteman, Robert	Instructor	Bachelors, University of Wisconsin Masters, University of Colorado
Reynolds, Benjamin	Assistant Professor	Bachelors, Chemistry, General, Northern Arizona Univeristy, 1997 Masters, Chemistry, General, Arizona State University, 1999
Reynolds, Melissa	Associate Professor	Bachelors, Chemistry, General, Washington State University, 1997 Doctorate, Chemistry, General, University of Michigan, 2004
Reynolds, Stephen	Professor	Bachelors, Carleton College, 1977 Masters, Univesity of Minnesota, 1983 Doctorate, Environmental Health, University of Minnesota, 1991
Rezende, Marlis	Associate Professor	Professional, Veterinary Medicine (D.V.M.), Universidade Federal Rural do Rio de Janeiro, 1996 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Universidade Estadual Paulista-UNESP, 2000 Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), Universidade Estadual Paulista-UNESP, 2003
Rhoades, Ryan	Associate Professor	Bachelors, Oklahoma State University, 2001 Masters, Animal Sciences, General, Texas AM University, 2004 Doctorate, Animal Sciences, General, Texas AM University, 2008
Rhodes, Matthew	Professor	Bachelors, Psychology, General, Francis Marion University, 1999 Masters, Cognitive Psychology and Psycholinguistics, Florida State University, 2002 Doctorate, Cognitive Psychology and Psycholinguistics, Florida State University, 2004
Richards, Tracy	Associate Professor	Bachelors, Psychology, General, Colorado State University, 1997 Masters, Counseling Psychology, Colorado State University, 2001 Doctorate, Counseling Psychology, Colorado State University, 2003
Rickard, Kathryn	Associate Professor	Bachelors, Psychology, General, UNIV OF ALABAMA, 1979 Masters, Psychology, General, UNIV OF GEORGIA, 1981 Doctorate, Clinical Psychology, UNIV OF GEORGIA, 1983
Ridley, John	Associate Professor	Bachelors, Geology, Queen's College, Cambridge,U.K., 1978 Doctorate, Geology, University of Edinburgh, U.K., 1982
Riep, David	Associate Professor	Bachelors, Communications, General, Asbury College, 1998 Masters, Art History, Criticism and Conservation, University of Kentucky, 2005 Professional, University of Iowa, 2011

Riggs, Nathaniel	Professor	Bachelors, University of Washington, 1996 Masters, The Pennsylvania State University, 2001 Doctorate, Penn State University, 2003
Ritsema, Christina	Senior Instructor	Bachelors, Miami University, 1991 Masters, University of Arkansas, 1994 Doctorate, University of Arkansas, 2001
Rizzo, Christine	Assistant Professor	Bachelors, University of North Carolina at Chapel Hill, 2010 Masters, Colorado State University, 2012 Doctorate, Colorado State University, 2015
Roark, Robert	Senior Instructor	Bachelors, Texas AM University, 1991 Masters, Texas AM University, 1994 Doctorate, University of Connecticut, 2011
Roberts, Bonnie	Associate Professor	
Roberts, Jacob	Professor	Bachelors, Physics, General, University of Notre Dame, 1994 Doctorate, Optics, University of Colorado, 2001
Roberts, Nicholas	Associate Professor	Bachelors, English Language and Literature, General, Georgia College State University, 2000 Masters, Management Information Systems and Business Data Processing, Kennesaw State University, 2003 Doctorate, Business Administration and Management, General, Clemson University, 2009
Robertson, Gregory	Assistant Professor	Doctorate, Microbiology/ Bacteriology, Louisiana State University, 2000
Robinson, Angelina	Instructor	Bachelors, Psychology, General, Vanderbilt University, 1984 Professional, Law (LL.B., J.D.), Washington University, School of Law, 1987
Robinson, Arnold	Instructor	Bachelors, Nicholss State University, 2005 Masters, Nicholls State University, 2007 Doctorate, Florida Atlantic University, 2014
Robinson, Daniel	Senior Instructor	Doctorate, Univ. of Denver, 1993
Rocca, Jorge	Professor	Bachelors, Physics, General, U ROSARIO-ARGEN, 1978 Doctorate, Electrical, Electronics and Communication Engin., COLO STATE UNIV, 1983
Rocca, Monique	Associate Professor	Bachelors, Biological Sciences/Life Sciences, Other, Stanford University, 1996 Professional, Ecology, Duke University, 2004
Rodgers, Timothy	Instructor	Bachelors, University of California Davis, 1976 Doctorate, University of California, Santa Cruz, 1982 Masters, University of Oregon, 1999
Roebuck, Anthony	Instructor	
Rogers, Jack	Instructor	Bachelors, Long Island University, 1996 Masters, Georgia State University, 2012
Rogers, Zachary	Assistant Professor	Bachelors, University of Nevada, Reno, 2009 Doctorate, Arizona State University, 2015 Masters, Arizona State University
Rojas Rueda, David	Assistant Professor	Professional, National Autonomous University of Mexico, Mexico City, Mexico, 2004 Masters, Autonomous University of Barcelona, Barcelona, Spain, 2009 Doctorate, University Pompeu Fabra, Barcelona, Spain, 2013
Rojas, Don	Professor	Bachelors, Psychology, General, Colorado State University, 1990 Masters, Experimental Psychology, Colorado State University, 1992 Doctorate, Experimental Psychology, Colorado State University, 1995

Roller, James	Senior Instructor	Bachelors, University of California at Santa Cruz, 1994 Masters, Colorado State University, 2010
Rollin, Bernard	Professor	Bachelors, Philosophy, CITY COLL OF NY, 1964 Doctorate, Philosophy, Columbia University, 1972
Rollin, Linda	Assistant Professor	Bachelors, City College of New York, 1964 Masters, Yeshiva University, Ferkaif Graduate School, 1966 Masters, Colorado State University, 1973 Doctorate, Mathematics, Colorado State University, 1982
Romagni, Domenica	Assistant Professor	Bachelors, Philosophy, John Hopkins University, 2010 Masters, Philosophy, Princeton University, 2015 Doctorate, Philosophy, Princeton University, 2018
Roman-Muniz, Ivette	Associate Professor	Professional, Veterinary Medicine (D.V.M.), University of Wisconsin-Madison, 2001 Masters, Adult and Continuing Education Administration, Colorado State University, 2004
Romero Lopez, Marisabel	Assistant Professor	Bachelors, Universidad Catolica de Honduras, 2004 Masters, Baylor University, 2009 Doctorate, University of South Florida, 2016
Ronayne, Michael	Associate Professor	Bachelors, Geological Sciences, Other, Ohio University, 1994 Masters, Miscellaneous Physical Sciences, Other, University of Arizona, 1996 Doctorate, Miscellaneous Physical Sciences, Other, Stanford University, 2008
Rosado, Caleb	Instructor	Bachelors, Pacific Union College, 1966 Masters, Andrews University, 1969 Doctorate, Northwestern University, 1985
Rosecrance, John	Professor	Bachelors, Physical Therapy, California State University, 1981 Masters, Physical Therapy, University of North Carolina, 1986 Doctorate, Occupational Therapy, University of Iowa, 1993
Rosen, Lee	Professor	Bachelors, Psychology, Other, U OF MINNESOTA, 1978 Masters, Clinical Psychology, SUNY Stony Brook, 1982 Doctorate, Clinical Psychology, SUNY Stony Brook, 1984
Rosenberg, Corey	Assistant Professor	Bachelors, Univ of Wyoming, 1993 Doctorate, Univ of Wyoming, 1998
Ross, Eric	Professor	Bachelors, Biophysics, Yale University, 1996 Doctorate, Biochemistry, Mayo Foundation, 2001
Ross, Kathryn	Assistant Professor	Bachelors, Physics, Other, University of Waterloo, 2007 Doctorate, Physics, Other, McMaster University, 2012
Ross, Matthew	Assistant Professor	Bachelors, Ecology, University of Colorado at Boulder, 2010 Doctorate, Ecology, Duke University, 2017
Rosychuk, Rodney	Professor	Professional, Veterinary Medicine (D.V.M.), W COL OF VET MD, 1974
Rotner, Jaime	Instructor	Masters, Colorado State University, 2007
Rotter, Jerilyn	Instructor	Bachelors, Colorado State University Masters, Colorado State University
Rovnak, Joel	Assistant Professor	Bachelors, Colorado State University, 1982 Masters, Colorado State University, 1989 Doctorate, Cornell University, 1999

Rowe, Karen	Instructor	Bachelors, Business Teacher Education (Vocational), Colorado College (UNC), 1969 Masters, Business Teacher Education (Vocational), Colorado State University, 1983 Doctorate, Business Teacher Education (Vocational), Colorado State University, 1987
Rubino, Nick	Instructor	Bachelors, Colorado State University, 2007
Ruch Gallie, Rebecca	Associate Professor	Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1999 Masters, Epidemiology, Colorado State University, 2002
Ruegg, Kristen	Assistant Professor	
Ruff, Colin	Instructor	
Rutledge, Steven	Professor	Bachelors, Physics, General, UNIV OF MISSOURI, 1978 Doctorate, Atmospheric Sciences and Meteorology, UNIV OF WASH, 1983
Ryan, Ajean	Associate Professor	Bachelors, Painting, University of California at Los Angeles, 1993 Masters, Sculpture, University of California at Berkeley, 2000
Ryan, Elizabeth	Associate Professor	Bachelors, Bowling Green State University, 1996 Masters, University of Rochester, School of Medicine Dentistry, 2003 Doctorate, University of Rochester, 2006
Ryan, Patricia	Associate Professor	Doctorate, University of South Flordia, 1995
Ryder, Stacia	Instructor	Doctorate, Colorado State University, 2019
Sabbath, Karyl	Senior Instructor	Bachelors, Bowling Green State University, 1979 Masters, Northern Arizona University, 1982 Doctorate, Ohio University, 1988
Sabin, Eleanor	Instructor	
Sadar, Miranda	Assistant Professor	Bachelors, Colorado State University, 2005 Professional, Colorado State University, 2009
Safadi-Chamberlain, Farida	Associate Professor	Bachelors, Animal Sciences, General, University of Jordan, 1977 Masters, Plant Sciences, General, University of Jordan, 1983 Doctorate, Horticulture Science, Colorado State University, 1992
Sagas, Ernesto	Professor	Bachelors, University of Puerto Rico-Mayaguez, 1986 Masters, University of Florida, 1988 Doctorate, University of Florida, 1993
Sagas, Jimena	Assistant Professor	Bachelors, Colorado State University, 2009 Certificate, Latin American Studies, Colorado State University, 2009 Masters, Library Science, Other, University of Denver, 2012
Saiz, LeRoy	Instructor	Bachelors, Metropolitan State University, 2011 Masters, Colorado State University, 2014
Sakurai, Hiroshi	Associate Professor	Bachelors, Ocean Engin., UNIV OF TOKYO, 1967 Masters, Mechanical Engin., MIT, 1982 Doctorate, Mechanical Engin., MIT, 1990
Sale, Thomas	Professor	Bachelors, Chemistry, General, MIAMI UNIV, 1980 Masters, Water Quality and Wastewater Treatment Tech./ Technician, UNIV OF AZ, 1985 Doctorate, Agricultural Engin., CSU, 1998

Salerno, Jonathan	Assistant Professor	Bachelors, Biology, General, University of Rochester, 2002 Masters, Ecology, University of California, 2013 Doctorate, Ecology, University of California Davis, 2015
Salman, Mo	Professor	Bachelors, Veterinary Medicine (D.V.M.), U OF BAGHDAD, 1973 Masters, Biological Sciences/Life Sciences, Other, U OF CALIFORNIA, 1980 Doctorate, Pathology, Human and Animal, U OF CALIFORNIA, 1983
Sambur, Justin	Assistant Professor	Bachelors, The State University of New York (SUNY), 2006 Doctorate, Colorado State University, 2011
Samelson, Donald	Associate Professor	Bachelors, Macalester College, 1973 Masters, University of Wisconsin, 1975 Doctorate, Virginia Tech, 1992
Sampath, Walajabad	Professor	Bachelors, Mechanical Engin., INDIAN INST TEC, 1980 Masters, Mechanical Engin., AZ STATE UNIV, 1982 Doctorate, Mechanical Engin., AZ STATE UNIV, 1985
Sample, Pat	Professor	Bachelors, Secondary Teacher Education, UNIV OF WYOMING, 1978 Masters, Theological Studies and Religious Vocations, Other, LUTHER NW T SEM, 1983 Doctorate, Education, Other, Colorado State University, 1995
Sampson, David	Associate Professor	Bachelors, Biology, General, BOWDOIN COLL, 1972 Masters, Biochemistry, U CONNECTICUT, 1975 Doctorate, Biochemistry, COLO STATE UNIV, 1982
Sandelin, Theresa	Senior Instructor	Bachelors, Colorado State University, 1985 Masters, Colorado State University, 1989
Sanford, William	Associate Professor	Bachelors, Geology, Beloit College, 1983 Masters, Geophysics and Seismology, Cornell University, 1986 Doctorate, Agricultural Engin., Cornell University, 1992
Santangelo, Kelly	Associate Professor	Bachelors, Biology, General, Rochester Institute of Technology, 2000 Professional, Veterinary Medicine (D.V.M.), Cornell University, 2004 Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), Ohio State University, 2011
Santangelo, Thomas	Associate Professor	Doctorate, Biochemistry, Cornell University, 2003
Santistevan, Tiare	Instructor	Bachelors, Agriculture/ Agricultural Sciences, Other, Colorado StateUniversity, 1999 Masters, Agriculture/ Agricultural Sciences, Other, Colorado State University, 2001
Sarason, Yolanda	Associate Professor	Bachelors, Unspecified, please update, 1979 Masters, Unspecified, please update, 1986 Doctorate, Unspecified, please update, 1997
Saunders, Kyle	Professor	Bachelors, Political Science, General, Ohio State University, 1994 Masters, Political Science, General, Emory University, 1999 Doctorate, Political Science and Government, Other, Emory University, 2001
Saunders, Mark	Senior Instructor	Bachelors, Southern Illinois University, 1998 Masters, Colorado State University, 2005

Say, Benjamin	Instructor	Bachelors, Computer and Information Sciences, General, University of South Dakota, 2007 Masters, Computer Science, University of South Dakota, 2009
Sbicca, Joshua	Assistant Professor	Bachelors, Santa Clara University, 2005 Masters, University of Florida, 2010 Doctorate, University of Florida, 2014
Scalia IV, Joseph	Assistant Professor	Bachelors, Bucknell University, 2007 Masters, University of Wisconsin - Madison, 2009 Doctorate, University of Wisconsin - Madison, 2015
Scansen, Brian	Associate Professor	Bachelors, Oceanography, University of Washington, 2000 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Michigan State University, 2004 Professional, Veterinary Medicine (D.V.M.), Michigan State University, 2004
Schaeffer, Joshua	Assistant Professor	Bachelors, The College of Wooster, 2001 Masters, Colorado State University, 2008 Doctorate, Colorado State University, 2013
Schaeffer, Steven	Professor	Doctorate, C.S.U., 1996
Schaffer, Paula	Assistant Professor	Bachelors, Biological Sciences/Life Sciences, Other, Stanford University, 2005 Professional, Veterinary Medicine (D.V.M.), University of Tennessee, 2009
Scharf, Louis	Professor	Bachelors, Electrical, Electronics and Communication Engin., UNIV WASH, 1964 Masters, Electrical, Electronics and Communication Engin., UNIV WASH, 1966 Doctorate, Electrical, Electronics and Communication Engin., UNIV WASH, 1969
Schenkel, Alan	Associate Professor	Bachelors, University of Colorado-Boulder, 1993 Doctorate, University of Wisconsin-Madison, 1998
Schillo, John	Instructor	Bachelors, Liberal Arts and Sciences/Liberal Studies, St. John's College, 1985 Masters, Teaching English as a Second Language/ Foreign Language, Monterey Institute of International Studies, 1990
Schipanski, Meagan	Associate Professor	Doctorate, Cornell University, 2009 Bachelors, Biology, General, Oberlin College
Schissler, Jennifer	Assistant Professor	Professional, Veterinary Medicine (D.V.M.), Colorado State University, 2005 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), The Ohio State University, 2009
Schleusener, Richard	Instructor	Bachelors, Mathematics, South Dakota State University, 1978 Masters, Mathematical Statistics, Colorado State University, 1980 Doctorate, Organizational Behavior Studies, Colorado State University, 1999
Schmid, Arlene	Associate Professor	Masters, D'Youville College, 1997 Doctorate, University of Florida, 2005
Schmidt, Jenne	Instructor	Bachelors, Willamette University, 2008 Masters, San Francisco State University, 2012

Schneider Peterson, Abbey	Instructor	Masters, Colorado State University, 2011
Schneider, Lindsey	Assistant Professor	Bachelors, Willamette University, 2008 Masters, University of California - Riverside, 2012 Doctorate, University of California - Riverside, 2016
Scholl, Amy	Instructor	Bachelors, University of Colorado, 1989 Masters, University of California, 1993
Schountz, William	Associate Professor	Bachelors, Biology, General, Newman University, 1986 Masters, Virology, Emporia State University, 1991 Doctorate, Biological Immunology, Kansas State University, 1996
Schultz, Courtney	Associate Professor	Bachelors, International Relations and Affairs, Stanford University, 1997 Masters, Conservation and Renewable Natural Resources, Other, University of Maryland, College Park, 2004 Doctorate, Forestry, General, University of Montana, 2009
Schumacher, Russ	Associate Professor	Bachelors, VALPARAISO, 2001 Masters, Atmospheric Sciences and Meteorology, Colorado State University, 2003 Doctorate, Atmospheric Sciences and Meteorology, Colorado State University, 2008
Schutt, Derek	Associate Professor	Bachelors, Physics, General, Kalamazoo, 1991 Bachelors, Mathematics, University of Oregon, 1992 Doctorate, Geology, University of Oregon, 2000
Schwebach, Robert	Associate Professor	Bachelors, University of South Dakota, 1980 Bachelors, University of South Dakota, 1981 Masters, University of South Dakota, 1983 Doctorate, University of Nebraska-Lincoln, 1992
Scofidio, Elizabeth	Instructor	
Scolere, Leah	Assistant Professor	Doctorate, Communications, General, Cornell University, 2017
Scorza, Andrea	Instructor	Professional, Veterinary Medicine (D.V.M.), La Plata National University (Buenos Aires), 1993 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 2001 Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 2007
Scott, Janelle	Instructor	Bachelors, Cell and Molecular Biology, Other, Marymount University, 2008 Professional, Veterinary Medicine (D.V.M.), Kansas State University, 2012
Scott, Ryan	Assistant Professor	Bachelors, Washington State University, 2012 Masters, University of Washington, 2014 Doctorate, University of Washington, 2017
Seabaugh, Kathryn	Assistant Professor	
Searle, Juliana	Instructor	Bachelors, Individual and Family Development Studies, General, Colorado State University, 2011 Masters, Education, General, Colorado State University, 2013

Sebald, Ann	Assistant Professor	Bachelors, Elementary Teacher Education, University of Montana, 1993 Masters, Education of the Deaf and Hearing Impaired, University of Northern Colorado, 1996 Doctorate, Special Education, Other, University of Northern Colorado, 2005
Sebek, Barbara	Professor	Bachelors, University of Chicago, 1986 Masters, University of Illinois, 1989 Doctorate, University of Illinois, 1994
Sedlins, Mara	Associate Professor	Bachelors, Psychology, Other, St. Olaf College, 2003 Doctorate, Social Psychology, University of Washington, 2012
Seel, Peter	Professor	Bachelors, San Francisco Art Institute, 1975 Masters, San Francisco State University, 1979 Doctorate, Mass Communications, Indiana University, 1995
Seelig, Chad	Instructor	
Seger, Carol	Professor	Bachelors, Psychology, General, Harvard and Radcliffe Colleges, 1987 Masters, Cognitive Psychology and Psycholinguistics, University of California, Los Angeles, 1991 Doctorate, Cognitive Psychology and Psycholinguistics, University of California, Los Angeles, 1994
Seguin, Bernard	Associate Professor	Professional, Veterinary Medicine (D.V.M.), University of Montreal, 1992 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Washington State University, 1998
Seidel Jr, George	Professor	Bachelors, Dairy Science, PENN STATE UNIV, 1965 Masters, Physiology, Human and Animal, CORNELL UNIV, 1968 Doctorate, Physiology, Human and Animal, CORNELL UNIV, 1970
Seidl, Andrew	Professor	Bachelors, International Economics, University of Wisconsin, 1985 Masters, University of Florida, 1993 Doctorate, University of Florida, 1996
Seim III, Howard	Professor	Bachelors, Veterinary Clinical Sciences (M.S., Ph.D.), WASHINGTON ST U, 1974 Professional, Veterinary Medicine (D.V.M.), WASHINGTON ST U, 1975
Seitz, Deanne	Senior Instructor	Associates, Front Range Community College, 1985 Bachelors, Arizona State University, 1992 Masters, Colorado State University, 2016
Selberg, Kurt	Assistant Professor	Masters, Agricultural Animal Physiology, University of Florida, 2002 Professional, Veterinary Medicine (D.V.M.), Washington State University, 2007 Masters, Colorado State University, 2011
Sellers, Mitchell	Instructor	Bachelors, Texas AM University, 2009 Masters, Texas State University, 2011 Masters, University of Florida, 2014 Doctorate, University of Florida, 2016
Seng, Stephanie	Instructor	Bachelors, NE Wesleyan University, 1987 Masters, Colorado State University, 1994

Senior, Bolivar	Associate Professor	Bachelors, Civil Engin., General, Universidad Nacional Pedro Henriquez, 1976 Masters, Civil Engin., General, Georgia Institute of Technology, 1990 Doctorate, Prudue University, 1993
Seo, Hyeji	Instructor	Bachelors, Sookmyung Women?s University, 2011 Masters, Western Illinois University, 2013 Masters, Michigan State University, 2017 Doctorate, Michigan State University, 2018
Serrano, Christina	Assistant Professor	Doctorate, University of Georgia, 2011 Bachelors, Armstrong Atlantic State Uni Bachelors, University of Georgia
Seshadri, Arathi	Assistant Professor	Bachelors, Horticulture Science, University of Agricultural Sciences, 1988 Masters, Genetics, Plant and Animal, University of Agricultural Sciences, 1991 Doctorate, Ecology, Indian Institute of Science, 1997
Sevel, Judith	Instructor	
Shackelford, Charles	Professor	Bachelors, Civil Engin., General, University of Missouri Rolla, 1980 Masters, Geotechnical Engin., UNIV OF TEXAS, 1983 Doctorate, Geotechnical Engin., UNIV OF TEXAS, 1988
Shaffer, Staci	Instructor	Masters, Univ of Colorado at Denver, 2007
Shan, Yan	Instructor	Masters, Chinese Academy of Social Sciences - Beijing, 2014
Sharp, Benjamin	Assistant Professor	Bachelors, Mathematics, University of Evansville, 1999 Masters, Mathematical Statistics, Montana State University, 2007 Doctorate, Environmental/ Environmental Health Engin., Clemson University, 2013
Sharp, Julia	Associate Professor	Bachelors, Mathematics, University of Evansville, 1998 Masters, Mathematical Statistics, Montana State University, 2001 Doctorate, Mathematical Statistics, Montana State University, 2007
Sharvelle, Sybil	Associate Professor	Bachelors, University of Colorado, 1998 Masters, University of Colorado, 2002 Doctorate, Purdue University, 2006
Shaw, Jane	Professor	Bachelors, Animal Sciences, General, Cornell University, 1990 Professional, Veterinary Medicine (D.V.M.), Michigan State University, 1994 Doctorate, Epidemiology, University of Guelph, 2004
Sheehan, John	Instructor	Bachelors, Chemical Engin., University of Pennsylvania, 1979 Masters, Chemical Engin., Lehigh University, 1985 Doctorate, University of Minnesota
Sheflin, Douglas	Instructor	Bachelors, University of Wisconsin-Madison, Madison, WI, 1999 Doctorate, University of Colorado at Boulder, CO, 2012

Shelstad, Mark	Associate Professor	Bachelors, Social Studies Teacher Education, Minnesota, 1990 Masters, Public/ Applied History and Archival Administration, Wisconsin Milwaukee, 1992
Sherwood, Vance	Instructor	Bachelors, Colorado State University, 1999
Shi, Yian	Professor	Bachelors, Nanjing University, 1983 Masters, Chemistry, General, University of Toronto, 1987 Doctorate, Chemistry, General, Stanford University, 1992
Shields, Martin	Professor	Bachelors, Michigan State, 1989 Masters, The Pennsylvania State University, 1991 Doctorate, Agricultural Economics, University of Wisconsin, 1998
Shillington, Audrey	Professor	Bachelors, Psychology, General, Drury College, 1982 Masters, Educational Evaluation and Research, Washington University, St. Louis MO, 1987 Doctorate, Social Work, Washington University, St. Louis MO, 1991 Masters, Educational Psychology, Washington University, St. Louis, MO, 1993
Shipman, Patrick	Associate Professor	Bachelors, Linguistics, University of Arizona, 1999 Bachelors, Mathematics, University of Arizona, 1999 Doctorate, Mathematics, University of Arizona, 2004
Shockley, Kenneth	Professor	Bachelors, Philosophy, University of Wisconsin-Madison, 1993 Masters, Philosophy, SUNY-Buffalo, 1995 Doctorate, Philosophy, Washington University, 2002
Shoemaker, Mark	Assistant Professor	Bachelors, Mathematics, University of Puget Sound, 2008 Doctorate, Mathematics, University of Michigan, 2013
Sholders, Aaron	Associate Professor	Bachelors, Chemistry, General, University of Northern Colorado, 2001 Masters, Biochemistry, Colorado State University, 2003 Doctorate, Biochemistry, Colorado State University, 2006
Shomaker, Lauren	Associate Professor	Bachelors, University of Virginia, 2001 Masters, University of Denver, 2004 Doctorate, University of Denver, 2007
Shonkwiler, Clayton	Assistant Professor	Bachelors, Mathematics, Sewanee: The University of the South, 2003 Doctorate, Mathematics, University of Pennsylvania, 2009
Shore, Lynn	Professor	Bachelors, Psychology, General, University of Oregon, 1977 Masters, Industrial and Organizational Psychology, Colorado State University, 1983 Doctorate, Industrial and Organizational Psychology, Colorado State University, 1985
Shores, Matthew	Professor	Bachelors, Gustavus Adolphus College, 1997 Doctorate, Chemistry, General, University of California Berkeley, 2002

Shropshire, Sarah	Instructor	Bachelors, Microbiology/ Bacteriology, Colorado State University, 2005 Professional, Veterinary Medicine (D.V.M.), Colorado State University, 2011 Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 2018
Shuey, Mark	Instructor	Masters, University of Northern Colorado, 2013
Shuler, Scott	Associate Professor	Bachelors, Purdue Univ, 1974 Masters, Purdue Univ, 1977 Doctorate, Civil Engin., General, Texas AM, 1985
Shulman, Steven	Professor	Bachelors, Economics, General, UNIV OF MASS, 1977 Masters, Economics, General, UNIV OF MASS, 1979 Doctorate, Economics, General, UNIV OF MASS, 1984
Shupe, Abigail	Assistant Professor	Bachelors, Indiana University, 2007 Masters, Indiana University, 2009 Doctorate, University of Western Ontario, 2015
Shuster, William	Master Instructor	Bachelors, History, General, Colorado State University, 1987 Masters, Business Communications, University of Northern Colorado, 1992 Masters, Business Administration and Management, General, Colorado State University, 2000
Shutters, Patricia	Assistant Professor	Bachelors, University of Virginia, 1995 Masters, New York University, 2000 Doctorate, New York University, 2004
Sibold, Jason	Associate Professor	Bachelors, Geography, University of Colorado, 1998 Masters, Geography, University of Colorado, 2001 Doctorate, Geography, University of Colorado, 2005
Sica, Robert	Assistant Professor	Masters, Library Science/Librarianship, Florida State University, 2000 Bachelors, Philosophy, Furman University
Sieker, Frederick	Instructor	Bachelors, Civil Engin., Other, University of Wisconsin, 1970 Masters, Civil Engin., Other, University of Wisconsin, 1972 Masters, Computer Science, Colorado State University, 1989
Siller, Thomas	Associate Professor	Bachelors, Civil Engin., General, State University of NY Buffalo, 1979 Masters, Civil Engin., General, University of Massachusetts Amherst, 1981 Doctorate, Civil Engin., General, Carnegie Mellon UNIViersity, 1988
Simmons, Mark	Professor	Bachelors, University of Richmond, 1994 Doctorate, Biology, General, Cornell University, 2000
Simpson, Katharine	Assistant Professor	Bachelors, Animal Sciences, General, Texas AM University, 2002 Professional, Veterinary Medicine (D.V.M.), Texas AM University, 2006 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Oklahoma State University, 2013

Singleton, John	Assistant Professor	Bachelors, Geology, Pomona College, 2001 Masters, Geology, University of California at Santa Barbara, 2004 Doctorate, Geology, University of Texas at Austin, 2011
Sink, Elizabeth	Senior Instructor	Bachelors, Aquinas College, 1999 Masters, Colorado State University, 2006
Sites, James	Professor	Bachelors, Physics, General, DUKE UNIV, 1965 Masters, Physics, General, CORNELL UNIV, 1968 Doctorate, Physics, General, CORNELL UNIV, 1969
Sivakumar, Gayathri	Assistant Professor	Doctorate, Communications, Other, Universtiy of Wisconsin, 2014
Skeels, Sara	Assistant Professor	Bachelors, Anthropology, Ohio State University, 2012 Masters, Library Science/Librarianship, University of South Carolina, 2016
Skiba, Hilla	Associate Professor	Bachelors, University of Kansas, 2002 Masters, University of Kansas, 2004 Doctorate, University of Kansas, 2008
Skov, Erik	Instructor	Bachelors, Colorado State University, 2006 Masters, Colorado State University, 2013
Slagowski-Tipton, Sabrina	Instructor	Bachelors, Colorado State University, 2010 Masters, Colorado State University, 2016
Slattery, Kristin	Senior Instructor	Bachelors, Colorado State University, 2003 Masters, Colorado State University, 2005
Slayden, Richard	Professor	Doctorate, Colorado State Univ, 1997
Sloan, Daniel	Associate Professor	Bachelors, Wesleyan University, 2003 Doctorate, Biology, General, University of Virginia, 2011
Sloane, Sarah	Professor	Bachelors, Middlebury College, 1979 Masters, Univ of Mass, Amherst, 1987 Masters, Carnegie Mellon Univ., 1988 Doctorate, Ohio State Univ., 1991
Sloniker, Mark	Instructor	Bachelors, Colorado State University, 1984
Smeak, Daniel	Professor	Bachelors, Pre-Veterinary Studies, Michigan State University, 1977 Professional, Veterinary Medicine (D.V.M.), Michigan State University, 1979 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), The Ohio State University, 1984
Smith II, Frank	Master Instructor	Bachelors, Air Force Academy, 1984 Masters, Chapman University, 1989 Doctorate, Texas Tech Univ., 2005
Smith, Charles	Associate Professor	Bachelors, MIT, 1980 Doctorate, University of Arizona, 1990
Smith, Charles	Instructor	Bachelors, Tech. Teacher Education/ Industrial Arts Teacher Education, COLO STATE UNIV, 1974 Masters, Tech. Teacher Education/Industrial Arts Teacher Education, COLO STATE UNIV, 1975 Doctorate, Trade and Industrial Teacher Education (Vocational), COLO STATE UNIV, 1987
Smith, Gary	Professor	Bachelors, Agriculture/ Agricultural Sciences, General, CA STATE UNIV, 1960 Masters, Animal Sciences, General, WA STATE UNIV, 1962 Doctorate, Animal Sciences, General, TEXAS AM UNIV, 1968

Smith, Melinda	Professor	Bachelors, Biology, General, University of Colorado, 1992 Masters, Biology, General, Kansas State University, 1998 Doctorate, Biology, General, Kansas State University, 2002
Snell, Michael	Instructor	Bachelors, University of Northern Colorado, 1985 Masters, University of Colorado at Denver, 1998
Snodgrass, Jeffrey	Professor	Bachelors, Molecular Biology, Vanderbilt University, 1988 Masters, Anthropology, University of California, San Diego, 1990 Doctorate, Anthropology, University of California, San Diego, 1997
Snow, Christopher	Associate Professor	Bachelors, Massachusetts Institute of Technology, 2000 Doctorate, Stanford University, 2006
Snyder, John	Instructor	Bachelors, Colorado State University, 2005 Masters, Colorado State University, 2009
Soler Gallego, Silvia	Assistant Professor	Doctorate, Universidad de Cordoba, Spain, 2013
Solomon, Jennifer	Assistant Professor	Bachelors, Political Science, General, University of Buffalo, 1994 Masters, Environmental Science/Studies, Tufts University, 2000 Doctorate, Ecology, University of Florida, 2007
Somers, Patricia	Associate Professor	Bachelors, Occidental College, 1983 Doctorate, University of Pennsylvania, 1989
Sommer, Peter	Associate Professor	Bachelors, Music - General Performance, University of CO at Boulder, 1999 Masters, Music - General Performance, University of CO Boulder, 2002
Son, Hyunsang	Instructor	Bachelors, Chung-Ang University Doctorate, University of Texas Masters, University of Florida
Sorensen, Leif	Associate Professor	Bachelors, Univ. of California Berkeley, 1994 Masters, San Francisco State University, 1997 Doctorate, New York University, 2005
Souza, Caridad	Assistant Professor	Bachelors, State University of NY College at Oneonta, 1986 Masters, University of California, Berkeley, 1989 Doctorate, University of California, Berkeley, 1995
Sowell, Jordan	Instructor	Bachelors, German Language and Literature, Colorado State University, 2003 Masters, Teaching English as a Second Language/Foreign Language, Colorado State University, 2007
Sparks, Diane	Professor	Bachelors, Child Growth, Care and Development Studies, HUMBOLT ST COLL, 1969 Masters, Clothing/ Apparel and Textile Studies, U OF ARKANSAS, 1982 Doctorate, Adult and Continuing Teacher Education, U OF ARKANSAS, 1988
Speidel, Scott	Assistant Professor	Bachelors, Animal Sciences, General, California State University Fresno, 1998 Masters, Animal Sciences, General, University of Arizona, 2001
Spencer, John	Associate Professor	Bachelors, University of Pennsylvania, PA, 1975 Masters, University of Hawaii, Honolulu, HI, 1981 Doctorate, University of Hawaii, 1986

Spencer, Kimberly	Senior Instructor	Bachelors, University of Northern Colorado Masters, University of Northern Colorado
Spiece, Sarah	Instructor	Masters, Colorado State University, 2017
Spraker, Terry	Professor	Bachelors, Veterinary Medicine (D.V.M.), COLO STATE UNIV, 1970 Professional, Veterinary Medicine (D.V.M.), COLO STATE UNIV, 1972 Doctorate, Pathology, Human and Animal, COLO STATE UNIV, 1977
Sreerama, Narasimha	Assistant Professor	Masters, Physics, General, University of Mysore, 1983 Doctorate, Biophysics, Indian Institute of Science, 1988
Stading, Jeana	Instructor	
Stallones, Lorann	Professor	Bachelors, Anthropology, U OF CALIFORNIA, 1974 Doctorate, Epidemiology, U OF TEXAS, 1982
Stargell, Laurie	Professor	Bachelors, Biology, General, Universityof Virginia, 1986 Masters, Biology, General, University of Rochester, 1988 Doctorate, Biology, General, University of Rochester, 1993
Starke, Daniel	Instructor	Bachelors, CSU, 1998 Masters, University of Colorado at Denver, 2006 Certificate, CFA, 2018
Stasevich, Timothy	Assistant Professor	Doctorate, Physics, General, University of Maryland, 2006
Steele, Chisato	Instructor	Associates, Hokusei Gakuen Junior College, 1997 Bachelors, University of Nebraska at Kearney, 2006 Masters, University of Nebraska at Lincoln, 2014
Steensen, Sasha	Professor	Bachelors, University of Nevada, 1997 Masters, University of Nevada, 2000 Doctorate, SUNY, Buffalo, 2005
Steger, Michael	Professor	Bachelors, Psychology, General, Macalester College, 1988 Masters, Counseling Psychology, University of Oregon, 1997 Doctorate, Counseling Psychology, University of Minnesota, 2005
Stein, Christopher	Senior Instructor	Bachelors, University of Wyoming, 1991 Masters, Colorado State University, 1994
Steingraeber, David	Associate Professor	Bachelors, Botany, General, U OF WISCONSIN, 1974 Doctorate, Botany, General, U OF WISCONSIN, 1980
Stekelberg, James	Assistant Professor	Bachelors, Rutgers University, 2002 Masters, University of Southern California, 2004 Doctorate, University of Southern California, 2013
Stenglein, Mark	Assistant Professor	Bachelors, Mathematics, Wahington University in Saint Louis, 1997 Doctorate, Biochemistry, University of Minnesota, 2009
Stephen, Daniel	Instructor	Bachelors, Sociology, Miami University (Oxford, OH), 1981 Masters, European History, University of Cincinnati, 1997 Doctorate, European History, University of Colorado Boulder, 2005
Stephens, Angela	Instructor	Bachelors, Colorado State University, 2017
Stephens, Jaclyn	Assistant Professor	Bachelors, Illinois Wesleyan University, 2007 Masters, Washington University in St. Louis, 2009 Doctorate, University of Nevada, REno, 2015

Stevens-Rumann, Camille	Assistant Professor	Bachelors, Biology, General, Brandeis University, 2007 Masters, Forestry, General, Northern Arizona University, 2011 Doctorate, Natural Resources Conservation, General, University of Idaho, 2015
Stevenson, Cerissa	Associate Professor	Bachelors, University of Northern Colorado, 2000 Masters, Education, General, Colorado State University, 2004 Doctorate, Education, General, Colorado State University, 2008
Stevis, Dimitris	Professor	Bachelors, Political Science, General, DEPAUW UNIV, 1977 Masters, Political Science, General, U OF ARIZONA, 1983 Doctorate, Political Science, General, U OF ARIZONA, 1987
Stewart, Dafina	Professor	Bachelors, Sociology, Kalamazoo College, 1995 Masters, Higher Education Administration, The Ohio State University, 1998 Doctorate, Higher Education Administration, The Ohio State University, 2001
Stewart, Jane	Assistant Professor	Masters, Forestry, General, University of Vermont, 2003 Doctorate, Plant Pathology, Washington State University, 2011
Stewart, Leslie	Instructor	Bachelors, University of Southern California, 1975 Masters, University of Southern California, 1980
Stickel, Jennifer	Instructor	Bachelors, Colorado State University, 2003 Masters, Colorado State University, 2015
Still Brooks, Kelly	Assistant Professor	Bachelors, Animal Sciences, Other, Berry College, 2001 Professional, Veterinary Medicine (D.V.M.), Cornell University, 2005 Masters, Public Health, General, University of Iowa, 2010
Stilwell, Jill	Instructor	Bachelors, Graphic Design, Commercial Art and Illustration, Colorado State University, 1991 Masters, Art History, Criticism and Conservation, University of Denver, 1998
Stockman, Jonathan	Instructor	Bachelors, The Hebrew University of Jerusalem, Israel, 2001 Professional, The Hebrew University of Jerusalem, Israel, 2006
Stone, Martha	Professor	Bachelors, Home Economics Teacher Education (Vocational), U OF TENNESSEE, 1974 Masters, Foods and Nutrition Studies, Other, U OF TENNESSEE, 1975 Doctorate, Foods and Nutrition Studies, Other, U OF TENNESSEE, 1977
Stone-Roy, Leslie	Assistant Professor	Bachelors, Biology, General, University of Colorado at Denver, 1990 Doctorate, Cell Biology, University of Colorado Health Sciences Center, 1996
Stoner, Kathryn	Professor	Bachelors, Zoology, General, University of Michigan, Ann Arbor, 1986 Masters, Anthropology, Univeristy of Michigan, Ann Arbor, 1988 Doctorate, Ecology, University of Kansas, Lawrence, 1993
Strapko, Noel	Instructor	Masters, University of Colorado - Colorado Springs, 2012
Strauss, Gabrielle	Instructor	

Strauss, Steven	Professor	Bachelors, Chemistry, General, FRANKLIN MARS, 1973 Masters, Chemistry, General, Northwestern University, 1976 Doctorate, Inorganic Chemistry, Northwestern University, 1978
Stright, Lisa	Assistant Professor	Bachelors, Civil Engin., General, University of Colorado Boulder, 1995 Masters, Geological Engin., Michigan Tech, 1999 Masters, Petroleum Engin., Stanford University, 2006 Doctorate, Geological Sciences, Other, Stanford University, 2011
Stroman, Shilo	Instructor	Masters, Colorado State University, 2008
Stuart, Amy	Instructor	
Stuckey, Tracy	Instructor	Bachelors, Fine/Studio Arts, Florida State University, 2001 Masters, Painting, University of New Mexico, 2005
Stumpf, Kathleen	Instructor	Bachelors, Western Michigan University, 1984 Masters, University of Wisconsin, 1987 Doctorate, Thomas Jeffersn University, 2014
Stutz-Tanenbaum, Patricia	Assistant Professor	Bachelors, Occupational Therapy, UNIV OF KANSAS, 1976 Masters, Occupational Therapy, COLO STATE UNIV, 1987
Suarez Garcia, Jose	Professor	Bachelors, Foreign Languages and Literatures, General, University of Granada, Spain, 1984 Masters, Spanish Language and Literature, University of Illinois, Urbana, 1986 Doctorate, Spanish Language and Literature, University of Illinois, Urbana, 1991
Suchman, Erica	Professor	Bachelors, University of California, San Diego, 1987 Doctorate, University of California, Irvine, 1994
Sudowe, Ralf	Associate Professor	Masters, Philipps-Universitat Marburg, Germany, 1995 Doctorate, Philipps-Universitat Marburg, Germany, 1999
Sueltenfuss, Jeremy	Assistant Professor	
Sullivan, Emily	Instructor	
Sunseri, Thaddeus	Professor	Bachelors, History, General, University of Northern Iowa, 1980 Masters, European History, University of Oregon, 1984 Doctorate, History, Other, University of Minnesota, 1993
Suryanarayanan, Siddharth	Professor	Bachelors, Madras University, India, 2000 Masters, Arizona State University, 2001 Doctorate, Arizona State University, 2004
Suter, Jordan	Associate Professor	Bachelors, Vanderbilt University, 1999 Masters, Applied and Resource Economics, Cornell University, 2003 Doctorate, Applied and Resource Economics, Cornell University, 2008
Sutton, Christina	Senior Instructor	Bachelors, Illinois College, 1984 Masters, Colorado State University, 1991
Sutton, Sally	Associate Professor	Bachelors, Geology, U OF MICHIGAN, 1979 Doctorate, Geology, U OF CINCINNATI, 1987
Swann, Deborah	Instructor	Bachelors, Kansas State University, 2006 Masters, Texas State University, 2008
Swann, Josh	Instructor	Bachelors, Parks, Recreation and Leisure Facilities Management, University of Northern Colorado, 1994 Masters, Parks, Recreation, Leisure and Fitness Studies, Other, University of Arkansas, 1997
Swanson, Deric	Instructor	Bachelors, Colorado State University

Swindler, William	Instructor	Bachelors, University of North Texas, 2001
Switzer Jr, Ralph	Professor	Bachelors, U OF ILLINOIS, 1968 Certificate, U OF ILLINOIS, 1972 Doctorate, Law (LL.B., J.D.), U OF ILLINOIS, 1972
Switzer, Jamie	Associate Professor	Bachelors, Journalism, TEXAS CHRISTIAN, 1983 Masters, Journalism, COLO STATE UNIV, 1994 Doctorate, Educational/ Instructional Media Tech./Technician, Pepperdine University, 2000
Szamel, Grzegorz	Professor	Masters, Warsaw University, Poland, 1986 Doctorate, Chemistry, General, Warsaw University, Poland, 1990
Tamkun, Michael	Professor	Bachelors, Microbiology/ Bacteriology, Univ. of South Florida, Tampa, 1976 Masters, Zoology, General, Univ. of South Florida, Tampa, 1979 Doctorate, Pharmacology, Human and Animal, Univ. of Washington, Seattle, 1983
Tavani, Daniele	Associate Professor	Masters, Univ. of Rome, 2003 Doctorate, New School for Social Research, 2009 Doctorate, Univ. of Rome, 2009
Taylor, Peter	Professor	Bachelors, Political Science, General, Trinity University, 1981 Masters, Sociology, Cornell University, 1986 Doctorate, Sociology, Cornell University, 1991
Taylor-Massey, Julie	Assistant Professor	Masters, Colorado State University, 2004 Doctorate, Psychology, Other, Colorado State University, 2009
Teather-Posadas, Edward	Instructor	Bachelors, University of San Francisco, 2011 Masters, Rossevelt University, 2013
Teel, Tara	Professor	Masters, Utah State University, 1999 Doctorate, Natural Resources Management and Policy, Colorado State University, 2004
Tellechea, Teresa	Instructor	Bachelors, Autonoma University of Madrid, 1994 Doctorate, Autonoma University of Madrid, 2005
Telling, Glenn	Professor	Bachelors, Biochemistry, Oxford University, 1980 Masters, Biochemistry, Oxford University, 1983 Doctorate, Biological Immunology, Carnegie Mellon University, 1990
Temirbekov, Sayat	Instructor	Associates, Institute of Botany, Kazakhstan, 1990 Bachelors, Kazakh State Un-TY, Kazakhstan, 1990 Masters, Kazakh State Un-TY, Kazakhstan, 1990
Thamm, Douglas	Professor	Bachelors, Biology, General, University of Pennsylvania, 1990 Professional, Veterinary Medicine (D.V.M.), University of Pennsylvania, 1995
Thiem, Barbara	Instructor	Bachelors, Music History and Literature, Music School Cologne, Ger, 1970 Masters, Music History and Literature, Indiana University, 1972
Thilmany, Dawn	Professor	Bachelors, Iowa State University, 1990 Masters, Univ CA - Davis, 1991 Doctorate, Univ CA, Davis, 1994
Thirion, Rodney	Instructor	Masters, University of Colorado - Denver, 2001

Thomas, Adam	Instructor	Bachelors, Northwestern University, 1997 Masters, Colorado State University, 2001 Doctorate, Johns Hopkins University, 2016
Thomas, Khaleedah	Instructor	Bachelors, Philosophy, University of CA Riverside, 2005 Masters, Criminal Justice Studies, San Jose State University, 2007 Masters, Library Science/Librarianship, San Jose State University, 2011
Thomas, Laura	Senior Instructor	Bachelors, St. Bonaventure University, 1980 Masters, Colorado State University, 1994 Masters, University of Colorado-Boulder, 2003
Thomas, Michael	Assistant Professor	Bachelors, Psychology, General, University of California, Riverside, 2005 Masters, Clinical Psychology, Arizona State University, 2007 Doctorate, Clinical Psychology, Airzona State University, 2011
Thomas, Milton	Professor	Bachelors, Animal Sciences, General, University of Missouri, 1988 Masters, Dairy Science, University of Missouri, 1990 Doctorate, Texas A M University, 1994
Thompson, David	Professor	Bachelors, Aerospace, Aeronautical and Astronautical Engin., CU BOULDER, 1994 Masters, Atmospheric Sciences and Meteorology, UNIV WA, 1998 Doctorate, Atmospheric Sciences and Meteorology, UNIV WA, 2000
Thompson, Deborah	Professor	Bachelors, Univ. of Florida, 1986 Masters, Rice University, 1991 Doctorate, Rice University, 1993
Thompson, Henry	Professor	Bachelors, Environmental Science/Studies, Rutgers University, 1972 Masters, Dietetics/Human Nutritional Services, Rutgers University, 1974 Masters, Rutgers University, 1974 Doctorate, Medical Nutrition, Rutgers University, 1975
Thornton, Christopher	Associate Professor	Bachelors, Civil Engin., General, Colorado State University, 1993 Doctorate, Civil Engin., General, Colorado State University, 1999
Thorson, Loni	Instructor	Bachelors, Colorado State University, 2007 Masters, Colorado State University, 2012 Masters, Colorado State University, 2012
Timpson, William	Professor	Bachelors, American (United States) History, HARVARD UNIV, 1968 Masters, Higher Education Administration, CLEVELAND STATE, 1971 Doctorate, Educational Psychology, U OF WISCONSIN, 1978
Tinkham, Wade	Assistant Professor	Bachelors, Forestry and Related Sciences, Other, Washington State University, 2008 Masters, Forestry and Related Sciences, Other, University of Idaho, 2010 Doctorate, Natural Resources Management and Policy, University of Idaho, 2013
Tjalkens, Ronald	Professor	Bachelors, Biochemistry, University of California San Diego, 1992 Doctorate, Toxicology, University of Colorado Health Sciences Center, 1998

Tobet, Stuart	Professor	Bachelors, Psychology, General, Tulane University, 1978 Masters, Biological Sciences/Life Sciences, Other, Massachusetts Institute of Tec, 1982 Doctorate, Neuroscience, Mass Institute of Technology, 1985
Toki, Walter	Professor	Certificate, Physics, General, U OF CALIFORNIA, 1973 Doctorate, Physics, General, MASS INST TECH, 1976
Tompkins, Sara	Assistant Professor	Bachelors, University of Central Florida, 2001 Masters, University of Western Florida, 2003 Doctorate, Colorado State University, 2006
Tong, Tiezheng	Assistant Professor	Bachelors, Beijing, 2010 Masters, Tsinghua University, 2010 Doctorate, Northwestern University, 2015
Tornatzky, Cyane	Associate Professor	Bachelors, Philosophy, College of Wooster, 1988 Masters, Education, General, San Francisco State University, 1997 Masters, Art, General, San Francisco State University, 2008
Torres, Adam	Instructor	Bachelors, Angelo State University, 2009 Masters, Colorado State University, 2011
Torres-Henderson, Camille	Assistant Professor	Professional, Veterinary Medicine (D.V.M.), Colorado State University, 2001
Tracy, Brian	Associate Professor	Bachelors, Colorado State University, 1988 Masters, Colorado State University, 1991 Doctorate, University of Maryland, 1998
Trehus, Rebecca	Instructor	Bachelors, Colorado State Universtiy, 2013 Bachelors, Colorado State Universtiy, 2013
Trembath, Paul	Associate Professor	Bachelors, Comparative Literature, U OF WISCONSIN, 1980 Masters, English Language and Literature, General, U OF WISCONSIN, 1983 Doctorate, English Language and Literature, General, U OF VIRGINIA, 1990
Trivedi, Pankaj	Assistant Professor	Bachelors, Kurukshetra Univ., Kurukshetra, Harayana, India, 1997 Masters, Gurukul Kangr Univ., Haridwar, uttarakhand, India, 2000 Doctorate, Kumaun University, Nainital, Uttarakhand, India, 2005
Tropman, Elizabeth	Professor	Bachelors, Philosophy, The Ohio State University, 1998 Doctorate, Philosophy, Indiana University, Bloomington, 2006
Trout, Brian	Instructor	Bachelors, Colorado State University, 1977 Masters, Colorado State University, 1990
Troxell, Wade	Associate Professor	Bachelors, Engin. Science, COLO STATE UNIV, 1980 Masters, Mechanical Engin., COLO STATE UNIV, 1982 Doctorate, Mechanical Engin., COLO STATE UNIV, 1987
Trumbo, Craig	Professor	Bachelors, Journalism, Iowa State University, 1984 Masters, Journalism, Iowa State University, 1993 Doctorate, Mass Communications, University of Wisconsin, 1997

Tsai, Su-Jung	Assistant Professor	Bachelors, Taunghai University, Taiwan, 1993 Masters, Yuan-ze University, Taiwan, 1995 Masters, University of Massachusetts-Lowell, 2002 Doctorate, University of Massachusetts-Lowell, 2008
Tsunoda, Susan	Professor	Bachelors, Molecular Biology, University of California, San Diego, 1990 Doctorate, Neuroscience, Washington University School of Medicine, 1995
Tucker, Dustin	Associate Professor	Bachelors, Philosophy, University of Washington, 2003 Doctorate, Philosophy, University of Michigan, 2011
Tucker, Ruth	Instructor	Bachelors, Carleton College, 1992 Doctorate, SUNY Stony Brook, 1997
Tulanowski, Elizabeth	Instructor	
Turtle, Harry	Professor	Bachelors, University of Saskatchewan, 1986 Masters, University of Western Ontario, 1987 Doctorate, University of Alberta, 1991
Twedt, David	Professor	Professional, Veterinary Medicine (D.V.M.), IOWA STATE UNIV, 1972
Uchanski, Mark	Associate Professor	Bachelors, Horticulture Science, University of Illinois at Urbana-Champaign, 2002 Doctorate, University of Illinios at Urbana Champaign, 2007
Unnithan, N	Professor	Bachelors, Criminal Justice Studies, KARNATAK UNIV, 1974 Masters, Criminal Justice Studies, U OF SAUGAR, 1976 Doctorate, Sociology, U OF NEBRASKA, 1983
Usrey, Wendy	Senior Instructor	Bachelors, Missouri State University, 2009 Bachelors, Missouri State University, 2009 Masters, Colorado State University, 2012 Certificate, Colorado State University, 2013 Doctorate, Colorado State University, 2013
Vader-Lindholm, Connie	Assistant Professor	Bachelors, Biology, General, Western State College, 1971 Professional, Medical Tech., Penrose Hospital, 1972 Masters, Physiology, Human and Animal, Colorado State University, 1979 Doctorate, Physiology, Human and Animal, Colorado State University, 1987
Vair, Kendra	Instructor	Bachelors, History Teacher Education, Colorado State University, 1999 Masters, Counselor Education Counseling and Guidance Services, Univesity of Phoenix, 2004
Valdes Jr, Jose	Instructor	Bachelors, Colorado State University, 1975 Masters, Adult and Continuing Education Administration, Colorado State University, 1977 Masters, Telecommunications, University of Denver, 1991 Masters, Computer and Information Sciences, General, Almeda University, 2007
Valdes Vasquez, Rodolfo	Associate Professor	Bachelors, Civil Engin., General, Technological University of Panama, 2000 Masters, Construction and Building Finishers and Managers, Other, Clemson University, 2006 Doctorate, Civil Engin., General, Clemson University, 2011

Valerio-Holguin, Fernando	Professor	Bachelors, Latin American Studies, Universidad Autonoma de Santo Domingo, 1982 Masters, Hispanic-American Studies, Tulane University, 1987 Doctorate, Spanish Language and Literature, Tulane University, 1994
Van Buren, Mary	Professor	Bachelors, Anthropology, University of Oregon, 1982 Masters, Anthropology, University of Arizona, 1984 Doctorate, Anthropology, University of Arizona, 1993
Van Campen, Hana	Professor	Bachelors, University of California-Davis, 1975 Masters, University of California-Davis, 1978 Professional, Purdue University, 1984 Doctorate, University of Wisconsin-Madison, 1989
van de Lindt, John	Professor	Bachelors, California State Univ, 1993 Masters, Texas A M University, 1995 Doctorate, Texas A M University, 1999
Van Den Heever, Susan	Professor	Bachelors, UNIV OF WITWAT, 1988 Masters, UNIV OF WITWAT, 1994 Doctorate, Colorado State University, 2001
Van Kalsbeek, Mindy	Instructor	Bachelors, Social Work, Dordt College, 2003 Masters, Social Work, Colorado State University, 2003
van Leeuwen, Petrus Johannes	Professor	Masters, Theoretical and Mathematical Physics, University of Amsterdam, 1987 Doctorate, Physics, General, Technical University of Delft, 1992 Bachelors, Astrophysics, Leiden University
Van Orden, Alan	Professor	Bachelors, Chemistry, General, Brigham Young University, 1990 Doctorate, Chemistry, General, University of California, Berkeley, 1996
Vance, Thomas	Associate Professor	Bachelors, Central Washington University, 1993 Masters, Pennsylvania State University, 1998 Doctorate, University of Washington Seattle, 2007
Vanderspek, Paul	Master Instructor	Bachelors, Carleton College, 1989 Masters, University of Iowa, 1995 Masters, Purdue University, 1997
Vap, Linda	Associate Professor	Bachelors, Medical Tech., U OF NEBRASKA, 1977 Professional, Veterinary Medicine (D.V.M.), COLO STATE UNIV, 1988
Vaske, Jerry	Professor	Bachelors, Sociology, U OF WISCONSIN, 1973 Masters, Sociology, U OF WISCONSIN, 1977 Doctorate, Social Psychology, U OF MARYLAND, 1980
Vasudevan, Ramaa	Professor	Bachelors, Univ. of Delhi, 1986 Masters, Jawaharlal Nehru Univ, 1988 Masters, Jawaharlal Nehru Univ, 1990 Doctorate, The New School for Social Research, NY, 2006
Vasylyev, Sergiy	Instructor	Bachelors, Music - General Performance, University of Michigan, 2003 Masters, Music - General Performance, Rice University, 2006
Vaughan Knaus, Pam	Senior Instructor	Bachelors, History, General, Colorado State University, 1988 Masters, History, Other, Southern Illinois University, 1992 Doctorate, History, Other, Southern Illinois University, 1996

Vaughan, Jonathan	Instructor	Bachelors, Colorado State University, 2003
Veeder, Kate	Instructor	Bachelors, Social Work, University of Northern Iowa, 2006 Masters, Social Work, Colorado State University, 2012
Veeramachaneni, D N Rao	Professor	Professional, Veterinary Medicine (D.V.M.), AP AGRI UNIV, 1973 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), A P Agricultural University, India, 1976 Doctorate, Physiology, Human and Animal, U OF ILLINOIS, 1985
Veir, Julia	Associate Professor	Bachelors, Chemistry, General, Bradley University, 1994 Professional, Veterinary Medicine (D.V.M.), University of Illinois, 1998 Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 2006
Velasco, Marcela	Associate Professor	Bachelors, Sociology, University of Massachusetts, 1993 Masters, Latin American Studies, New York University, 1995 Doctorate, Political Science, General, Boston Univeristy, 2007
Velazquez-Castillo, Maura	Professor	Bachelors, Comparative Literature, National University of Paraguay, 1981 Masters, Linguistics, University of Kansas, 1986 Doctorate, Linguistics, University of California San Diego, 1993
Veliquette, Abigail	Senior Instructor	Bachelors, Theology/ Theological Studies, Bethany University, 2003 Masters, Speech and Rhetorical Studies, Colorado State University, 2007 Doctorate, Education, General, Colorado State University, 2013
Venable, Esther	Senior Instructor	Bachelors, English Language and Literature, General, University of Salamanca, Spain, 1992 Bachelors, Art History, Criticism and Conservation, University of Salamanca, Spain, 1997 Masters, Spanish Language and Literature, Colorado State University, 2002
Venayagamoorthy, Subhas	Professor	Bachelors, Univ of Natal, Durban, So Africa, 2000 Masters, University of Natal, Durban, So Africa, 2002 Doctorate, Stanford University, 2007
Venkatachalam, Chandrasekaran	Professor	Bachelors, Electrical, Electronics and Communication Engin., INDIAN INST TEC, 1981 Masters, Electrical, Electronics and Communication Engin., COLO STATE UNIV, 1983 Doctorate, Electrical, Electronics and Communication Engin., COLO STATE UNIV, 1986
Vermeulen, Bert	Instructor	Bachelors, Massachusetts Inst of Tech, 1981 Masters, Massachusetts Inst of Tech, 1981 Masters, Stanford University, 1985
Vesgaard, Heather	Instructor	Masters, Agricultural Business and Management, General, Colorado State University, 2006
Vieira, Nicole	Instructor	
Vigh, Jozsef	Associate Professor	Masters, Biology, General, Jozsef Attila University, 1994 Doctorate, Neuroscience, Janus P. University, 1999
Vijayasarathy, Leo	Professor	Doctorate, Florida International University, 1994

Vin-Raviv, Neomi	Assistant Professor	Bachelors, Biological Sciences/Life Sciences, Other, Bar-ilan Uiversity, 2001 Masters, Epidemiology, University of Haifa, 2006 Doctorate, Epidemiology, University of Haifa, 2011
Vivanco, Jorge	Professor	Bachelors, Agronomy and Crop Science, Universidad Nacional Agraria, 1994 Doctorate, Plant Pathology, The Pennsylvania State University, 1999
Vogl, Mary	Associate Professor	Bachelors, French Language and Literature, Oberlin College, 1989 Masters, French Language and Literature, Indiana University, 1991 Doctorate, French Language and Literature, Indiana University, 1998
Volbrecht, Vicki	Professor	Bachelors, Psychology, General, U OF WISCONSIN, 1979 Masters, Psychology, General, U OF COLORADO, 1984 Doctorate, Psychology, General, U OF COLORADO, 1988
Volckens, John	Professor	Bachelors, Civil Engin., Other, University of Vermont, 1996 Masters, Environmental/ Environmental Health Engin., University of North Carolina Chapel Hill, 1999 Doctorate, Environmental/ Environmental Health Engin., University of North Carolina Chapel Hill, 2003
von Fischer, Joseph	Professor	Bachelors, Biology, General, Augustana Coll, Sioux Falls,SD, 1992 Doctorate, Ecology, Cornell University, 2002
Waack, Peter	Instructor	Bachelors, University of Wisconsin
Wagner, John	Professor	Bachelors, Michigan State University, 1980 Masters, Agricultural business and Management, Other, Oklahoma State Unviersity, 1982 Doctorate, Oklahoma State University, 1985
Wakefield, Russell	Senior Instructor	Bachelors, Computer Science, Colorado State University, 1980 Masters, Computer Science, Colorado State University, 2011
Walck, Raye	Assistant Professor	Bachelors, Biology, General, Western State College of Colorado, 1993 Bachelors, Spanish Language and Literature, Western State College of Colorado, 1993 Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1998
Walker, Aimee	Assistant Professor	Masters, Colorado State University, 2009 Doctorate, Colorado State Univeristy, 2013
Walker, Debra	Senior Instructor	Bachelors, Colorado State University, 1994 Masters, Colorado State University, 1997
Wallenstein, Matthew	Professor	Bachelors, Geological Sciences, Other, Franklin and Marshall College, 1996 Doctorate, Ecology, Duke University, 2004
Walrond, John	Associate Professor	Bachelors, Zoology, General, OHIO UNIV, 1971 Doctorate, Neuroscience, UNIV WISCONSIN, 1979
Wang, Haonan	Professor	Bachelors, Mathematical Statistics, Nankai University, 1997 Doctorate, Mathematical Statistics, North Carolina-Chapel Hill, 2003

Wang, Jeff	Instructor	Doctorate, University of Rochester, 1997
Wang, Qiang	Professor	Bachelors, Tsinghua University, 1993 Doctorate, Univ of Wisconsin, 2002
Wang, Tianyang	Associate Professor	Masters, Nankai University, 2003 Masters, University of Louisville, 2005 Doctorate, University of Texas at Austin, 2011
Wang, Zhijie	Assistant Professor	Bachelors, Zhejiang University, 2001 Masters, State University of NY at Buffalo, 2004 Doctorate, State University of NY at Buffalo, 2008
Ward, Linnea	Instructor	Doctorate, Colorado State University Masters, Colorado State University
Ward, Sarah	Associate Professor	Bachelors, Plant Sciences, Other, U OF LONDON, 1980 Masters, Science Teacher Education, General, E CAROLINA U, 1988 Doctorate, Plant Breeding and Genetics, COLORADO STATE UNIVERSITY, 1994
Warren, Judith	Instructor	Bachelors, Political Science, General, Adelphi University, 1972 Masters, Social Work, Rutgers University, 1977
Waters, Sean	Instructor	Masters, Colorado State University, 2008 Masters, Colorado State University, 2008 Masters, Colorado State University, 2014
Watkins, Samuel	Instructor	Bachelors, University of Phoenix, 2010 Certificate, Colorado State University, 2012 Masters, Colorado State University, 2013
Watson, Albert	Professor	Bachelors, Chemical Engin., UNIV TEXAS-Austin, 1975 Doctorate, Chemical Engin., CAL INST TECH, 1980
Watson, Renae	Assistant Professor	Bachelors, English Literature (British and Commonwealth), Eastern Kentucky University, 2009 Masters, English Composition, Eastern Kentucky University, 2011 Masters, Library Science, Other, University of Kentucky, 2014 Masters, Educational/ Instructional Media Design, Purdue University, 2016
Webb, Colleen	Professor	Bachelors, Applied Mathematics, General, University of Chicago, 1993 Masters, Biology, General, University of Oregon, 1994 Doctorate, Ecology, Cornell University, 2001
Webb, Craig	Professor	Bachelors, Physiology, Human and Animal, University of Wisconsin-Milwaukee, 1981 Masters, Physiology, Human and Animal, University of Wisconsin--Madison, 1986 Doctorate, Neuroscience, Hahnemann University, 1991 Professional, Veterinary Medicine (D.V.M.), University of Wisconsin-Madison, 1997 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 2002
Weeks, Nefratiri	Instructor	Masters, Colorado State University, 2017
Wei, Yu	Professor	Bachelors, Hebei Forest College, 1994 Doctorate, University of Minnesota, 2004 Masters, University of Minnesota, 2004

Weil, Michael	Professor	Bachelors, Microbiology/ Bacteriology, Louisiana State University, 1975 Doctorate, Microbiology/ Bacteriology, University of Texas, 1987
Weiler, Stephan	Professor	Masters, Stanford, 1988 Doctorate, University of California, 1994
Weinberger, Christopher	Associate Professor	Bachelors, Cal Poly, San Luis Obispo, 2001 Masters, Stanford University, 2005 Doctorate, Stanford University, 2009
Weir, Heather	Assistant Professor	Bachelors, Biological and Physical Sciences, Colorado State University, 1991 Bachelors, Equestrian/ Equine Studies, Horse Management and Training, Colorado State University, 1991 Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1995
Weir, Tiffany	Associate Professor	Doctorate, Colorado State University, 2008 Bachelors, Pennsylvania State University Masters, Pennsylvania State University
Weiss, John	Master Instructor	Bachelors, COLO ST UNIV, 1979 Masters, COLO ST UNIV, 1988
Weissend, Carla	Instructor	Bachelors, Animal Sciences, General, Auburn University, 2013 Masters, Animal Sciences, General, Auburn University, 2015 Doctorate, Colorado State University, 2018
Welch, Wadd	Instructor	
Welker, Alyson	Senior Instructor	Bachelors, University of Colorado Denver, 2010 Masters, University of Colorado Denver, 2012
Weller, Zachary	Assistant Professor	
Wennogle, Sara	Instructor	
Wernimont, Theresa	Senior Instructor	Masters, Colorado State University, 2007
Wessel, Thea	Instructor	Bachelors, Psychology, General, University of Nebraska-Lincoln, 2004 Masters, Psychology, Other, University of Denver, 2009
Westra, Philip	Professor	Bachelors, Philosophy, U OF WISCONSIN, 1971 Bachelors, Secondary Teacher Education, CALVIN COLLEGE, 1973 Doctorate, Agronomy and Crop Science, U OF MINNESOTA, 1980
Whalen, Lawrence	Professor	Bachelors, Chemistry, General, U OF CALIFORNIA, 1972 Professional, Veterinary Medicine (D.V.M.), U OF CALIFORNIA, 1976 Doctorate, Pathology, Human and Animal, U OF CALIFORNIA, 1982
Wheeler, Richard	Instructor	Bachelors, Carroll College, 1995 Professional, Colorado State University, 1999 Certificate, Cornell, 2002
White, Allison	Assistant Professor	Bachelors, Occidental College, 2005 Masters, University of Chicago, 2007 Doctorate, University of Texas at Austin, 2014
Whitley, L	Professor	Bachelors, Anthropology, W KENTUCKY U, 1978 Masters, Anthropology, S ILLINOIS U, 1980 Doctorate, Anthropology, S ILLINOIS U, 1985 Masters, Computer Science, South Illinois, 1986
Whitney, Shawn	Instructor	Bachelors, Westmont College, 2000 Masters, Seattle Pacific University, 2003
Wiebensohn, Scott	Instructor	Bachelors, Elementary Teacher Education, University of Wisconsin - Milwaukee, 2001 Masters, Library Science/Librarianship, University of Denver, 2011

Wiese, Claudia	Assistant Professor	Bachelors, Biology, General, Technical University, Darmstadt, Germany, 1986 Masters, Biochemistry, Technical University, Darmstadt, Germany, 1990 Doctorate, Cell Biology, Christian Albrechts University, Kiel, Germany, 1995
Wilcox, Franziska	Senior Instructor	Bachelors, Colorado State University, 2001 Masters, German Language and Literature, Colorado State University, 2003
Wilde, Michelle	Associate Professor	Bachelors, English Language and Literature, General, Oregon State University, 1993 Masters, Library Science/Librarianship, Indiana University - Bloomington, 1996
Wilhelm, Kyle	Instructor	Bachelors, Music - General Performance, Coe College, 1994 Masters, Music Therapy, The University of Iowa, 2002
Wilhelm, Lindsey	Assistant Professor	Bachelors, Colorado State University, 2007 Masters, The University of Iowa, 2010
Wilkes, Jeffrey	Assistant Professor	Bachelors, Civil Engin., General, Texas AM University, 2000 Masters, Colorado State University, 2014
Wilkins, Michael	Assistant Professor	Bachelors, University of Birmingham, UK, 2002 Doctorate, University of Manchester, UK, 2005
Williams, Elizabeth	Associate Professor	Bachelors, Alma College, 2001 Masters, Purdue University, 2007 Doctorate, Purdue University, 2011
Williams, Gregory	Instructor	Masters, University of Colorado Denver, 1994 Masters, University of Colorado Denver, 2009
Williams, John	Professor	Bachelors, C.S.U., 1986 Doctorate, C.S.U., 1991
Williams, Linda	Instructor	Bachelors, Family/ Consumer Resource Management, Other, Colorado State University, 1978
Williams, Robert	Professor	Bachelors, Chemistry, General, Syracuse University, 1975 Doctorate, Chemistry, General, Massachusetts Institute of Technology, 1979
Williford, Anne	Associate Professor	Masters, Social Work, University of Texas at Austin, 2000 Doctorate, Social Work, University of Denver, 2009
Willis, Danielle	Instructor	Bachelors, Psychology, General, Fort Lewis College, 2005 Masters, Social Work, Colorado State University, 2010
Willson, Bryan	Professor	Bachelors, Mechanical Engin., TEXAS AM, 1982 Masters, Mechanical Engin., UNIV OF TEXAS, 1985 Doctorate, Mechanical Engin., UNIV OF TEXAS, 1988
Wilson, Emily	Instructor	Bachelors, University of Colorado, 2006 Masters, University of Colorado, 2009 Masters, University of Chicago, 2011 Doctorate, University of Chicago
Wilson, James	Associate Professor	Bachelors, Mathematics, Portland State University, 2002 Masters, Mathematics, University of Oregon, 2004 Doctorate, Mathematics, University of Oregon, 2008
Wilson, Jesse	Assistant Professor	Bachelors, Colorado State University, 2004 Masters, Colorado State Univeristy, 2007 Doctorate, Colorado State University, 2010

Wilson, Kenneth	Professor	Bachelors, Wildlife and Wildlands Management, U OF CALIFORNIA, 1978 Masters, Wildlife and Wildlands Management, UTAH STATE UNIV, 1983 Doctorate, Wildlife and Wildlands Management, COLO STATE UNIV, 1991
Wilson, Robert	Professor	Bachelors, Physics, General, UNIV OF LONDON, 1977 Masters, Physics, General, PURDUE UNIV, 1979 Doctorate, Physics, General, PURDUE UNIV, 1983
Wilson, Thomas	Assistant Professor	Bachelors, Mathematics, University of Vermont, 2004 Masters, Mathematical Statistics, North Carolina State University, 2011 Doctorate, Mathematical Statistics, North Carolina State University, 2014
Wilusz, Carol	Professor	Bachelors, Imperial Coll - Sci, Tech, Med, 1991 Doctorate, Imperial Coll - Sci, Tech, Med, 1995
Wilusz, Jeffrey	Professor	Bachelors, Rutgers University, 1981 Doctorate, Duke University, 1985
Windom, Bret	Assistant Professor	Bachelors, University of Florida, 2004 Masters, University of Florida, 2006 Doctorate, University of Florida, 2009
Windsong, Elena	Assistant Professor	Bachelors, Whitman College, Walla Walla, WA, 2002 Masters, Colorado State University, 2006 Doctorate, University of New Mexico, 2015
Winey, Tracey	Instructor	Bachelors, Sociology, Colorado State University Certificate, Social Studies Teacher Education, Colorado State University Masters, Educational/ Instructional Media Tech./Technician, Colorado State University
Winger, Quinton	Associate Professor	Bachelors, University of Western Ontario, 1994 Masters, University of Western Ontario, 1996 Professional, Texas A M University, 2000
Withrow, Stephen	Professor	Bachelors, Biology, General, U OF MINNESOTA, 1970 Professional, Veterinary Medicine (D.V.M.), U OF MINNESOTA, 1972
Witt, Jessica	Professor	Bachelors, Psychology, General, Smith College, 2000 Masters, Cognitive Psychology and Psycholinguistics, University of Virginia, 2003 Doctorate, Cognitive Psychology and Psycholinguistics, University of Virginia, 2007
Wittemyer, George	Associate Professor	Bachelors, Biology, General, Colorado College, 1997 Doctorate, Environmental Science/ Studies, University of California at Berkeley, 2005
Wohl, Ellen	Professor	Bachelors, Geology, ARIZONA STATE U, 1984 Doctorate, Geological Sciences, Other, UNIV OF ARIZONA, 1988

Wolff, Tamara	Instructor	Bachelors, English Teacher Education, Colorado State University, 1998 Certificate, Secondary Teacher Education, Colorado State University, 1998 Masters, English Teacher Education, Colorado State University, 2010
Wolfgang, Justin	Assistant Professor	Masters, University of Missouri, 2011 Professional, University of Missouri, 2012 Doctorate, University of Missouri, 2016
Wood, Mary-Keara	Assistant Professor	Bachelors, University of Massachusetts, 2003 Professional, North Carolina State University, 2008
Wood, Wendy	Professor	Bachelors, Tufts University, 1975 Masters, University of Southern California, 1988 Doctorate, University of Southern California, 1995
Woodman, Tyler	Instructor	Bachelors, Colorado State Universtiy, 2014
Work, Robert	Instructor	Bachelors, Fine/Studio Arts, Colorado State University, 1995 Masters, Fine/Studio Arts, Colorado State University, 1999
Worley, Deanna	Associate Professor	Bachelors, Biological Sciences/Life Sciences, Other, Montana State University, 1995 Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1999
Worrell, Jennifer	Instructor	
Wotman, Kathryn	Assistant Professor	Bachelors, Animal Sciences, General, Purdue University, 1998 Professional, Veterinary Medicine (D.V.M.), University of Illinois, 2002
Wright, Amanda	Senior Instructor	Bachelors, Nebraska Wesleyan University, 2002 Masters, Communications, General, Colorado State University, 2004
Wright, Grace	Instructor	Bachelors, University of Denver, 2008 Masters, Colorado State University, 2013
Wright, Nancy	Senior Instructor	Bachelors, University of Vermont, 1986 Masters, Marquette University, 1990 Masters, Eastern Washington University, 1998
Wrighton, Kelly	Assistant Professor	Bachelors, California Polytechnic State University, 2001 Masters, California Polytechnic State University, 2005 Doctorate, University of California Berkely, 2010
Wu, Mingzhong	Professor	Bachelors, Physics, General, Huazhong University of Science Technology, 1991 Bachelors, Theoretical and Mathematical Physics, Huazhong University of Science and Technology, 1991 Masters, Physics, General, Huazhong University of Science Technology, 1996 Masters, Theoretical and Mathematical Physics, Huazhong University of Science and Technology, 1996 Doctorate, Physics, General, Huazhong University of Science Technology, 1999 Doctorate, Theoretical and Mathematical Physics, Huazhong University of Science and Technology, 1999

Wurz, James	Instructor	Bachelors, Spanish Language and Literature, University of Wisconsin, 1982 Masters, Parks, Recreation and Leisure Facilities Management, Colorado State University, 1996
Xiang, Hongyan	Assistant Professor	Bachelors, Wuhan University, China, 2006 Masters, National University of Singapore, 2009 Doctorate, Pennsylvania State University, 2014
Xiong, Lina	Assistant Professor	Bachelors, Travel-Tourism Management, Jinan University, China, 2006 Masters, Hospitality/ Administration Management, University of Delaware, 2008 Doctorate, Business Administration and Management, General, Temple University, 2014
Xu, Jun	Assistant Professor	Doctorate, University of Wisconsin Madison, 2016
Yalen, Deborah	Associate Professor	Bachelors, English Language and Literature, General, Columbia College, 1989 Masters, History, Other, Georgetown University, 1994 Doctorate, European History, University of California Berkeley, 2007
Yalin, Azer	Professor	Bachelors, QUEEN'S UNIV, 1995 Masters, PRINCETON UNIV, 1997 Doctorate, PRINCETON UNIV, 2000
Yan, Ruoh-Nan	Associate Professor	Bachelors, Journalism, National Chengchi University, 1993 Masters, General Retailing Operations, University of Arizona, 2001 Doctorate, General Retailing Operations, University of Arizona, 2005
Yang, Hua	Assistant Professor	Bachelors, Food Sciences and Tech, Sichuan University of Science and Technology, 1996 Masters, Food Sciences and Tech, China Agricultural University, 2000 Doctorate, Clemson University, South Carolina, 2003
Yang, Liuqing	Professor	Bachelors, Huazhong Univ of Sci Tech, 1994 Masters, Univ of Minnesota, 2002 Doctorate, University of Minnesota, 2004
Yao, Tingting	Associate Professor	Bachelors, Biochemistry, Wuhan University, 1996 Doctorate, Biochemistry, The University of Iowa, 2002
Yarrington, Douglas	Associate Professor	Doctorate, History, General, University of Texas, 1992
Yelinek, Kristina	Instructor	Masters, Oberlin College, 2001 Masters, University of Colorado Boulder, 2005 Masters, Colorado State University, 2014
Yoder, Jamie	Associate Professor	Bachelors, Ohio University, 2005 Masters, University of Cincinnati, 2008 Doctorate, Mental Health Services, Other, University of Denver, 2013
Yoelin-Allen, Renee	Instructor	Bachelors, Psychology, General, University of Northern Colorado, 1990 Masters, Social Work, Colorado State University, 1996

Yost, Dylan	Assistant Professor	Doctorate, University of Colorado, 2011 Bachelors, Colorado School of Mines
Yost, Nicole	Instructor	Bachelors, Colorado State University
Young, Falene	Instructor	Bachelors, CU Denver, 2014 Masters, Colorado State University, 2015
Young, Peter	Professor	Bachelors, Engin. Science, OXFORD UNIV, 1985 Masters, Electrical, Electronics and Communication Engin., UNIV OF FLORIDA, 1988 Doctorate, Electrical, Electronics and Communication Engin., CAL INST TECH, 1993
Yourdkhani, Mostafa	Assistant Professor	Bachelors, Mechanical Engin., Sharif University of Technology, 2007 Masters, Mechanical Engin., McGill University, 2009 Doctorate, Mechanical Engin., McGill University, 2014
Yowell, Robyn	Instructor	Bachelors, Colorado State University, 1994 Masters, Colorado State University, 2017
Yu, Yawen	Assistant Professor	
Yuma, Paula	Assistant Professor	Bachelors, Pre-Elementary/Early Childhood/Kindergarten Teacher Education, Univerity of Texas Austin, 2001 Masters, Texas A M Health Science Center, 2003 Doctorate, Social Work, Untiversity of Texas Austin, 2014
Zabel, Mark	Professor	Bachelors, Loyola University of Chicago, 1990 Bachelors, Southern Illinois University, 1995 Doctorate, University of Utah, 2001
Zablocki, Alex	Instructor	
Zadrozny, Joseph	Assistant Professor	Bachelors, Virginia Polytechnic Institute and State University, 2007 Doctorate, University of California, 2013
Zaffos, Josh	Instructor	Bachelors, Emory University Masters, Yale University
Zahran, Sammy	Professor	Bachelors, Political Science, General, University of Windsor, 1995 Doctorate, Sociology, University of Tennessee, 2003
Zamora, Felicia	Instructor	Bachelors, Iowa State University, 2001 Masters, Colorado State University, 2012
Zamzow, Marie	Instructor	Bachelors, Psychology, General, Colorado State University, 1995 Masters, Social Work, Smith College School for Social Work, 1997
Zarestky, Jill	Assistant Professor	Bachelors, Mathematics, University of Tennessee, 1999 Masters, Applied Mathematics, General, University of Texas, 2002 Doctorate, Adult and Continuing Teacher Education, Texas AM, 2014
Zeas, Joanne	Instructor	Bachelors, University of Maryland, College Park Doctorate, Temple University Masters, Temple University
Zeller, Shannon	Instructor	Bachelors, University of New Mexico, 2005 Certificate, One World Training - Boulder, 2011 Masters, Colorado State University, 2015
Zersen, Kristin	Instructor	
Zhao, Jianguo	Assistant Professor	Bachelors, Harbin Institute of Technology, 2005 Masters, Harbin Institute of Technology, 2007 Doctorate, Michigan State University, 2015

Zhou, Wen	Assistant Professor	Doctorate, Applied Mathematics, General, Iowa State University, 2010 Doctorate, Mathematical Statistics, Iowa State University, 2014
Zhou, Yongcheng	Associate Professor	Bachelors, Mechanical Engin., Northwestern Polytechnical University, 1996 Masters, Mechanical Engin., China Academy of Launch Vehicle Technology, 1999 Doctorate, Applied Mathematics, General, Michigan State University, 2006
Zhou, Yongli	Associate Professor	Bachelors, Computer Science, University of Iowa, 2003 Masters, Library Science, Other, University of Iowa, 2004
Zimmerman, Debra	Instructor	Bachelors, Iowa State University, 1981 Masters, University of Northern Colorado, 1984 Masters, Colorado State University, 1999
Zimmerman, Donald	Professor	Bachelors, Biology, General, KANSAS STATE U, 1966 Masters, Journalism, KANSAS STATE U, 1968 Doctorate, Mass Communications, U OF WISCONSIN, 1977
Zimmerman, Toni	Professor	Bachelors, Psychology, General, OHIO UNIVERSITY, 1984 Masters, Clinical Psychology, RADFORD UNIV, 1985 Doctorate, Family and Marriage Counseling, VIRGINIA POLY U, 1991
Zinn, Gesa	Instructor	Bachelors, California State University, 1985 Masters, University of Minnesota Twin Cities, 1990 Doctorate, University of Minnesota Twin Cities, 1995
Zoch, Amanda	Instructor	Masters, Indiana University, Bloomington, 2012
Zuniga, Heidi	Associate Professor	Bachelors, English Language and Literature, General, Pacific Lutheran University, 1998 Masters, English Language and Literature, General, Colorado State University, 2002 Masters, Library Science/Librarianship, Clarion University of Pennsylvania, 2008
Zwick-Tapley, Sarah	Instructor	Bachelors, Illinois State University, 1991 Masters, Harvard University/Moscow Art Theatre, 1999

KEY TO COURSES

The University reserves the right to change courses in this section without notice. There is no assurance that a given course will be offered in complete accordance with the catalog listing. Since the frequency of course offerings is determined by the department in accordance with program needs, students should consult the online class schedule (available on RAMweb (https://ramweb.colostate.edu)***) for courses and sections to be offered in a given term.***

Key to Courses of Instruction

CO[1] 150[2] College Composition (GT-CO2)[3] Credits: 3 (3-0-0)[4]
Course Description: Understanding and writing for rhetorical situations; critical reading and response; writing source-based argument for academic and public audiences.[5]
Prerequisite: CO 130.[6]
Registration Information: Must have taken CO 130 or Composition Challenge Exam (score of 3, 4, or 5) or have a SAT Verbal/Critical reading score of minimum 570 or SAT Evidence Based Reading/Writing score of minimum 620 or ACT Composite score of minimum 26 or Directed Self-Placement Survey score of 15.[7]
Terms Offered: Fall, Spring, Summer.[8]
Grade Mode: Traditional.[9]
Special Course Fee: No.[10]
Additional Information: Intermediate Writing 1A,[11] Intermediate Writing (GT-CO2).
Refer to the sections below for an explanation of each numbered item.

1. Course Subject Codes

Courses offered by colleges, departments, or units are indicated by course subject codes, using 2, 3, or 4 letters.

2. Course Numbering

Course numbering is based on the content level of material presented in a course.

100-299	Courses primarily for freshman and sophomore students.
300-499	Courses primarily for junior and senior students. Acceptable for graduate credit for students holding bachelor's degrees when approved by the student's graduate committee.
500-599	Courses primarily for students enrolled in master's level degree programs or equivalents. Qualified junior and senior students may enroll.
600-699	Courses primarily for students enrolled in master's level programs or equivalents. Undergraduate students may not enroll to satisfy undergraduate degree requirements.
700-799	Courses primarily for students enrolled in Ph.D. level programs or equivalents and professional veterinary medicine. Undergraduate students may not enroll.
8000-8999	Not for academic credit, English Language Program Courses.

3. State Guaranteed Transfer (GT- *subcode)*

By legislation, lower-division CSU courses in categories 1-3 of the All-University Core Curriculum (AUCC) must be submitted to and approved by the Colorado Commission on Higher Education (CCHE) (http://highered.colorado.gov/Academics/Transfers/gtPathways/curriculum.html) as general education courses guaranteed to transfer among all public higher education institutions within Colorado.
The subcode refers to the specific statewide general education category the course fulfills. For a complete listing of the courses approved statewide, visit the CCHE (https://highered.colorado.gov/Academics/Transfers/gtPathways/Curriculum/Courses.aspx) site. (http://highered.colorado.gov/Academics/Transfers/gtPathways/curriculum.html)

4. Credits and Clock Hour Distribution

The distribution of credit for lecture#laboratory#discussion or recitation class periods per semester is as follows: in the example 04(2#2#1), the number outside the parentheses indicates the number of credits of this course. Inside the parentheses, the first number indicates the number of clock hours spent in lectures each week, the second number indicates the number of clock hours spent in laboratory/studio each week, and the third number indicates the number of clock hours spent in discussion, recitation, seminar, or other each week.

Variable Credit Courses

VAR indicates variable credit with no specific minimum credit or no maximum credit indicated. May vary from 1-18 credits. Prior to registering, students should consult department for the number of credits to register for.

Var[3#9] indicates variable credits with minimum and maximum numbers of credits per term. Prior to registering students should consult the department for the specific number of credits to register for.

The course listing may indicate other credit limitations.

5. Course Description

A description of the content of the course.

6. Prerequisites

Students must meet all course prerequisites prior to registration for a specific course, or acquire the instructor's permission. Students should inquire about overrides with the instructor assigned to teach the class or the department offering the class.

All prerequisites may be considered to have been met if a student presents evidence of credit earned in equivalent courses or if knowledge equivalent to the prerequisites listed is demonstrated.

A department may limit the enrollment in a course; courses may be limited to a specific number of students, to students in specified majors, or to students of specified class levels.

In the listing in this catalog, only the most recent version of a course number is shown as a prerequisite.

7. Registration Information

Additional course information students need prior to registering for a course. Courses are offered Face-to-Face unless otherwise noted. Courses approved for online are identified. Check the class schedule or department for availability. Additional information (e.g., Required Field trips, partial semester courses, etc.) will be listed here. Courses may be offered through CSU Online/Division of Continuing Education (http://www.online.colostate.edu).

8. Terms Offered

Fall	Scheduled fall semester
Spring	Scheduled spring semester
Summer	Scheduled summer session

The term or terms listed are those in which the course could be scheduled and offered. Since the frequency of course offerings is determined by the department in accordance with program needs, students should consult the official, applicable online class schedule (available on RAMweb (https://ramweb.colostate.edu)) for courses and sections to be offered in a given term.

The following types of courses do not always list a term; they will be offered when there is sufficient demand: -84, -85, Supervised College Teaching; #86, Practicum; #87, Internship; -88, Field Placement; -89, Cooperative; #90, #91, Workshop; #92, #93, Seminar; #94, #95, Independent Study; #96, #97, Group Study; #98, Research; and #99, Thesis or Dissertation.

9. Grade Mode

Refer to the Glossary for grade mode defintions.

- Traditional letter grades;
- Satisfactory/Unsatisfactory (S/U) grading only;
- Student Option - Traditional or S/U;
- Instructor Option - Traditional or S/U

10. Special Course Fees (http://provost.colostate.edu/files/2015/05/Comprehensive-List-AY16-FINAL.pdf)

Certain courses carry a special fee which is assessed at the time a student registers for the course. For a list of current course fees, refer to the Office of the Provost (https://provost.colostate.edu/media/sites/75/2018/05/Comprehensive-List-as-of-AY19-final.pdf).

Certain courses carry a variable fee which is assessed each student enrolled in the course based on expenses that fluctuate (e.g., expendable materials).

11. Additional Information

This notation identifies which, if any, of the categories (i.e., AUCC 1A) the course fulfills in the **All-University Core Curriculum (AUCC).**

Students are strongly advised to see if their major and concentration has specific courses or course recommendations to meet AUCC requirements.

COURSES A-Z

Key To Courses
Academic English, Adv-AEAD (AEAD)

Courses

AEAD 8310 ESOL – Advanced 3 Academic English, Listening & Speaking for Undergraduates CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. For students planning to pursue an undergraduate degree. Improve listening comprehension using Level 3 texts; communicate with increasing fluency and accuracy about ideas from course themes.
Prerequisite: (AEIN 8210 with a minimum grade of S) and (AEIN 8212 with a minimum grade of S) and (AEIN 8213 with a minimum grade of S) and (AEIN 8255 with a minimum grade of S).
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Registration Information: Concurrent registration in AEAD 8312 and AEAD 8313.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEAD 8312 ESOL – Advanced 3 Academic English, Reading & Writing for Undergraduates CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. For students planning to pursue an undergraduate degree. Improve reading comprehension using Level 3 texts; complete well-developed and organized Level 3 writing tasks about ideas from course themes.
Prerequisite: (AEIN 8210 with a minimum grade of S) and (AEIN 8212 with a minimum grade of S) and (AEIN 8213 with a minimum grade of S) and (AEIN 8255 with a minimum grade of S).
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Registration Information: Concurrent registration in AEAD 8310 and AEAD 8313.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEAD 8313 ESOL – Advanced 3 Academic English, Grammar for Undergraduates CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. For students planning to pursue an undergraduate degree. Focus on grammatical structures present in Level 3 reading and listening texts; incorporate learned grammatical structures in Level 3 writing and speaking tasks.
Prerequisite: (AEIN 8210 with a minimum grade of S) and (AEIN 8212 with a minimum grade of S) and (AEIN 8213 with a minimum grade of S) and (AEIN 8255 with a minimum grade of S).
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Registration Information: Concurrent registration in AEAD 8310 and AEAD 8312.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEAD 8355 ESOL – Advanced 3 Academic English, General Non-Core for Undergraduates CEUs: 3 (3-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. For students planning to pursue an undergraduate degree. Introduce and review technology tools and independent language learning strategies to support language skill development.
Prerequisite: (AEIN 8210 with a minimum grade of S) and (AEIN 8212 with a minimum grade of S) and (AEIN 8213 with a minimum grade of S) and (AEIN 8255 with a minimum grade of S).
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEAD 8510 ESOL – Advanced 3 Academic English, Listening & Speaking for Graduates CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. For students with a Bachelor's degree or equivalent. Improve listening comprehension using Level 3 texts; communicate with increasing fluency and accuracy about ideas from course themes.
Prerequisite: (AEIN 8210 with a minimum grade of S) and (AEIN 8212 with a minimum grade of S) and (AEIN 8213 with a minimum grade of S) and (AEIN 8255 with a minimum grade of S).
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Registration Information: Concurrent registration in AEAD 8512 and AEAD 8513.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEAD 8512 ESOL – Advanced 3 Academic English, Reading & Writing for Graduates CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. For students with a Bachelor's degree or equivalent. Improve reading comprehension using Level 3 texts; complete well-developed and organized Level 3 writing tasks about ideas from course themes.
Prerequisite: (AEIN 8210 with a minimum grade of S) and (AEIN 8212 with a minimum grade of S) and (AEIN 8213 with a minimum grade of S) and (AEIN 8255 with a minimum grade of S).
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Registration Information: Concurrent registration in AEAD 8510 and AEAD 8513.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEAD 8513 ESOL – Advanced 3 Academic English, Grammar for Graduates CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. For students with a Bachelor's degree or equivalent. Focus on grammatical structures present in Level 3 reading and listening texts; incorporate learned grammatical structures in Level 3 writing and speaking tasks.
Prerequisite: (AEIN 8210 with a minimum grade of S) and (AEIN 8212 with a minimum grade of S) and (AEIN 8213 with a minimum grade of S) and (AEIN 8255 with a minimum grade of S).
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Registration Information: Concurrent registration in AEAD 8510 and AEAD 8512.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEAD 8555 ESOL – Advanced 3 Academic English, General Non-Core for Graduates CEUs: 3 (3-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. For students with a Bachelor's degree or equivalent. Introduce and review technology tools and independent language learning strategies to support language skill development.
Prerequisite: (AEIN 8210 with a minimum grade of S) and (AEIN 8212 with a minimum grade of S) and (AEIN 8213 with a minimum grade of S) and (AEIN 8255 with a minimum grade of S).
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

Academic English, Basic-AEBA (AEBA)

Courses

AEBA 8110 ESOL – Basic 1 Academic English, Listening & Speaking CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Improve listening comprehension using Level 1 texts; communicate with increasing fluency and accuracy about ideas from course themes.
Prerequisite: (AEFN 8210 with a minimum grade of S or AEFN 8310 with a minimum grade of S) and (AEFN 8212 with a minimum grade of S or AEFN 8312 with a minimum grade of S) and (AEFN 8213 with a minimum grade of S or AEFN 8313 with a minimum grade of S) and (AEFN 8255 with a minimum grade of S or AEFN 8355 with a minimum grade of S).
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Registration Information: Concurrent registration in AEBA 8112 and AEBA 8113.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEBA 8112 ESOL– Basic 1 Academic English, Reading & Writing CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Improve reading comprehension using Level 1 texts; complete well-developed and organized Level 1 writing tasks about ideas from course themes.
Prerequisite: (AEFN 8210 with a minimum grade of S or AEFN 8310 with a minimum grade of S) and (AEFN 8212 with a minimum grade of S or AEFN 8312 with a minimum grade of S) and (AEFN 8213 with a minimum grade of S or AEFN 8313 with a minimum grade of S) and (AEFN 8255 with a minimum grade of S or AEFN 8355 with a minimum grade of S).
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Registration Information: Concurrent registration in AEBA 8110 and AEBA 8113.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEBA 8113 ESOL – Basic 1 Academic English, Grammar CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Focus on grammatical structures present in Level 1 reading and listening texts; incorporate learned grammatical structures in Level 1 writing and speaking tasks.
Prerequisite: (AEFN 8210 with a minimum grade of S or AEFN 8310 with a minimum grade of S) and (AEFN 8212 with a minimum grade of S or AEFN 8312 with a minimum grade of S) and (AEFN 8213 with a minimum grade of S or AEFN 8313 with a minimum grade of S) and (AEFN 8255 with a minimum grade of S or AEFN 8355 with a minimum grade of S).
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Registration Information: Concurrent registration in AEBA 8110 and AEBA 8112.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEBA 8155 ESOL – Basic 1 Academic English, General Non-Core CEUs: 3 (3-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Introduce and review technology tools and independent language learning strategies to support language skill development.
Prerequisite: (AEFN 8210 with a minimum grade of S or AEFN 8310 with a minimum grade of S) and (AEFN 8212 with a minimum grade of S or AEFN 8312 with a minimum grade of S) and (AEFN 8213 with a minimum grade of S or AEFN 8313 with a minimum grade of S) and (AEFN 8255 with a minimum grade of S or AEFN 8355 with a minimum grade of S).
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

Academic English, Fndtns-AEFN (AEFN)

AEFN 8110 ESOL – Level 1 Foundations Academic English, Listening & Speaking CEUs: 3 (3-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. No previous study in English. Listening comprehension of Foundations 1 texts; communicate with increasing fluency and accuracy about ideas from course themes.
Prerequisite: None.
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Registration Information: Concurrent registration in AEFN 8112 and AEFN 8113.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEFN 8112 ESOL– Level 1 Foundations Academic English, Reading & Writing CEUs: 3 (3-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. No previous study in English. Reading comprehension of Foundations 1 texts; complete well-developed and organized Foundations 1 writing tasks about ideas from course themes.
Prerequisite: None.
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Registration Information: Concurrent registration in AEFN 8110 and AEFN 8113.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEFN 8113 ESOL – Level 1 Foundations Academic English, Grammar CEUs: 3 (3-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. No previous study in English. Focus on grammatical structures present in Foundations 1 reading and listening texts; incorporate learned grammatical structures in Foundations 1 writing and speaking tasks.
Prerequisite: None.
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Registration Information: Concurrent registration in AEFN 8110 and AEFN 8112.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEFN 8155 ESOL – Level 1 Foundations Academic English, General Non-Core CEU: 1.5 (1.5-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. No previous study in English. Introduce and review technology tools and independent language learning strategies to support Foundations 1 language skill development.
Prerequisite: None.
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEFN 8210 ESOL – Level 2 Foundations Academic English, Listening & Speaking CEUs: 3 (3-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Improve listening comprehension using Foundations 2 texts; communicate with increasing fluency and accuracy about ideas from course themes.
Prerequisite: (AEFN 8110 with a minimum grade of S) and (AEFN 8112 with a minimum grade of S) and (AEFN 8113 with a minimum grade of S).
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Registration Information: Concurrent registration in AEFN 8212 and AEFN 8213.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEFN 8212 ESOL – Level 2 Foundations Academic English Reading & Writing CEUs: 3 (3-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Improve reading comprehension using Foundations 2 texts; complete well-developed and organized Foundations 2 writing tasks about ideas from course themes.
Prerequisite: (AEFN 8110 with a minimum grade of S) and (AEFN 8112 with a minimum grade of S) and (AEFN 8113 with a minimum grade of S).
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Registration Information: Concurrent registration in AEFN 8210 and 8213.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEFN 8213 ESOL – Level 2 Foundations Academic English, Grammar CEUs: 3 (3-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Focus on grammatical structures present in Foundations 2 reading and listening texts; incorporate learned grammatical structures in Foundations 2 writing and speaking tasks.
Prerequisite: (AEFN 8110 with a minimum grade of S) and (AEFN 8112 with a minimum grade of S) and (AEFN 8113 with a minimum grade of S).
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Registration Information: Concurrent registration in AEFN 8210 and AEFN 8212.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEFN 8255 ESOL – Level 2 Foundations Academic English, General Non-Core CEU: 1.5 (1.5-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Introduce and review technology tools and independent language learning strategies to support Foundations 2 language skill development.
Prerequisite: (AEFN 8110 with a minimum grade of S) and (AEFN 8112 with a minimum grade of S) and (AEFN 8113 with a minimum grade of S).
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEFN 8310 ESOL – Level 3 Foundations Academic English, Listening & Speaking CEUs: 3 (3-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Improve listening comprehension using Foundations 3 texts; communicate with increasing fluency and accuracy about ideas from course themes.
Prerequisite: (AEFN 8210 with a minimum grade of S) and (AEFN 8212 with a minimum grade of S) and (AEFN 8213 with a minimum grade of S).
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Registration Information: Concurrent registration in AEFN 8312 and AEFN 8313.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEFN 8312 ESOL – Level 3 Foundations Academic English, Reading & Writing CEUs: 3 (3-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Improve reading comprehension using Foundations 3 texts; complete well-developed and organized Foundations 3 writing tasks about ideas from course themes.
Prerequisite: (AEFN 8210 with a minimum grade of S) and (AEFN 8212 with a minimum grade of S) and (AEFN 8213 with a minimum grade of S).
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Registration Information: Concurrent registration in AEFN 8310 and AEFN 8313.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEFN 8313 ESOL – Level 3 Foundations Academic English, Grammar CEUs: 3 (3-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Focus on grammatical structures present in Foundations 3 reading and listening texts; incorporate learned grammatical structures in Foundations 3 writing and speaking tasks.
Prerequisite: (AEFN 8210 with a minimum grade of S) and (AEFN 8212 with a minimum grade of S) and (AEFN 8213 with a minimum grade of S).
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Registration Information: Concurrent registration in AEFN 8310 and AEFN 8312.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEFN 8355 ESOL – Level 3 Foundations Academic English, General Non-Core CEU: 1.5 (1.5-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Introduce and review technology tools and independent language learning strategies to support Foundations 3 language skill development.
Prerequisite: (AEFN 8210 with a minimum grade of S) and (AEFN 8212 with a minimum grade of S) and (AEFN 8213 with a minimum grade of S).
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

Academic English, NonNatv- AENG (AENG)

Courses

AENG 8310 ESOL – Comprehensive Pathway, Listening & Speaking for Undergraduates CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Skills-based course to prepare students for typical listening and speaking tasks in undergraduate courses.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Concurrent enrollment in AENG 8312 and AENG 8313.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AENG 8312 ESOL – Comprehensive Pathway, Reading & Writing for Undergraduates CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Skills-based course to prepare students for the reading and writing tasks in typical undergraduate courses.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Concurrent registration in AENG 8310 and AENG 8313.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AENG 8313 ESOL – Comprehensive Pathway, Grammar for Undergraduates CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers Skills-based course to improve grammatical and lexical understanding and accuracy in written and oral communication.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Concurrent enrollment in AENG 8310 and AENG 8312.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

Academic English, EngPgm-AEEP (AEEP)

Courses

AEEP 8393 ESOL – Academic English, Preparatory for IELTS Exam CEU: 1.5 (1.5-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers.
Prerequisite: (AEIN 8210 with a minimum grade of S) and (AEIN 8212 with a minimum grade of S) and (AEIN 8213 with a minimum grade of S) and (AEIN 8255 with a minimum grade of S).
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEEP 8591 ESOL – Academic English, Preparatory for GRE Exam CEU: 1.5 (1.5-0-0)
Course Description: Not for academic credit. GRE Prep course designed for non-native English Speakers.
Prerequisite: None.
Restriction: Must be a: Graduate.
Terms Offered: Fall, Spring.
Special Course Fee: No.

AEEP 8592 ESOL – Academic English, Preparatory for GMAT Exam CEU: 1.5 (1.5-0-0)
Course Description: Not for academic credit. GMAT Prep course designed for non-native English Speakers.
Prerequisite: None.
Restriction: Must be a: Graduate.
Terms Offered: Fall, Spring.
Special Course Fee: No.

Academic English, Int-AEIN (AEIN)

Courses

AEIN 8210 ESOL – Intermediate 2 Academic English, Listening & Speaking CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Improve listening comprehension using Level 2 texts; communicate with increasing fluency and accuracy about ideas from course themes.
Prerequisite: (AEBA 8110 with a minimum grade of S) and (AEBA 8112 with a minimum grade of S) and (AEBA 8113 with a minimum grade of S) and (AEBA 8155 with a minimum grade of S).
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Registration Information: Concurrent registration in AEIN 8212 and AEIN 8213.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEIN 8212 ESOL – Intermediate 2 Academic English Reading & Writing CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Improve reading comprehension using Level 2 texts; complete well-developed and organized Level 2 writing tasks about ideas from course themes.
Prerequisite: (AEBA 8110 with a minimum grade of S) and (AEBA 8112 with a minimum grade of S) and (AEBA 8113 with a minimum grade of S) and (AEBA 8155 with a minimum grade of S).
Restriction: Must major/minor in: INTO Academic English.
Registration Information: Concurrent registration in AEIN 8210 and AEIN 8213.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEIN 8213 ESOL – Intermediate 2 Academic English, Grammar CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Focus on grammatical structures present in Level 2 reading and listening texts; incorporate learned grammatical structures in Level 2 writing and speaking tasks.
Prerequisite: (AEBA 8110 with a minimum grade of S) and (AEBA 8112 with a minimum grade of S) and (AEBA 8113 with a minimum grade of S) and (AEBA 8155 with a minimum grade of S).
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Registration Information: Concurrent registration in AEIN 8210 and AEIN 8213.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEIN 8255 ESOL – Intermediate 2 Academic English, General Non-Core CEUs: 3 (3-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Introduce and review technology tools and independent language learning strategies to support language skill development.
Prerequisite: (AEBA 8110 with a minimum grade of S) and (AEBA 8112 with a minimum grade of S) and (AEBA 8113 with a minimum grade of S) and (AEBA 8155 with a minimum grade of S).
Restrictions: Must major/minor in: INTO Academic English. Must be a: Self Improvement.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

Accounting-ACT (ACT)

Courses

ACT 205 Fundamentals of Accounting Credits: 3 (3-0-0)
Course Description: Understanding of financial statements to support financial and managerial decision making.
Prerequisite: None.
Registration Information: For nonbusiness majors. Sections may be offered: Online. Credit not allowed for both ACT 205 and ACT 210.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 210 Introduction to Financial Accounting Credits: 3 (3-0-0)
Course Description: Use of accounting information by decision makers; development of the basic accounting model, and issues concerning income and cash flows.
Prerequisite: None.
Registration Information: Credit not allowed for both ACT 210 and ACT 205.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 211 Accounting Professional Skills Credit: 1 (1-0-0)
Course Description: Survey of accounting profession career options, certifications, and professional skills.
Prerequisite: ACT 210.
Registration Information: Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 220 Introduction to Managerial Accounting Credits: 3 (3-0-0)
Course Description: Use of accounting information in internal decision making.
Prerequisite: ACT 210.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 311 Intermediate Accounting I Credits: 4 (3-0-1)
Course Description: Preparation and analysis of financial statements under U.S. generally accepted accounting principles (GAAP); accounting for revenue and assets.
Prerequisite: (ACT 210 with a minimum grade of B-) and (ACT 211, may be taken concurrently and ACT 220 with a minimum grade of B-).
Registration Information: Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 312 Intermediate Accounting II Credits: 3 (3-0-0)
Course Description: Equity structure of corporations; analysis and interpretation of accounting data.
Prerequisite: ACT 311 with a minimum grade of C.
Registration Information: Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 321 Cost Management Credits: 3 (3-0-0)
Course Description: Utilizing budgetary and cost accounting information for planning, controlling, and decision-making.
Prerequisite: ACT 220.
Registration Information: Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 330 Introduction to Taxation Credits: 3 (3-0-0)
Course Description: Introduction to U.S. taxation, with emphasis on federal income tax; impact of taxation on business decisions.
Prerequisite: ACT 220.
Registration Information: Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 350 Accounting Information Systems Credits: 3 (3-0-0)
Course Description: Design, administration and control of accounting information systems; use of accounting systems software.
Prerequisite: ACT 220 and ACT 321.
Registration Information: Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 411 Advanced Accounting Credits: 3 (3-0-0)
Course Description: Accounting for branches and subsidiaries, partnerships, and business combinations. Accounting for multi-national business transactions.
Prerequisite: ACT 312.
Registration Information: Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 441 Auditing Practices Credits: 3 (3-0-0)
Course Description: Environment, professional standards, and practices involved in auditing financial statements and performance of other assurance services.
Prerequisite: ACT 312 and ACT 350.
Registration Information: Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 487 Internship Credits: Var[1-6] (0-0-0)
Course Description: Supervised work experience in public, industry, not-for-profit, or governmental accounting.
Prerequisite: ACT 311 and ACT 312 or ACT 311 and ACT 321 or ACT 311 and ACT 330 or ACT 311 and ACT 350 or ACT 312 and ACT 321 or ACT 312 and ACT 330 or ACT 312 and ACT 350 or ACT 321 and ACT 330 or ACT 321 and ACT 350 or ACT 330 and ACT 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ACT 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 498 Research Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

ACT 540 Professional Ethics and Responsibilities Credits: 3 (3-0-0)
Course Description: Ethical practice of professional accounting.
Prerequisite: ACT 311.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 541 Forensic Accounting and Fraud Auditing Credits: 3 (3-0-0)
Course Description: Professional practices for addressing the related areas of forensic accounting and fraud.
Prerequisite: ACT 441.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 550 Accounting Information Technologies Credits: 3 (3-0-0)
Course Description: Best practices for information technologies used in accounting systems worldwide.
Prerequisite: ACT 350.
Registration Information: Sections may be offered: Online. Consent of instructor can substitute for ACT 350 for a student with substantial and relevant work experience.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 561 Legal and Regulatory Issues in Accounting Credits: 3 (3-0-0)
Course Description: Contracts, ownership, bankruptcy (debtor/creditor relationship), formation of business entities, regulation of accounting profession.
Prerequisite: BUS 205 or BUS 260.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 570 Government and Nonprofit Credits: 3 (3-0-0)
Course Description: Theory and practical application of accounting principles and auditing standards to governmental entities and not-for-profit organizations.
Prerequisite: ACT 441, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 575 Oil and Gas Accounting Credits: 3 (3-0-0)
Course Description: Specialized financial accounting procedures related to the oil and gas industry.
Prerequisite: ACT 311.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 601A Professional Practice: Taxation Credits: 3 (3-0-0)
Course Description: Management of professional tax practice; professional ethics and regulation; research techniques.
Prerequisite: ACT 330.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online, and in 8 week format.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 601B Professional Practice: Accounting Credits: 3 (3-0-0)
Course Description: Management of professional accounting practice; professional ethics and regulation; and research techniques.
Prerequisite: ACT 441.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online, in 8 week format.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 605 Accounting for Sustainable Enterprises Credits: 3 (3-0-0)
Course Description: A survey of financial, managerial, and sustainability accounting systems and reports.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Not available to Master of Accountancy students.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 612 Issues in Financial Reporting and Auditing Credits: 3 (3-0-0)
Course Description: Contemporary and emerging issues at the intersection of financial reporting and auditing.
Prerequisite: ACT 312.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 614 Financial Statement Analysis and Valuation Credits: 3 (3-0-0)
Course Description: Tools and techniques of financial statement analysis and application to equity valuation.
Prerequisite: ACT 312.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 631 Corporate Taxation Credits: 3 (3-0-0)
Course Description: Federal income tax principles pertaining to formation and operation of corporate entities.
Prerequisite: ACT 330.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 633 Flow-Through Entities Credits: 3 (3-0-0)
Course Description: Federal income tax principles and problems pertaining to flow-through entities.
Prerequisite: ACT 330.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 635 State and Local Taxation Credits: 3 (3-0-0)
Course Description: Tax planning and compliance issues for entities doing business in multi-jurisdictional locales.
Prerequisite: ACT 330.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 636 Taxation of Corporations and Shareholders Credits: 3 (3-0-0)
Course Description: Federal income tax principles and problems relating to reorganization, consolidation, and termination of corporations.
Prerequisite: ACT 330.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 639 Special Topics in Taxation Credits: 3 (3-0-0)
Course Description: Taxation of not-for-profit entities; international tax issues; other contemporary topics.
Prerequisite: ACT 330.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 641 Information Systems Audit and Control Credits: 3 (3-0-0)
Course Description: Exploration of organizations' information systems, and the considerations involved in controlling and auditing these systems. Topics range from the general, such as organizational governance, to the very technical, for example, data encryption. Addresses material found on the CPA exam and the Certified Information Systems Auditor (CISA) exam.
Prerequisite: ACT 350 and ACT 441.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ACT 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Aerospace Studies-AS (AS)

Courses

AS 101 Heritage and Values of the US Air Force I Credit: 1 (1-0-0)
Course Description: Introduction to the United States Air Force. Overview of the basic characteristics, missions, and organization of the Air Force.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AS 102 Heritage and Values of the US Air Force II Credit: 1 (1-0-0)
Course Description: Deeper overview of the basic characteristics, missions, and organization of the Air Force.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AS 196A Aerospace Group Study I Credit: 1 (0-2-0)
Course Description: Leadership Group Study is mandatory for students who are members of ROTC or are eligible to pursue a commission as determined by the Professor of Aerospace Studies.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

AS 196B Aerospace Group Study I Credit: 1 (0-2-0)
Course Description: Leadership Group Study is mandatory for students who are members of ROTC or are eligible to pursue a commission as determined by the Professor of Aerospace Studies.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

AS 201 Air Force Team & Leadership Fundamentals I Credit: 1 (1-0-0)
Course Description: Focus on the foundation for teams and leadership. Topics include skills that improve leadership on a personal level and within a team. Prepare for field training experience practicing the concepts learned. Instill a leadership mindset and motivation for transition from AFROTC cadet to AFROTC officer candidate.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AS 202 Air Force Team & Leadership Fundamentals II Credit: 1 (1-0-0)
Course Description: More in-depth lecture foundation for teams and leadership in a military environment. Topics include skills that improve leadership on a personal level and within a team. Intense preparation for field training experience practicing the concepts learned.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AS 296A Aerospace Group Study II Credit: 1 (0-2-0)
Course Description: Leadership Group Study is mandatory for students who are members of ROTC or are eligible to pursue a commission as determined by the Professor of Aerospace Studies.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

AS 296B Aerospace Group Study II Credit: 1 (0-2-0)
Course Description: Leadership Group Study is mandatory for students who are members of ROTC or are eligible to pursue a commission as determined by the Professor of Aerospace Studies.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

AS 301 Leading People and Effective Communication I Credits: 3 (3-0-0)
Course Description: Advanced skills and knowledge in management and leadership. Emphasis on enhancing leadership skills and communication. Cadets explore these leadership and management techniques in a supervised environment.
Prerequisite: AS 202.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AS 302 Leading People and Effective Communication II Credits: 3 (3-0-0)
Course Description: Enhance skills and knowledge in management and leadership while in leadership positions. Cadets explore these leadership and management techniques in a supervised environment.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AS 333 Operational Air Force Writing Credits: 2 (2-0-0)
Course Description: Common writing practices and procedures encountered by junior officers in the Air Force. Emphasizes proper writing content as well as form.
Prerequisite: CO 150.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AS 396A Aerospace Group Study III Credit: 1 (0-2-0)
Course Description: Concept of leadership; relationship between leadership and management; importance of leadership in the operation and success of any organization.
Prerequisite: AS 296A or AS 296B.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

AS 396B Aerospace Group Study III Credit: 1 (0-2-0)
Course Description: Concept of leadership; relationship between leadership and management; importance of leadership in the operation and success of any organization.
Prerequisite: AS 296A or AS 296B.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

AS 401 National Security Affairs/Active Duty I Credits: 3 (3-0-0)
Course Description: Evolution and formulation of U.S. defense policy and strategy, regional conflict studies, Air Force roles and missions.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AS 402 National Security Affairs/Active Duty II Credits: 3 (3-0-0)
Course Description: Professionalism, military justice system, military ethics, commissioning essentials, and emphasis on communication skills.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AS 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: AS 202.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

AS 496A Aerospace Group Study IV Credit: 1 (0-1-0)
Course Description: Concept of leadership; relationship between leadership and management; importance of leadership in the operation and success of any organization.
Prerequisite: AS 396A or AS 396B.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

AS 496B Aerospace Group Study IV Credit: 1 (0-2-0)
Course Description: Concept of leadership; relationship between leadership and management; importance of leadership in the operation and success of any organization.
Prerequisite: (AS 396A) and (AS 396B).
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

Agricultural Biology-AB (AB)

Please see the Spring 2020 Class Schedule for approved Agricultural Biology courses.

Agricultural Education-AGED (AGED)

Courses

AGED 110 Agriculture Production Systems Credits: 3 (2-3-0)
Course Description: Broad survey of the diverse aspects of Colorado agriculture.
Prerequisite: None.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 210 History of Agriculture in the United States Credits: 3 (3-0-0)
Course Description: Relationships in agriculture. Historical/Native American/early practices, industrial agriculture, technologies, philosophy, green revolution.
Prerequisite: CO 150.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D.

AGED 220 Understanding Agricultural Education Credit: 1 (1-0-0)
Course Description: Understanding different agricultural education systems. Understanding delivery models of agricultural education programs.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 240 Technical Tool Applications in Ag Education Credits: 2 (1-3-0)
Course Description: Development of safe competencies and applications related to power and technical tools utilized in school-based agricultural education programs.
Prerequisite: None.
Registration Information: Must register for lecture and lab.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 244 Power, Structure, and Tech. Systems in Ag Ed Credits: 3 (2-3-0)
Course Description: Development of competencies and theory related to agricultural power, structure, and technical systems utilized in school-based agricultural education programs.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 320 Technology Lab for Ag Education Credit: 1 (0-3-0)
Course Description: Laboratory applications related to the power, structure, and technical systems pathway utilized in school-based agricultural education programs.
Prerequisite: AGED 240, may be taken concurrently or AGED 244, may be taken concurrently.
Registration Information: May be taken twice for credit.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 330 Program Design and Evaluation in Ag. Literacy Credits: 3 (3-0-0)
Course Description: Design and evaluate programs in agricultural literacy using experiential methods.
Prerequisite: AGED 220.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 420 Developing School-Based Ag Education Programs Credits: 3 (3-0-0)
Course Description: Developing knowledge in the approach and delivery of school-based agricultural education programs.
Prerequisite: AGED 220.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 430 Methods of Agricultural Literacy Credits: 3 (3-0-0)
Course Description: Prepare and conduct agricultural literacy instructional units to work with a variety of audiences and instructional topics.
Prerequisite: AGED 330.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 440 Managing Experiences in Ag Ed Laboratories Credit: 1 (0-3-0)
Course Description: Theory, management and pedagogy of delivering safety instruction and experiential curriculum in secondary agricultural education laboratory settings.
Prerequisite: AGED 420.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 486A Practicum: Agricultural Literacy Credits: Var[1-3] (0-0-0)
Course Description: Experience in the agricultural literacy field.
Prerequisite: (AGED 220) and (AGED 330 or AGED 430).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AGED 486B Practicum: On-site Experience in Agricultural Outreach Credits: Var[1-2] (0-0-0)
Course Description: Formalized training on conducting non-formal agricultural education at the National Western Stock Show.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGED 486C Practicum: FFA Credits: Var[1-2] (0-0-0)
Course Description: Formalized training on managing FFA experiences, including Career Development Events and Leadership Development Events.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AGED 487 Internship Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AGED 495 Independent Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AGED 496 Group Study Credits: Var[1-12] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AGED 510 American Agricultural Values and Ideology Credits: 3 (3-0-0)
Course Description: Explore how people have conceptualized agriculture in the United States, how agricultural ideologies have shaped our agricultural values, and how differing agricultural ideologies impact the work in agriculture today and in the future.
Prerequisite: None.
Registration Information: Senior standing. Written consent of instructor. Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AGED 525 Agricultural and Extension Teaching Credits: 3 (3-0-0)
Course Description: Use research on effective teaching methods to define and deliver educational programs, courses and presentations in formal and non-formal educational settings in agriculture. Apply organization and instructional methods to evaluate, plan, deliver and assess effective educational programs.
Prerequisite: None.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AGED 540 Ag Ed Laboratory Management and Safety Credits: 2 (2-0-0)
Course Description: Theory, management, and pedagogy of delivering safety instruction and experiential curriculum in secondary agricultural education laboratory settings.
Prerequisite: EDCT 420.
Restriction: .
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AGED 587 Internship in Extension Credits: Var[1-2] (0-0-0)
Course Description: First-hand experiences in extension programming.
Prerequisite: AGRI 547.
Registration Information: Graduate standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AGED 600 Evaluation and Applied Research in Extension Credits: 3 (3-0-0)
Course Description: Train extension and other outreach specialists in the basics of program evaluation and research methods. Work with real world scenarios and/or their own field experiences to learn how to strategically design evaluation plans and effectively analyze the data collected. Emphasizing how to improve programming with the collected data.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online. Credit not allowed for both AGED 600 and EDRM 600.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AGED 692 Agricultural Education Seminar Credit: 1 (0-0-1)
Course Description: Agricultural education focusing on current trends in Extension.
Prerequisite: AGED 587, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrolled in the Master of Agriculture Extension Education or the Graduate Certificate of Teaching in Extension. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGED 698 Agricultural Education Research Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Master of Agriculture in Agricultural Sciences, Teacher Development Specialization. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Agriculture + Resrce Econ-AREC (AREC)

Courses

AREC 202 Agricultural and Resource Economics (GT-SS1) Credits: 3 (3-0-0)
Course Description: Introduction to decision-making by consumers, firms, and government and the resulting allocation of resources through markets.
Prerequisite: MATH 117, may be taken concurrently or MATH 118 or MATH 124 or MATH 125 or MATH 126 or MATH 141 or MATH 155 or MATH 159 or MATH 160.
Registration Information: Sections may be offered: Online. Credit not allowed for both AREC 202 and ECON 202.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

AREC 224 Introduction to Agribusiness Entrepreneurship Credit: 1 (0-0-1)
Course Description: Introductory exposure to entrepreneurship for agribusinesses through presentations by industry professionals.
Prerequisite: AREC 202, may be taken concurrently or ECON 202, may be taken concurrently.
Registration Information: Required field trips. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 240 Issues in Environmental Economics (GT-SS1) Credits: 3 (3-0-0)
Also Offered As: ECON 240.
Course Description: Discussion and economic analysis of current environmental issues with special emphasis on the impact of economic growth.
Prerequisite: None.
Registration Information: Credit not allowed for both AREC 240 and ECON 240.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

AREC 305 Agricultural and Resource Enterprise Analysis Credits: 3 (2-2-0)
Course Description: Use of records in agricultural and resource enterprise management; analytical methods, budgets, and planning techniques for improved decision making.
Prerequisite: (CIS 120 or BUS 150 or CS 110) and (AREC 202 or ECON 202).
Registration Information: Sections may be offered: Online. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 310 Agricultural Marketing Credits: 3 (3-0-0)
Course Description: Market structure, behavior, and performance including futures market and market games theory.
Prerequisite: AREC 202 or ECON 202.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 311 Agricultural and Resource Product Marketing Credits: 3 (3-0-0)
Course Description: Theory and practice of marketing-differentiated agricultural products and natural resource amenities with focus on strategies and market trends.
Prerequisite: AREC 202 or ECON 202.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 325 Personnel Management in Agriculture Credits: 3 (3-0-0)
Course Description: Human resource issues for agribusiness firms. Managing employees, legal issues, negotiation methods, and benefits packages. Workplace professionalism.
Prerequisite: AREC 202 or ECON 202.
Restriction: .
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 328 Small Agribusiness Management Credits: 3 (3-0-0)
Course Description: Apply business principles to small food enterprises, agribusinesses and cooperatives.
Prerequisite: AREC 202 or ECON 202.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 335 Introduction to Econometrics Credits: 3 (3-0-0)
Also Offered As: ECON 335.
Course Description: Estimating statistical regression models of economic relationships; treatment of special problems that may arise in analysis of economic data.
Prerequisite: (ECON 204) and (STAT 201 or STAT 204 or STAT 301 or STAT 307 or STAT 311 or STAT 315) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Credit not allowed for both ECON 335 and AREC 335. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 340 Introduction-Economics of Natural Resources Credits: 3 (3-0-0)
Also Offered As: ECON 340.
Course Description: Concepts, theories, institutions; analytical methods for economic evaluation of alternative resource use patterns and land use plans.
Prerequisite: AREC 202 or ECON 202.
Registration Information: Sections may be offered: Online. Credit not allowed for both AREC 340 and ECON 340.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 341 Environmental Economics Credits: 3 (3-0-0)
Course Description: Economic theories and analytic frameworks are developed and applied to contemporary problems of the use and protection of the natural environment.
Prerequisite: AREC 202 or ECON 202.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 342 Water Law, Policy, and Institutions Credits: 3 (3-0-0)
Course Description: Legal water issues within the context of historical, social and economic development with emphasis on the southwestern United States.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 346 Economics of Outdoor Recreation Credits: 3 (3-0-0)
Also Offered As: ECON 346.
Course Description: Benefit cost framework in public planning for outdoor recreation, pricing problems, projecting demand, and regional economic development.
Prerequisite: AREC 202 or ECON 202.
Registration Information: Credit not allowed for both AREC 346 and ECON 346.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 375 Agricultural Law Credits: 3 (3-0-0)
Course Description: Laws, regulations, case decisions affecting ranching and farming in the Rocky Mountain area.
Prerequisite: None.
Restriction: Must be a: Junior.
Registration Information: Junior standing. Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 381 Introduction to Environmental Economics Credits: 3 (3-0-0)
Course Description: Design and measurement of economic values and environmental policy; how the theory can be used to construct solutions to real-world problems.
Prerequisite: (AREC 202 or ECON 202) and (MATH 118 or MATH 124 or MATH 125 or MATH 126 or MATH 141 or MATH 155 or MATH 160).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 405 Agricultural Production Management Credits: 3 (2-2-0)
Course Description: Economic principles of agricultural production decisions with linear programming analysis of production choices and farm planning.
Prerequisite: AREC 305.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 408 Agricultural Finance Credits: 3 (3-0-0)
Course Description: Monetary affairs of agribusiness and agricultural production emphasizing credit institutions and procurement, investment, and management.
Prerequisite: AREC 305.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 412 Agricultural Commodities Marketing Credits: 3 (3-0-0)
Course Description: Agricultural marketing and agribusiness principles applied to current marketing problems relating to livestock and field and horticultural crops.
Prerequisite: AREC 310.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AREC 415 International Agricultural Trade Credits: 3 (3-0-0)
Course Description: Agricultural trade patterns and institutions; trade theory with applications to agriculture. Current issues in agricultural trade.
Prerequisite: AREC 310 and ECON 204.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 428 Agricultural Business Management Credits: 3 (3-0-0)
Course Description: Economic analysis, organization, and management practices of agriculture and food industries studied through simulation, case study, computer labs.
Prerequisite: (AREC 305) and (AREC 310 or AREC 311).
Registration Information: Senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 440 Advanced Environmental and Resource Economics Credits: 3 (3-0-0)
Course Description: Microeconomic techniques to rigorously explore economic decision-making and policy as they apply to environmental and natural resource problems.
Prerequisite: (AREC 340 or ECON 340) and (AREC 341 and ECON 306).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 442 Water Resource Economics Credits: 3 (3-0-0)
Course Description: An in-depth exploration of the role of economics in water resource planning.
Prerequisite: AREC 342 and ECON 306, may be taken concurrently.
Registration Information: Credit not allowed for both AREC 442 and AREC 542.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 444 Economics of Energy Resources Credits: 3 (3-0-0)
Also Offered As: ECON 444.
Course Description: Supply, consumption trends, and projected demand for alternative energy resources in domestic and world perspective; economics of public energy policies.
Prerequisite: ECON 306.
Registration Information: Junior standing. Written consent of instructor. Credit allowed for only one of the following: AREC 444, ECON 344, or ECON 444.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 454 Real Estate Appraisal Credits: 3 (3-0-0)
Also Offered As: REL 454.
Course Description: Theoretical principles that underlie real estate appraisal methods. Procedures and practices used in real estate appraisal.
Prerequisite: (AREC 202 or ECON 202) and (AREC 305 or REL 360).
Registration Information: Sections may be offered: Online. Credit allowed for only one of the following: AREC 453, AREC 454, REL 453, or REL 454.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 460 Ag- and Resource-Based Economic Development Credits: 3 (3-0-0)
Course Description: Indicators, tools and approaches for agriculture- and natural resource-based economic development in resource dependent countries and communities.
Prerequisite: ECON 306.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 478 Agricultural Policy Credits: 3 (3-0-0)
Course Description: Formulation and administration of public policies affecting agricultural industries and rural areas in the United States.
Prerequisite: AREC 202 or ECON 202 or AREC 240 or ECON 240.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 482A Study Abroad-Environmental Economics in Italy: Managing a Sustainable Global Environment Credits: 3 (0-0-3)
Course Description: The economics of managing environmental assets in a sustainable manner. Presents a theoretical basis for different resource management systems including various methods of cost–benefit analysis, utility theory, property right structures, government institutions, and cultural and ethical aspects. Considers specific policies aimed at sustaining the environment and their impacts on specific natural resource and agricultural products.
Prerequisite: None.
Registration Information: Sophomore standing. This is a partial semester course.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 482B Study Abroad-Italian Culture: Economics of Food and the Environment Credits: 3 (0-0-3)
Course Description: The historical and current economics of agriculture and natural resources in Florence, Tuscany and Italy. Focus on (1) Italian culture in general; (2) the economic and political history of Florence in particular; and (3) the production and regional economic importance of agricultural products of and natural resources used in central Italy.
Prerequisite: None.
Registration Information: Sophomore standing. This is a partial semester course. Required field trips.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 484 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 10 credits allowed in course. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 487 Internship Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: May be taken for a maximum of 6 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 495 Independent Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: May be taken for a maximum of 6 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 505 Agricultural Production Economics Credits: 3 (3-0-0)
Course Description: Empirical applications of production economic theory for use of imputs and allocation of resources in agricultural, natural resource sectors.
Prerequisite: (MATH 141) and (AREC 405 or ECON 306).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 506 Applied Microeconomic Theory Credits: 3 (3-0-0)
Also Offered As: ECON 506.
Course Description: Introduction to mathematical models in modern microeconomics, including choices and demand, production and supply, and market structures and failures.
Prerequisite: ECON 306.
Registration Information: Credit not allowed for both AREC 506 and ECON 506.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 507 Applied Welfare and Policy Analysis Credits: 3 (3-0-0)
Course Description: How policies are crafted to effectively address social issues, especially for agriculture and the environment, and how they impact society.
Prerequisite: ECON 306.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 508 Financial Management in Agriculture Credits: 2 (2-0-0)
Course Description: Systematic approach to understanding and applying financial management in farm businesses.
Prerequisite: (AREC 408 or FIN 305) and (ECON 306).
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 510 Agricultural Product Marketing Credits: 3 (3-0-0)
Course Description: Marketing techniques, industrial organization/ competition for agricultural products in US domestic, international trade, and developing country markets.
Prerequisite: (AREC 310) and (AREC 335 or ECON 335).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 511 Opportunities in the Agricultural Value Chain Credits: 2 (2-0-0)
Course Description: Explores the economics and business structure of operations within the food and agribusiness system, using readings, field trips and guest speakers.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Required field trips. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 512 Innovation in Agribusinesses Credits: 2 (2-0-0)
Course Description: Core concepts of entrepreneurship within both private and social enterprises. General applications of innovation and entrepreneurship with particular emphasis on the industries that make up the agricultural and food system.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 513 Idea Evaluation in Agricultural Value Chains Credits: 2 (2-0-0)
Course Description: Processes of identifying and evaluating a new idea, applying strategic and design-thinking principles and tools to explore pathways by which it could grow into a viable agribusiness.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 514 Entrepreneurial Accounting and Finance Credits: 2 (2-0-0)
Course Description: Foundational background in accounting and financial concepts and mastery of financial tools needed to start a new agribusiness.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 515 Assessing Agricultural and Food Markets Credits: 2 (2-0-0)
Course Description: Foundational background regarding marketing concepts needed to evaluate the potential market for an agricultural or food product or service, using an economics framework.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 516 Business Economics for the Entrepreneur Credits: 2 (2-0-0)
Course Description: Microeconomic framework that a potential entrepreneur can use to analyze business opportunities. Topics include components of cost and revenue and their relevance for new business ventures, determinants and measurement of consumer demand, and alternate forms of business organization and interaction.
Prerequisite: AREC 202 or ECON 202.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 517 Entrepreneurial Identity and Team Formation Credits: 2 (1-2-0)
Course Description: Students explore their emergent identity as "entrepreneur", including their necessary interdependence on other members of a team when engaged in creative endeavors such as innovation or new business development in the agricultural space.
Prerequisite: AREC 513.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 518 Raising Capital in the Agricultural Sector Credits: 2 (2-0-0)
Course Description: Methods to value a startup business and approaches to identifying sources of capital needed to launch and sustain the startup. Emphasis on unique challenges in and sources of raising capital in the agricultural sector.
Prerequisite: AREC 512 and AREC 514.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 519A New Venture Communication: Interpersonal Interactions Credit: 1 (0-2-0)
Course Description: Communicating in the workplace, both orally and in written form. Development of a succinct business proposal.
Prerequisite: AREC 517, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 519B New Venture Communication: Making the Pitch Credit: 1 (0-2-0)
Course Description: Emphasis on oral communication when trying to sell a business idea to potential investors. Development of tailored presentations to target audience within moments of opportunity.
Prerequisite: AREC 519A.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 520 Intellectual Property in Food and Agriculture Credits: 2 (2-0-0)
Course Description: Explores the critical role that intellectual property plays in commercial activities within the knowledge economy. Emphasis on strategic management of technology through patents and other control mechanisms, thereby allowing startups to survive and thrive in the knowledge economy with special attention to property developed in the agricultural and food systems.
Prerequisite: AREC 518 and BUS 660.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 521 New Food Product Development Credits: 2 (2-0-0)
Course Description: An overview of the food product development process. Topics include strategies, marketing perspectives, quality controls and supply chains in the food system.
Prerequisite: AREC 515.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 528 Applied Agribusiness Decision Tools Credits: 2 (2-0-0)
Course Description: Applications of quantitative tools for managerial decision-making in the context of an agribusiness.
Prerequisite: (AREC 305 or AREC 408 or FIN 305) and (ECON 306).
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 530 Agricultural Price Analysis Credits: 3 (3-0-0)
Course Description: Agricultural commodity prices related to neoclassical economics; current literature emphasizing management problems.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 535 Applied Econometrics Credits: 3 (3-0-0)
Also Offered As: ECON 535.
Course Description: Econometric techniques applied to testing and quantification of theoretical economic relationships drawn from both microeconomics, macroeconomics.
Prerequisite: (AREC 335 or ECON 335) and (ECON 304 or ECON 306).
Registration Information: Credit not allowed for both AREC 535 and ECON 535.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 540 Environmental and Natural Resource Economics Credits: 3 (3-0-0)
Also Offered As: ECON 540.
Course Description: Theory, methods, and policy in environmental and natural resource economics.
Prerequisite: AREC 506 or ECON 506.
Registration Information: Credit not allowed for both AREC 540 and ECON 540.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 541 Environmental Economics Credits: 3 (3-0-0)
Also Offered As: ECON 541.
Course Description: Economics of environmental policy; partial equilibrium and general equilibrium model; pollution; natural environments; population and economic growth.
Prerequisite: ECON 306.
Registration Information: Credit not allowed for both AREC 541 and ECON 541.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 542 Applied Advanced Water Resource Economics Credits: 3 (3-0-0)
Course Description: Theory and application of economics in water resource planning.
Prerequisite: (ECON 306 and AREC 342 and STAT 301) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Credit not allowed for both AREC 542 and AREC 442.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 547 Public Lands Planning and Management Credits: 3 (3-0-0)
Course Description: Principles and techniques used by federal land management agencies including Forest Service, Park Service, Fish and Wildlife Service, and BLM.
Prerequisite: AREC 202 or ECON 202.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 563 Regional Economics-Theory, Methods, and Issues Credits: 3 (3-0-0)
Also Offered As: ECON 563.
Course Description: Tools and methods of regional economics, including supply, demand, and externality analysis. Applications to current urban and regional policy issues.
Prerequisite: ECON 306 and ECON 501, may be taken concurrently.
Registration Information: Credit not allowed for both AREC 563 and ECON 563.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 566 Contemporary Issues in Developing Countries Credits: 3 (3-0-0)
Also Offered As: SOC 566.
Course Description: Social, economic, and technological factors in developing countries.
Prerequisite: None.
Registration Information: Two or more courses in AREC or ECON or SOC. Credit not allowed for both AREC 566 and SOC 566.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 570 Methodology of Economic Research Credits: 3 (3-0-0)
Also Offered As: ECON 530.
Course Description: Philosophical foundations of science and research. Concepts and skills for planning, performing, reporting, and evaluating economic research.
Prerequisite: ECON 304 and ECON 306.
Registration Information: Credit not allowed for both AREC 570 and ECON 530.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 572 Social Benefit Cost Analysis Credits: 3 (3-0-0)
Course Description: Theory, application of concepts relating to social benefit cost analysis of public projects, policies intended to promote social welfare, economic growth.
Prerequisite: ECON 306.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 586A New Venture Launch Practicum: Explore and Validate Value Proposition Credits: 2 (0-0-4)
Course Description: Team-based development of a new venture or innovation focusing on co-creation of value. Four main areas of competency--(1) entrepreneurial mindset and teamwork; (2) technology and product development; (3) communication and substantiation of value; and (4) business strategy and execution--are developed and demonstrated in the process of preparing to launch a new venture or innovation in the agricultural, food, or related industries.
Prerequisite: AREC 517, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

AREC 586B New Venture Launch Practicum: Communicate, Design, and Iterate Credits: 2 (0-0-4)
Course Description: Team-based development of a new venture or innovation focusing on co-creation of value. Four main areas of competency--(1) entrepreneurial mindset and teamwork; (2) technology and product development; (3) communication and substantiation of value; and (4) business strategy and execution--are developed and demonstrated in the process of preparing to launch a new venture or innovation in the agricultural, food, or related industries.
Prerequisite: AREC 586A, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

AREC 586C New Venture Launch Practicum: Final Evaluation, Presentation, and Launch Credits: Var[1-6] (0-0-0)
Course Description: Team-based development of a new venture or innovation focusing on co-creation of value. Four main areas of competency--(1) entrepreneurial mindset and teamwork; (2) technology and product development; (3) communication and substantiation of value; and (4) business strategy and execution--are developed and demonstrated in the process of preparing to launch a new venture or innovation in the agricultural, food, or related industries.
Prerequisite: AREC 586B, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Course may be taken multiple times for maximum of 12 credits total.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

AREC 605 Agricultural Production and Cost Analysis Credits: 2 (2-0-0)
Course Description: Empirical application and analysis of production and cost issues in the agricultural and natural resource sectors.
Prerequisite: (AREC 506) and (AREC 535 or ECON 535).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 606 Microeconomic Analysis I Credits: 3 (3-0-0)
Also Offered As: ECON 606.
Course Description: Advanced price/allocation theory: consumer/producer decisions; uncertainty; market structure; partial/general equilibrium; efficiency/welfare.
Prerequisite: ECON 306 and ECON 501.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 606 and ECON 606.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 610 Agricultural Marketing and Demand Analysis Credits: 2 (2-0-0)
Course Description: Empirical application and analysis of agricultural marketing and demand issues in the agricultural and natural resource sectors.
Prerequisite: (AREC 506) and (AREC 535 or ECON 535).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 615 Optimization Methods for Applied Economics Credits: 3 (3-0-0)
Course Description: Theory and practice of optimization techniques used in economic applications with emphasis on linear and nonlinear programming.
Prerequisite: AREC 506.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 635 Econometric Theory I Credits: 3 (3-0-0)
Also Offered As: ECON 635.
Course Description: Theory of mathematical statistics and classical linear regression model in context of economic application.
Prerequisite: (AREC 535 or ECON 535) and (ECON 501, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 635 and ECON 635.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 647 Land Use Economics and Spatial Modeling Credits: 3 (3-0-0)
Course Description: Use of spatial data in economic analysis of land use focusing on development patterns, land conservation, spatial externalities and agricultural land.
Prerequisite: (AREC 506 or ECON 506) and (AREC 535 or ECON 535).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 660 Development of Rural Resource-Based Economies Credits: 3 (3-0-0)
Course Description: Economic literature-based exploration of human welfare measures and implications of approaches to agriculture and resource-based economic development.
Prerequisite: AREC 506.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 678 Agricultural and Resource Policy Credits: 3 (3-0-0)
Course Description: Evaluate and analyze economic theory, applications and public incentives related to government policies for agriculture and natural resources.
Prerequisite: ECON 306 and MATH 141.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 695 Independent Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 705 Advanced Production and Technological Change Credits: 2 (2-0-0)
Course Description: Production theory is applied to real-world issues including risk, innovation, and environment, through lectures and readings of current literature.
Prerequisite: (AREC 605) and (AREC 706, may be taken concurrently or ECON 706, may be taken concurrently) and (AREC 735 or ECON 735).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 706 Microeconomic Analysis II Credits: 3 (3-0-0)
Also Offered As: ECON 706.
Course Description: Advanced topics in microtheory: game theory; market imperfections; adverse selection; principal-agent problems; social choice theory; incentives, etc.
Prerequisite: ECON 606.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 706 and ECON 706.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 710 Advanced Agricultural Marketing Issues Credits: 2 (2-0-0)
Course Description: Theoretical and modeling issues of consumer demand, market structure, product differentiation and market behavior.
Prerequisite: (AREC 610) and (AREC 706, may be taken concurrently or ECON 706, may be taken concurrently) and (AREC 735 or ECON 735).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 735 Econometric Theory II Credits: 2 (2-0-0)
Also Offered As: ECON 735.
Course Description: Econometrics models and estimators in econometrics, from fully parametric to semiparametric and nonparametric approaches.
Prerequisite: AREC 635 or ECON 635.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 735 and ECON 735. This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 736A Advanced Econometric Methods: Discrete Choice Models Credit: 1 (1-0-0)
Also Offered As: ECON 736A.
Course Description: Econometrics analysis of: Discrete Choice Models.
Prerequisite: AREC 735, may be taken concurrently or ECON 735, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 736A-C and ECON 736A-C. This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 736B Advanced Econometric Methods: Panel Data Models Credit: 1 (1-0-0)
Also Offered As: ECON 736B.
Course Description: Econometrics analysis of: Panel Data Models.
Prerequisite: AREC 735, may be taken concurrently or ECON 735, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 736A-C and ECON 736A-C. This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 736C Advanced Econometric Methods: Time Series Models Credit: 1 (1-0-0)
Also Offered As: ECON 736C.
Course Description: Econometrics analysis of: Time Series Models.
Prerequisite: AREC 735, may be taken concurrently or ECON 735, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 736A-C and ECON 736A-C. This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 740 Advanced Natural Resource Economics Credits: 3 (3-0-0)
Also Offered As: ECON 740.
Course Description: Advanced theory, methods, and literature in natural resource economics, including dynamic programming and optimal control.
Prerequisite: AREC 706 or ECON 706.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 740 and ECON 740.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 741 Advanced Environmental Economics Credits: 3 (3-0-0)
Also Offered As: ECON 741.
Course Description: Advanced theory, methods, and literature in environmental economics.
Prerequisite: AREC 706 or ECON 706.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 770 Advanced Methods in Applied Economics Credits: 3 (3-0-0)
Course Description: Advanced research methods in applied economics: lab and field experiments, non-market valuation and discrete choice experiments.
Prerequisite: (AREC 706, may be taken concurrently or ECON 706, may be taken concurrently) and (AREC 735 or ECON 735).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 784 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 792A Seminar: Agricultural Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 792B Seminar: International Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 792C Seminar: Resources Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Agriculture-AGRI (AGRI)

Courses

AGRI 116 Plants and Civilizations (GT-SS3) Credits: 3 (2-0-1)
Also Offered As: IE 116.
Course Description: Plant origins and their relationships with cultures/civilizations as food, spices, perfumes, and medicines and in art, religion, wars, slavery, etc.
Prerequisite: None.
Registration Information: Credit not allowed for both AGRI 116 and IE 116. Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

AGRI 192 Orientation to Agricultural Systems Credit: 1 (0-0-1)
Course Description: Freshman inquiry course in agriculture. Information and skills necessary to succeed in majors in the agricultural sciences.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 270 World Interdependence-Population and Food (GT-SS3) Credits: 3 (3-0-0)
Also Offered As: IE 270.
Course Description: Survey of world population and food; emphasis on understanding the problems and opportunities in a world context.
Prerequisite: None.
Registration Information: Credit not allowed for both AGRI 270 and IE 270.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

AGRI 292 Transfer Seminar Credit: 1 (1-0-0)
Course Description: The university and its resources, college success skills, careers in the various disciplines of agriculture; current issues in agriculture.
Prerequisite: None.
Registration Information: Intended for Transfer students.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 300 Issues in Agriculture Credits: 2 (2-0-0)
Course Description: Scientific, technical, cultural, and social issues facing agriculture, and their interrelationships.
Prerequisite: None.
Registration Information: Credit not allowed for both AGRI 300 and AGRI 500. Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AGRI 330 Agricultural and Food System Ethics Credits: 3 (3-0-0)
Also Offered As: PHIL 330.
Course Description: Basic concepts in ethics and their application to agriculture and the food system.
Prerequisite: CO 150.
Registration Information: Credit not allowed for both AGRI 330 and PHIL 330.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 383 U.S. Travel-Integrated Resource Management Credits: 2 (0-2-1)
Also Offered As: NR 383.
Course Description: Evaluation of integrated ranch management decision alternatives in conjunction with professional resource managers.
Prerequisite: None.
Registration Information: Credit not allowed for both AGRI 383 and NR 383. Must register for laboratory and recitation. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 496A Group Study: General Credits: Var[1-12] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AGRI 496B Group Study: Agricultural Ambassadors Credits: Var[1-12] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AGRI 500 Advanced Issues in Agriculture Credits: 3 (2-0-1)
Course Description: Scientific, technical, cultural, and social issues facing agriculture, and their interrelationships.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online. Credit not allowed for both AGRI 300 and AGRI 500.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 510 Sustainable Agriculture Credits: 3 (3-0-0)
Course Description: An interdisciplinary study comparing conventional and alternative land management practices, using an agroecosystem analysis approach.
Prerequisite: None.
Registration Information: Enrollment in INTO Master of Agriculture Pathways or graduate standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 511A Study Abroad: Field Applications in Sustainable Agriculture Credit: 1 (0-0-1)
Course Description: Travel to Todos Santos, Mexico for a seven day experience where in-the-field laboratory skills in sustainable agriculture are practiced. Investigate and implement unique, real-time initiatives developed in class while in Todos Santos.
Prerequisite: AGRI 510.
Registration Information: A minimum of a 2.5 GPA. This is a partial semester course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 515 Urban Horticulture Credits: 3 (3-0-0)
Also Offered As: HORT 515.
Course Description: Investigate and evaluate the techniques of incorporating food production systems in the urban and peri-urban environment.
Prerequisite: HORT 451 or HORT 453.
Registration Information: Credit not allowed for both AGRI 515 and HORT 515. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 521 Emerging Issues and Challenges for Global Agr Credits: 3 (3-0-0)
Course Description: Interdisciplinary course containing tools and knowledge to discuss the emerging challenges of the global agriculture, water, and food system.
Prerequisite: None.
Registration Information: Written consent of instructor. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 545 Plant Tissue Culture Credits: 2 (2-0-0)
Course Description: Theory, technology, and techniques of cell, organ, tissue, and protoplast culture of plants.
Prerequisite: BZ 440.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 546 Principles of Cooperative Extension Credits: 3 (3-0-0)
Course Description: Traditional and contemporary delivery systems of Cooperative Extension emphasizing structures of nonformal education.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 547 Delivery of Cooperative Extension Programs Credits: 4 (2-0-2)
Course Description: Methods, techniques, and procedures in planning, implementation, and delivery of Cooperative Extension programs.
Prerequisite: None.
Registration Information: Written consent of instructor. Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 550 Capacity Building for a Changing Workplace Credits: 3 (3-0-0)
Course Description: A framework for competence in workplaces applies situation analysis/problem-solving to solve real-life agricultural situations shared by experts.
Prerequisite: None.
Registration Information: Graduate standing in agricultural sciences. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 562 Sociology of Food Systems and Agriculture Credits: 3 (2-0-1)
Also Offered As: SOC 562.
Course Description: How agricultural choices generate intended and unintended consequences for human communities and the natural environment.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Credit not allowed for both AGRI 562 and SOC 562.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 570 Issues in Animal Agriculture Credits: 2 (2-0-0)
Also Offered As: VS 570.
Course Description: Issues that have a major impact on the direction of changes in animal agriculture.
Prerequisite: None.
Registration Information: Credit not allowed for both AGRI 570 and VS 570.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 575 Livestock-Wildlife Conflict & Law Credits: 3 (3-0-0)
Course Description: Investigation of the laws and policies surrounding livestock wildlife interaction and conflict at the federal, state, and international levels.
Prerequisite: AGRI 300 or AGRI 500 or AREC 342 or AREC 375 or NR 320 or NR 425 or POLS 361.
Registration Information: Graduate standing. Offered as an online course only. Credit not allowed for both AGRI 575 and AGRI 581A2.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 587A Internship: Domestic Credits: Var[1-12] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. Maximum of 12 credits allowed for AGRI 587A-B. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AGRI 587B Internship: International Credits: Var[1-12] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. Maximum of 12 credits allowed for AGRI 587A-B. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AGRI 602 Bioenergy Policy, Economics, and Assessment Credits: 3 (2-2-0)
Course Description: Bioenergy policy; economic principles applied to biofuel production; evaluation of environmental impacts on bioenergy production.
Prerequisite: AGRI 601 or ENGR 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 630 Integrated Decision Making/Management Skills Credits: 3 (3-0-0)
Course Description: Motivation for management, decision making, introduction to systems, information management, introduction to statistics.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 631 Building the Business Credits: 3 (3-0-0)
Course Description: Skills required to organize and implement a modern business enterprise with focus on land-based operations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 632 Managing for Ecosystem Sustainability Credits: 3 (2-2-0)
Course Description: Impacts of ecological processes, use of mechanism-based understanding, and tools used to manage the ecosystem for sustainability.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 633 Understanding and Managing Animal Resources Credits: 3 (2-2-0)
Course Description: Evaluating nutritional requirements of a variety of animals, how and why requirements vary according to level of production.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 634 Animal Production Systems Credits: 3 (2-2-0)
Course Description: Developing animal management systems for a variety of animal species in a forage-based environment.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 635 Integrated Forage Management Credits: 3 (3-0-0)
Course Description: Development of management plans that integrate diverse forage resources including native rangeland and cultivated forages.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Required field trips. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 636 Analyzing and Managing the Business Credits: 3 (3-0-0)
Course Description: Assimilating, preparing, and analyzing records; reading financial statements to manage a land-based business.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 637 Understanding Policy and Emerging Issues Credits: 3 (3-0-0)
Course Description: Origination, purpose, and policy effects on land-based enterprises; policy effects on management decisions.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 638 Ecosystem Services on Agricultural Lands Credits: 3 (3-0-0)
Course Description: Within an economics framework, explores the unique management challenges involved in a modern, diversified agricultural operation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Required field trips. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 639 Products to Profit Credits: 3 (3-0-0)
Course Description: Marketing all aspects of the enterprise, beginning with land and forage resource and tracking all revenue generation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 640 Integrated Resource Management Plan Credits: 3 (3-0-0)
Course Description: Formulation of an optimal land management plan for a specific site based on specific goals and objectives.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 684 Supervised College Teaching Credits: Var[1-2] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 4 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

AGRI 692 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AGRI 695 Independent Study Credits: Var[1-12] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AGRI 698 Research Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AGRI 699 Thesis Credits: Var[1-6] (0-0-0)
Course Description: Thesis.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

American Studies-AMST (AMST)

Courses

AMST 100 Self/Community in American Culture, 1600-1877 (GT-AH2) Credits: 3 (3-0-0)
Course Description: Meaning and development of American culture, 1600-1877, through themes of self and community in art, politics, society, and religion.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, Literature & Humanities (GT-AH2).

AMST 101 Self/Community in American Culture Since 1877 (GT-AH2) Credits: 3 (3-0-0)
Course Description: Meaning and development of American culture since 1877, through themes of self and community in art, politics, society, and religion.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, Literature & Humanities (GT-AH2).

AMST 300 American Lives-Methods in American Studies Credits: 3 (3-0-0)
Also Offered As: E 300.
Course Description: Methods and changing approaches of American studies since 1950s using autobiography as organizing theme.
Prerequisite: AMST 100 and AMST 101.
Registration Information: Credit not allowed for both AMST 300 and E 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AMST 492 Seminar in American Studies Credits: 3 (0-0-3)
Course Description: Seminar for seniors in Liberal Arts involving critical reading, writing, research, and discussion. Topics vary.
Prerequisite: AMST 300 or E 300.
Registration Information: Senior standing or written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AMST 495 Independent Study in American Studies Credits: Var[1-3] (0-0-0)
Course Description: Individually-guided studies in interdisciplinary work in American culture.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AMST 499 Thesis in American Studies Credits: 3 (0-0-3)
Course Description:
Prerequisite: AMST 492.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Animal Sciences-ANEQ (ANEQ)

Courses

ANEQ 101 Food Animal Science Credits: 4 (3-3-0)
Course Description: Development, organization, trends and management of the livestock industry; emphasis on applying science to the production of food and fiber.
Prerequisite: None.
Registration Information: Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 102 Introduction to Equine Science Credits: 4 (3-2-0)
Course Description: Equine physiology, production systems and management systems as it pertains to the equine industry and management.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 103 Introduction to Animal Science Credits: 3 (3-0-0)
Course Description: Introduction to the livestock industries with emphasis on food and fiber animals. Overviews of the industry structures, and historical and future trends. Product quality evaluation and factors influencing animal performance such as management, nutrition, genetics, and reproduction are presented.
Prerequisite: None.
Registration Information: Non-Animal Sciences majors only. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 104 Values, Culture, and Food Animal Agriculture Credits: 3 (3-0-0)
Also Offered As: PHIL 104.
Course Description: Evolution of the social values and cultural understandings shaping modern animal agriculture; current problems in animal agriculture.
Prerequisite: None.
Registration Information: Non-Animal Science majors with a freshman or sophomore standing. Credit not allowed for both ANEQ 104 and PHIL 104.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 105 Introduction to Large Animal Anatomy Credit: 1 (0-2-0)
Course Description: Basic gross animal anatomy.
Prerequisite: None.
Registration Information: Animal Science or Equine Science majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 115 Applied Equine Behavior Credits: 2 (1-2-0)
Course Description: Understanding ethology, the science of animal behavior, will be a key component to evaluating horse behavior. Topics are instinctive, learned, social and reproductive behaviors as well as sensory perception and behavioral neuroanatomy important to equine health and welfare.
Prerequisite: ANEQ 102.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 200 Applied Horsemanship and Equitation Credits: 2 (0-4-0)
Course Description: Foundation and advancement of horsemanship, on the ground and on horseback.
Prerequisite: ANEQ 115.
Registration Information: Sophomore standing. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 201A Preparation of Horses for Competition: Western Credits: 2 (0-4-0)
Course Description: Development of skills to prepare and present horses in competitions aimed at enhancing their value.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 201B Preparation of Horses for Competition: English Credits: 2 (0-4-0)
Course Description: Development of skills to prepare and present horses in competitions aimed at enhancing their value.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 203 Equine Management Credits: 2 (1-2-0)
Course Description: Equine management and care techniques with hands-on experience.
Prerequisite: ANEQ 102.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 204 Equine Facilities Management Credits: 3 (2-2-0)
Course Description: Understanding of all aspects required to manage an equine facility coupled with hands-on experience.
Prerequisite: ANEQ 102.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 205 Equine Assessment, Evaluation and Retraining Credits: 2 (0-4-0)
Course Description: Skills in assessing, evaluating, and training horses in transitional phases of their lives, including, but not limited to horses with a history of non-use, previous trauma, compliance issues, and other problematic concerns.
Prerequisite: ANEQ 115.
Registration Information: Written consent of instructor. Credit not allowed for both ANEQ 205 and ANEQ 280A2.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 220 Feeds and Feeding Credits: 2 (2-0-0)
Course Description: Advantages and limitations of feedstuffs; nutrients and their functions; and feed practices for all physiological stages of livestock.
Prerequisite: ANEQ 101 or ANEQ 102.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 230 Farm Animal Anatomy and Physiology Credits: 3 (3-0-0)
Course Description: Basic concepts of farm animal anatomy and physiology; emphasis on growth, digestion, and reproduction.
Prerequisite: LIFE 100 to 199 - at least 3 credits.
Registration Information: Credit not allowed for both ANEQ 230 and ANEQ 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 249 Introduction to the Trail Riding Industry Credit: 1 (0-2-0)
Course Description: Emphasis on horse care, regulations, first aid, health, training, and hosting a trail ride.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 250 Live Animal and Carcass Evaluation Credits: 3 (1-4-0)
Course Description: Growth, development, and value-determining characteristics of market animals.
Prerequisite: ANEQ 101 or ANEQ 102.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 286 Livestock Practicum Credits: 2 (0-0-0)
Course Description: Livestock breeds and terminology; classification of feedstuffs; livestock handling and care; basic animal management techniques, hands-on experience.
Prerequisite: ANEQ 101 or ANEQ 102.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 292 Equine Industry Seminar Credit: 1 (1-0-0)
Course Description: Overview of the equine industry and industry careers.
Prerequisite: ANEQ 102.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 293 Animal Science Career Exploration Seminar Credit: 1 (0-0-1)
Course Description: Better understanding of individual abilities, strengths and passions is imperative to be successful in a career search as well as to succeeding in life. Designed to help students explore who they are individually, how they might fit into a career or graduate programs in animal agriculture; how to prepare marketing materials to be competitive in selection processes.
Prerequisite: ANEQ 101.
Registration Information: This is a partial semester course. Sophomore standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 300A Topics in Animal Sciences: Livestock Handling Credit: 1 (1-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 300B Topics in Animal Sciences: Livestock Entomology Credit: 1 (1-0-0)
Also Offered As: BSPM 300.
Course Description: Identification, biology and management of insect, tick, and mite pests.
Prerequisite: BZ 100 to 199 between 3 and 5 credits - at least 3 credits or LIFE 100 to 199 between 3 and 5 credits - at least 3 credits.
Registration Information: Credit not allowed for both ANEQ 300B and BSPM 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 300E Topics in Animal Sciences: Family Ranching Credit: 1 (1-0-0)
Course Description:
Prerequisite: ANEQ 101 or ANEQ 102.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 300L Topics in Animal Sciences: Quality Assurance Credits: 2 (2-0-0)
Course Description:
Prerequisite: ANEQ 101 or ANEQ 102.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 300N Topics in Animal Sciences: Seedstock Merchandising Credits: 2 (2-0-0)
Course Description: Overview of beef seedstock industry, including hands-on selection, management, and marketing of cattle.
Prerequisite: None.
Restriction: Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Junior or senior standing. Course required to apply for seedstock team.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 300R Topics in Animal Sciences: Calving and Calf Care Credits: 2 (1-2-0)
Course Description:
Prerequisite: (ANEQ 310) and (ANEQ 478 or ANEQ 510).
Registration Information: Senior standing. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 300T Topics in Animal Sciences: Event, Fair, and Show Management Credit: 1 (1-0-0)
Course Description:
Prerequisite: ANEQ 101 or ANEQ 102.
Registration Information: Credit not allowed for both ANEQ 300T and ANEQ 358.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 300U Topics in Animal Sciences: Seedstock Sale Management Credits: 2 (2-0-0)
Course Description: Develop, plan, and implement an effective seedstock cattle sale based on genetic information, customer service principles, and client relationships.
Prerequisite: ANEQ 300N.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 300W Topics in Animal Sciences: Equine Manure Management Credit: 1 (1-0-0)
Course Description: Practices which maximize the benefits of manure to soils and crops while minimizing hazards to air and water quality; complying with regulations.
Prerequisite: ANEQ 101 or ANEQ 102.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 303 Equine Digital Photography Credits: 3 (2-2-0)
Course Description: Basics of photographic principles and DSLR cameras with a focus on equine subjects.
Prerequisite: ANEQ 102.
Registration Information: Sophomore standing. Must register for lecture and laboratory. Credit not allowed for both ANEQ 303 and ANEQ 380A4.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 305 Functional Large Animal Physiology Credits: 3 (3-0-0)
Course Description: Concepts of large animal physiology; emphasis on growth, digestion, and reproduction.
Prerequisite: (LIFE 100 to 199 - at least 3 credits) and (CHEM 107 or CHEM 111).
Restriction: .
Registration Information: Credit not allowed for both ANEQ 305 and ANEQ 230.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 310 Animal Reproduction Credits: 3 (3-0-0)
Course Description: Anatomy and physiology of the reproductive system; causes of reproductive failure in farm animals; methods of improving reproductive performance.
Prerequisite: ANEQ 230 or BMS 300 or ANEQ 305.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 312 Animal Ultrasonography Credits: 2 (1-2-0)
Course Description: Fundamentals and application of using ultrasound in farm animals; basic reproductive technologies; utilizing ultrasound as a management tool.
Prerequisite: (ANEQ 230 or ANEQ 305) and (ANEQ 310).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 313 Prevention and Control of Livestock Diseases Credits: 3 (3-0-0)
Also Offered As: VS 313.
Course Description: Common ailments of livestock; sanitation and disease prevention and control.
Prerequisite: (ANEQ 230 or BMS 300 or ANEQ 305) and (ANEQ 310, may be taken concurrently and ANEQ 320, may be taken concurrently).
Registration Information: Junior or senior standing. Credit not allowed for both ANEQ 313 and VS 313.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 315 Equine Behavior Credits: 2 (1-2-0)
Course Description: Equine behaviors related to training and learning.
Prerequisite: ANEQ 102.
Registration Information: Sophomore or higher standing. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 320 Principles of Animal Nutrition Credits: 4 (3-3-0)
Course Description: Understanding of nutrients and nutrient function required to support animal life through all physiological states.
Prerequisite: (ANEQ 230 or BMS 300 or BMS 360 or ANEQ 305) and (CHEM 100 to 199 - at least 3 credits).
Registration Information: Must register for lecture and laboratory. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 322 Pet Nutrition Credits: 2 (2-0-0)
Course Description: Nutrients, nutrient requirements, feeding practices, food sources and management for companion animals (dogs, cats, birds, fish, reptiles, etc.).
Prerequisite: ANEQ 320 or ANEQ 345 or FSHN 350.
Registration Information: Offered as a correspondence or online course only.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANEQ 323 Zoo Nutrition Credits: 2 (2-0-0)
Course Description: Unique nutritional requirements of mammalian, avian, and reptile captive wild animals; management protocols needed.
Prerequisite: ANEQ 320 or ANEQ 345 or FSHN 350.
Registration Information: Offered as a correspondence or online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 325 Equine Exercise Physiology Credits: 2 (2-0-0)
Course Description: Overview of the main aspects of equine exercise physiology.
Prerequisite: ANEQ 230 or BMS 300 or ANEQ 305.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 328 Foundations in Animal Genetics Credits: 3 (3-0-0)
Course Description: Foundational information to understand animal genetics: genomes, molecular genetics, transmission-Mendelian inheritance, pedigree, population genetics, and introduction to quantitative genetics.
Prerequisite: (ANEQ 101 or ANEQ 102) and (LIFE 100 to 199 - at least 3 credits).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 330 Principles of Animal Breeding Credits: 3 (3-0-0)
Course Description: Genetic principles underlying animal improvement; elementary population genetics; heritability; selection response; mating systems; DNA markers.
Prerequisite: (BZ 350 or ANEQ 328 or SOCR 330) and (STAT 200 to 279 - at least 3 credits or STAT 300 to 379 - at least 3 credits).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANEQ 334 Principles of Equine Genetics Credits: 3 (3-0-0)
Course Description: Application of genetic principles for understanding important quantitative and qualitative traits in horses. Topics include variation, mechanisms of gene action, selection and genetic improvement.
Prerequisite: (ANEQ 102 with a minimum grade of C) and (ANEQ 328 with a minimum grade of C or BZ 350 with a minimum grade of C or SOCR 330 with a minimum grade of C) and (ANEQ 305 with a minimum grade of C or BMS 300 with a minimum grade of C).
Registration Information: Sophomore standing. Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 340 Horse Training and Sale Preparation I Credits: 3 (0-6-0)
Course Description: Practical training skills using a yearling or two year old: in-hand, restraint, ground driving, lungeing, first rides, stable management.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 341 Horse Training and Sale Preparation II Credits: 3 (0-6-0)
Course Description: Skills in training for specific riding maneuvers, conditioning, and fitting for sale.
Prerequisite: ANEQ 340.
Registration Information: Additional time outside of class required on weekends.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 344 Principles of Equine Reproduction Credits: 3 (3-0-0)
Course Description: Principles of reproduction and reproductive management of the mare and stallion.
Prerequisite: (ANEQ 102 with a minimum grade of C) and (ANEQ 230 with a minimum grade of C or ANEQ 305 with a minimum grade of C or BMS 300 with a minimum grade of C).
Registration Information: Sophomore standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 345 Principles of Nutrition: Equine Applications Credits: 3 (3-0-0)
Course Description: Principles of nutrition; application in feeding horses in different physiological states to promote health and wellness.
Prerequisite: (ANEQ 102 with a minimum grade of C) and (ANEQ 230 with a minimum grade of C or ANEQ 305 with a minimum grade of C or BMS 300 with a minimum grade of C) and (CHEM 100 to 199 - at least 3 credits and MATH 100 to 499 - at least 3 credits).
Registration Information: Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 346 Equine Disease Management Credits: 4 (3-2-0)
Course Description: Normal and abnormal body structures and functions of major systems of the horse. Recognition of main diseases, causes, prevention and treatments.
Prerequisite: (ANEQ 102 with a minimum grade of C) and (ANEQ 230 with a minimum grade of C or ANEQ 305 with a minimum grade of C or BMS 300 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 349 Packing and Outfitting Credits: 2 (1-2-0)
Course Description: Business aspects of outfitting/packing the horse; hitches, knots, horse care; planning pack trips, setting up camp.
Prerequisite: ANEQ 102.
Registration Information: Written consent of instructor. Must register for lecture and laboratory. Required field trips (Overnight pack trip).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 351 Techniques in Therapeutic Riding Credits: 2 (1-2-0)
Course Description: Equine assisted activities; therapeutic horseback riding, hippotherapy, driving/vaulting, mental health treatments, programs for youth at risk.
Prerequisite: ANEQ 102.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 352 Introduction to Horse Evaluation Credits: 2 (0-4-0)
Course Description: Criteria and techniques for evaluation of horses; development of logical decision processes for establishing comparative value.
Prerequisite: ANEQ 102.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 353 Advanced Horse Evaluation Credits: 3 (0-6-0)
Course Description: Advanced criteria/techniques for horse evaluation; logical decision process development to establish comparative value; intercollegiate competition.
Prerequisite: ANEQ 352.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 354 Introduction to Livestock Evaluation Credits: 3 (0-6-0)
Course Description: Criteria and techniques for evaluation of livestock; development of logical decision processes for establishing comparative value.
Prerequisite: ANEQ 101.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 355 Advanced Livestock Evaluation Credit: 1 (0-9-0)
Course Description: Advanced criteria and techniques for evaluation of livestock; establishing comparative value; participating in intercollegiate competition.
Prerequisite: ANEQ 354.
Registration Information: Course may be taken twice for a maximum of 2 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 356 Introduction to Dairy Evaluation Credits: 3 (0-6-0)
Course Description: Criteria and techniques for evaluation of dairy cattle; development of logical decision processes for establishing comparative value.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 357 Advanced Dairy Evaluation Credits: 2 (0-4-0)
Course Description: Advanced criteria and techniques for evaluation of dairy cattle; establishing comparative value; participating in intercollegiate competition.
Prerequisite: ANEQ 356.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 358 Equine Event and Sales Management Credits: 2 (2-0-0)
Course Description: Skills necessary to produce, organize, and promote equine related events.
Prerequisite: ANEQ 102.
Registration Information: Credit not allowed for both ANEQ 358 and ANEQ 300T.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 359 Equine Sales Production Credits: 2 (0-4-0)
Course Description: Emphasizes skills necessary to host and evaluate an equine sale.
Prerequisite: ANEQ 358.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 360 Principles of Meat Science Credits: 3 (3-0-0)
Course Description: Structure, composition, and biology of muscle and associated tissues; wholesomeness, nutritive value, and palatability of beef, pork, and lamb.
Prerequisite: CHEM 100 to 199 - at least 3 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 361 Introduction to Meat Product Evaluation Credits: 3 (0-6-0)
Course Description: Criteria and techniques for evaluation of meat products; development of logical decision processes for establishing comparative value.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 362 Advanced Meat Product Evaluation Credit: 1 (0-4-0)
Course Description: Criteria and techniques for evaluation of meat products; establishing comparative value; participating in intercollegiate competition.
Prerequisite: ANEQ 361.
Registration Information: Course may be taken twice for a maximum of 2 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 363 Introduction to Wool and Fiber Evaluation Credit: 1 (0-2-0)
Course Description: Criteria and techniques for evaluation of wool; development of logical decision processes for establishing comparative value.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 364 Advanced Wool and Fiber Evaluation Credit: 1 (0-2-0)
Course Description: Criteria and techniques for evaluation of wool; establishing comparative value; participating in intercollegiate competition.
Prerequisite: ANEQ 363.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 365 Principles of Teaching Therapeutic Riding Credits: 3 (2-2-0)
Course Description: Practical experiences and knowledge of the techniques to be a professional certified therapeutic riding instructor.
Prerequisite: ANEQ 351.
Registration Information: Written consent of instructor. Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 366 Animal Welfare Evaluation Credits: 2 (1-2-0)
Course Description: Criteria and techniques for evaluating animal welfare generally and for specific species based on the selected focus (specific species differ by year but include farm, companion, lab, working, and exotic animal species). Development of logical decision processes for establishing comparative value between cases.
Prerequisite: ANEQ 101 or ANEQ 102.
Registration Information: Must register for lecture and laboratory. Required field trips. Credit not allowed for both ANEQ 366 and ANEQ 380A3.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANEQ 386A Equine Practicum: Equine Training and Management Credits: 2 (1-2-0)
Course Description:
Prerequisite: ANEQ 102.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANEQ 386B Equine Practicum: Equine Reproductive Management Credits: 2 (1-2-0)
Course Description:
Prerequisite: ANEQ 344.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ANEQ 386C Equine Practicum: Equine Farrier Management Credit: 1 (0-2-0)
Course Description:
Prerequisite: ANEQ 102.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ANEQ 410 Applied Food Animal Behavior Credits: 3 (3-0-0)
Course Description: Principles of animal behavior applied to food animal species; the importance of understanding, observing, and assessing animal behavior in relation to food animal production; farm animal species specific behavior patterns.
Prerequisite: ANEQ 305.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 420 Applied Nutrition--Computer Diet Formulation Credits: 3 (3-0-0)
Course Description: Comparative diet formulation strategies for cattle (beef and dairy), equine, swine, and poultry. Utilizing advanced computer software to formulate diets, predict performance, and manage ingredient inventory.
Prerequisite: ANEQ 320 or ANEQ 345.
Registration Information: Junior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 440 Equine Industry and Issues Credits: 3 (3-0-0)
Course Description: For students planning a career in the horse industry; management of facilities, production systems, personnel, marketing, and biological systems.
Prerequisite: ANEQ 344 and ANEQ 345 or ANEQ 334 and ANEQ 344 or ANEQ 345 and ANEQ 346 or ANEQ 334 and ANEQ 345 or ANEQ 334 and ANEQ 346 or ANEQ 344 and ANEQ 346.
Registration Information: Any two of the following: ANEQ 334, ANEQ 344, ANEQ 345, ANEQ 346.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 441 Integrated Equine Science Credits: 2 (2-0-0)
Course Description: Describe, understand and integrate the newest scientific principles in equine sciences with equine management.
Prerequisite: ANEQ 334 and ANEQ 345 and ANEQ 344 or ANEQ 334 and ANEQ 344 and ANEQ 346 or ANEQ 346 and ANEQ 344 and ANEQ 345.
Registration Information: Junior standing.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 442 Riding Instructor Training Credits: 2 (0-4-0)
Course Description: Teaching techniques; theory; handling of large mounted groups, beginner through advanced levels.
Prerequisite: ANEQ 102.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 443 Applied Equine Nutrition Credits: 2 (1-2-0)
Course Description: Applying principles of nutrition to feeding horses in different physiological states in an effort to promote their health and well-being.
Prerequisite: ANEQ 345.
Registration Information: Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 444 Equine Business Management Credits: 2 (2-0-0)
Course Description: Real life" equine industry experience and the ins and outs of managing an equine facility/business.
Prerequisite: ANEQ 440.
Registration Information: Required field trips.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 445 Foaling Management Credits: 2 (1-3-0)
Course Description: Management of the foaling mare and newborn foal; monitoring techniques, preventative and emergency care procedures.
Prerequisite: ANEQ 344.
Registration Information: ANEQ 344 or PVM sophomore standing. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 447 Food Chemistry Credits: 2 (2-0-0)
Also Offered As: FTEC 447.
Course Description: Chemistry of food constituents as related to food quality and stability.
Prerequisite: CHEM 241 or CHEM 245 or CHEM 345.
Registration Information: Credit not allowed for both ANEQ 447 and FTEC 447.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 448 Livestock Manure Management and Environment Credits: 3 (2-2-0)
Course Description: Manure management; maximizing benefits to soils and crops; minimizing air and water quality hazards; complying with regulations.
Prerequisite: CHEM 100 to 199 - at least 3 credits.
Registration Information: Credit allowed for only one of the following: ANEQ 448, ANEQ 548, SOCR 448, SOCR 548. Must register for lecture and laboratory. Required field trips.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 450 Processed Meats Credits: 3 (2-3-0)
Course Description: Physical, chemical and functional characteristics of meat raw materials. Science and technology of value-added processing including curing, sausage manufacture, low moisture products, and restructuring. Quality assurance and related current industry topics.
Prerequisite: ANEQ 360.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 460 Meat Safety Credits: 2 (2-0-0)
Course Description: Meat safety; food borne pathogens; hazard analysis critical control points (HACCP) and total quality management (TQM) practices.
Prerequisite: CHEM 100 to 199 - at least 3 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 470 Meat Processing Systems Credits: 4 (3-2-0)
Course Description: Advanced understanding of the manufacturing, packaging, distribution, storage, and cooking of meat products.
Prerequisite: ANEQ 360.
Restriction: Must be a: Senior, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing. Must register for lecture and lab.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 472 Sheep Systems Credits: 3 (2-2-0)
Course Description: Sheep production under farm and ranch conditions; products, breeds, breeding, nutrition, reproduction, and management systems.
Prerequisite: None.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 473 Dairy Systems Credits: 3 (2-3-0)
Course Description: Integration of nutrition, genetics, physiology, and economics for management decisions of dairy farm operations and production and marketing of milk.
Prerequisite: (ANEQ 230 or BMS 300 or ANEQ 305) and (ANEQ 310 and ANEQ 320).
Restriction: .
Registration Information: Senior standing. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 474 Swine Systems Credits: 3 (2-2-0)
Course Description: Production of purebred and commercial swine; breeds, breeding, feeding, marketing, and management.
Prerequisite: None.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 475 Travel Abroad-Animal Agriculture Credits: 2 (2-0-0)
Course Description: Onsite evaluation of international animal agriculture systems with emphasis on production, marketing, and management.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 476 Feedlot Systems Credits: 3 (3-0-0)
Course Description: Feedlot facilities; nutrition; procurement; merchandising; handling; processing cattle; health care; custom feeding; managerial duties.
Prerequisite: ANEQ 320.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 478 Beef Systems Credits: 3 (2-2-0)
Course Description: Beef production as related to consumer through seedstock segments. Major emphasis on cow-calf management.
Prerequisite: None.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing. Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 486 Therapeutic Riding Instructor Practicum Credit: 1 (0-3-0)
Course Description: Mentor-guided teaching hours to students preparing for the PATH International Instructor examination.
Prerequisite: ANEQ 365.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

ANEQ 487A Internship: Animal Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANEQ 487B Internship: Equine Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANEQ 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANEQ 496 Group Study Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U Sat/Unsat Only, Traditional.
Special Course Fee: No.

ANEQ 500 Recent Developments Credits: Var[1-6] (0-0-0)
Course Description: Recent developments in animal science, avian science, and food technology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANEQ 510 Bovine Reproduction Management Credits: 4 (3-2-0)
Course Description: Role of reproduction in economic efficiency of cattle production systems. Causes of delayed breeding and nonpregnancy, abortion and perinatal mortality.
Prerequisite: ANEQ 310.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 522 Animal Metabolism Credits: 3 (3-0-0)
Course Description: Nutrient digestion, absorption, transport and metabolism in monogastric and ruminant domestic species as affected by physiological changes.
Prerequisite: CHEM 346 or CHEM 245 and CHEM 246.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 525 Advanced Meat Science Credits: 3 (3-0-0)
Course Description: Advanced study of fundamental and biochemical basis of meat quality.
Prerequisite: ANEQ 360 or ANEQ 470.
Registration Information: Junior standing. Credit not allowed for both ANEQ 525 and ANEQ 581A5.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 531 Applied Bovine Respiratory Disease Management Credit: 1 (1-0-0)
Course Description: Economic significance, management and measurement of bovine respiratory disease; introduction to genetic influence on susceptibility.
Prerequisite: ANEQ 313 or ANEQ 346.
Registration Information: Written consent of instructor. Offered as an online course only. This is a partial semester course. Senior standing. Credit not allowed for both ANEQ 531 and ANEQ 580A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 532 Genetics of Bovine Respiratory Disease Credit: 1 (1-0-0)
Course Description: Quantitative and molecular perspectives on the genetics of susceptibility to bovine respiratory disease (BRD); genetic improvement in BRD susceptibility.
Prerequisite: ANEQ 330 and ANEQ 531.
Registration Information: Senior standing. Written consent of instructor. Offered as an online course only. This is a partial semester course. Credit not allowed for both ANEQ 532 and ANEQ 580A2.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 533 Marker and Gene Assisted Selection Credit: 1 (1-0-0)
Course Description: Approaches to including DNA marker and gene information into livestock selection decisions to improve accuracy and rate of genetic improvement.
Prerequisite: ANEQ 535 or ANEQ 575.
Registration Information: Graduate standing. Written consent of instructor. Offered as an online course only. This is a partial semester course. Credit not allowed for both ANEQ 533 and ANEQ 580A3.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 534 Markers to Gene Function - Functional Change Credit: 1 (1-0-0)
Course Description: Results of marker association analyses are expanded to how sequence polymorphisms translate into functional changes in the animal genome and variation in animal performance. Topics include an introduction to the tools used to generate multi-omics data and how these data are used in genetic evaluation and animal improvement programs.
Prerequisite: ANEQ 328.
Registration Information: Senior standing. Written consent of instructor. Offered as an online course only. This is a partial semester course. Credit not allowed for both ANEQ 534 and ANEQ 580A4.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 535 Genetic Prediction in Livestock Credit: 1 (1-0-0)
Course Description: Emphasizes approaches to genetic prediction in livestock focusing on the use of mixed models and best linear unbiased prediction.
Prerequisite: ANEQ 575.
Registration Information: Graduate standing. Written consent of instructor. Offered as an online course only. This is a partial semester course. Credit not allowed for both ANEQ 535 and ANEQ 581A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 536 Livestock Variance Component Estimation Credit: 1 (1-0-0)
Course Description: Emphasizes approaches to estimation of (co)variance components and genetic parameters required to solve mixed models in livestock genetics.
Prerequisite: ANEQ 535 or ANEQ 575.
Registration Information: Senior standing. Written consent of instructor. Offered as an online course only. This is a partial semester course. Credit not allowed for both ANEQ 536 or ANEQ 581A2.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 545 Molecular Methods in Animal Genetics Credits: 3 (0-6-0)
Course Description: Hands-on learning exercises to help develop technical skills and conceptual understanding for critical evaluation of animal genetics at the molecular level. Practical experience in classical and modern genetics laboratory techniques as well as an appreciation for when these techniques should be applied and how to interpret the results.
Prerequisite: ANEQ 330 or ANEQ 334.
Registration Information: Senior standing. Credit not allowed for both ANEQ 545 and ANEQ 581A3.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 548 Issues in Manure Management Credits: 4 (2-2-1)
Course Description: Manure management practices maximizing benefits to soils and crops while minimizing hazards to air and water quality and complying with regulations.
Prerequisite: CHEM 100 to 199 - at least 3 credits.
Registration Information: Credit allowed for only one of the following courses: ANEQ 448, ANEQ 548, SOCR 448, SOCR 548. Must register for lecture, laboratory, and recitation. Required field trips.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 550A Basic Research Surgery: Farm Animal Credits: 2 (1-2-0)
Course Description: Basic principles and techniques of animal surgery to meet ACUC requirements for experimental procedures.
Prerequisite: ANEQ 230 or ANEQ 305 or BMS 300 or BMS 305.
Registration Information: Junior, senior, or graduate standing. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 550B Basic Research Surgery: Rodent Credits: 2 (1-2-0)
Course Description: Basic principles and techniques of animal surgery to meet ACUC requirements for experimental procedures.
Prerequisite: ANEQ 230 or ANEQ 305 or BMS 300 or BMS 305 or VS 333.
Registration Information: Junior, senior, or graduate standing. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 551 Field Necropsy Credits: 2 (1-2-0)
Course Description: Field necropsy techniques for collection of animal tissues for submission to a diagnostic laboratory.
Prerequisite: (ANEQ 230 or BMS 300 or ANEQ 305) and (VS 313 or ANEQ 346 or MIP 315 or ANEQ 313).
Restriction: Must be a: Graduate, Professional.
Registration Information: Junior or senior standing. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 565 Interpreting Animal Science Research Credits: 3 (3-0-0)
Course Description: Designing, conducting, analyzing, and reporting of animal science research.
Prerequisite: (ANEQ 101 or ANEQ 102) and (STAT 100 to 499 - at least 3 credits).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 567 HACCP Meat Safety Credits: 2 (2-0-0)
Course Description: Control of health problems in meat products through hazard analysis critical control point (HACCP) and total quality management (TQM) practices.
Prerequisite: ANEQ 460.
Registration Information: This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 575 Computational Biology in Animal Breeding Credits: 3 (2-2-0)
Course Description: Numerical analysis and use of computers to solve problems in animal improvement.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing or written consent of instructor. Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 587 Internship Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANEQ 610 Hormonal Regulation of Growth Credits: 2 (2-0-0)
Course Description: Cellular and molecular regulation of animal growth by hormones and growth factors.
Prerequisite: BMS 501.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 621 Vitamin and Mineral Metabolism Credits: 3 (3-0-0)
Course Description: Vitamin and mineral metabolism in domestic animals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 626 Animal Nutrition, Emissions, and Management Credits: 4 (3-3-0)
Course Description: Nutrients and nutrient function required to support animal life through all physiological states and assessment of the impacts on gaseous emissions from these animals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 631 Selection Index Theory Credits: 3 (2-0-1)
Course Description: Quantitative methods for genetic evaluation: selection index theory and introduction to best linear unbiased prediction.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANEQ 660 Topics in Meat Safety Credit: 1 (1-0-0)
Course Description: Topics of current concern in meat safety.
Prerequisite: ANEQ 567.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 676 Molecular Approaches to Food Safety Credits: 3 (1-4-0)
Course Description: Molecular subtyping, tracking, and control; molecular ecology and evolution of food-borne pathogens; molecular pathogenesis of food-borne diseases.
Prerequisite: MIP 300 or MIP 334.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANEQ 720 Nutritional Energetics Credits: 3 (3-0-0)
Course Description: Dietary energy use to meet animal requirements for maintenance, growth, pregnancy, and lactation; environmental, nutritional, and physiological effects.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 725 Rumen Metabolism Credits: 3 (3-0-0)
Course Description: Microbial degradation, transformation, and synthesis of ingested nutrients; feed particle passage kinetics in the rumen.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 730 Advances in Cattle Breeding Credits: 3 (3-0-0)
Course Description: Literature and research methods in beef cattle breeding.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANEQ 731 Advanced Genetic Prediction Credits: 3 (3-0-0)
Course Description: Models and methods for prediction of genetic merit in livestock populations.
Prerequisite: ANEQ 575.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANEQ 792A Seminar: General Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANEQ 792B Seminar: Breeding/Genetics Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANEQ 792C Seminar: Physiology Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANEQ 792D Seminar: Meat Sciences Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANEQ 792E Seminar: Nutrition Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANEQ 792F Seminar: Livestock Management Systems Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANEQ 792H Seminar: Livestock Behavior and Welfare Credit: 1 (0-0-1)
Course Description: Issues in the field of livestock behavior and welfare.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANEQ 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANEQ 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Anthropology-ANTH (ANTH)

Courses

ANTH 100 Introductory Cultural Anthropology (GT-SS3) Credits: 3 (3-0-0)
Course Description: Human societies and their cultural setting; variation in beliefs, social customs, and technologies; human differences in anthropological terms.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).

ANTH 101 Practicing Anthropology Credit: 1 (0-0-1)
Course Description: Familiarizes majors with the sub-fields of anthropology and provides an overview via practical exercises of foundational skills necessary for success in the anthropology major, CSU, and beyond. Topics include critical thinking and writing, conducting research, scholarly communication, and professional career development, with attention to how these apply to anthropology in particular.
Prerequisite: None.
Registration Information: Anthropology majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 120 Human Origins and Variation (GT-SC2) Credits: 3 (3-0-0)
Course Description: Mechanisms of evolution; genetics. Living primate biology, behavior, and history. Human evolutionary history. Human variation and adaptation.
Prerequisite: None.
Registration Information: Mixed face-to-face is a partial semester course. Sections may be offered: Online. Credit not allowed for both ANTH 180A1 and ANTH 120.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

ANTH 121 Human Origins and Variation Laboratory (GT-SC1) Credit: 1 (0-2-0)
Course Description: Labs demonstrating genetic and evolutionary processes, comparative skeletal anatomy, human evolution through fossil casts, and modern human variation.
Prerequisite: ANTH 120, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

ANTH 140 Introduction to Prehistory (GT-HI1) Credits: 3 (3-0-0)
Course Description: Origins of human society from the Stone Age to urban civilization using architecture, art, tools, and other material remains.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

ANTH 150 Imagining Sustainability Credits: 3 (3-0-0)
Also Offered As: ESS 150.
Course Description: Science alone cannot imagine the revolutionary changes necessary to sustain future life on our planet. Explore key concepts and practices of sustainability as represented in contemporary fiction, film, and the news media. Interdisciplinary approach will be anthropological and historical, charting the development of sustainability thinking through different epochs of capitalism.
Prerequisite: None.
Registration Information: Credit allowed for only one of the following: ANTH 150, ANTH 181A1, ESS 150, or ESS 181A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 200 Cultures and the Global System (GT-SS3) Credits: 3 (3-0-0)
Course Description: Analyze diversity, cultural responses, and adaptations of smaller-scale societies to emerging global trends.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

ANTH 225 Anthropology of the Arts Credits: 3 (3-0-0)
Course Description: Explores the arts (both visual and performing) from the perspective of cultural anthropology. What is art and how is the category differently constructed cross-culturally? Why and how do people make, consume, and identify with expressive culture? How can the visual and performing arts help us to develop a deeper understanding of how human beings make meaning? Read a variety of ethnographic texts that illuminate these and related questions.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 232 Soundscapes-Music as Human Practice Credits: 3 (3-0-0)
Also Offered As: MU 232.
Course Description: Musical communities and soundscapes from around the world provide exploration points for how music and sound inform human life. Study everything from playlists to music of distant lands. Ability to read notated music not required.
Prerequisite: None.
Registration Information: Previous music experience not required. Credit allowed for only one of the following: ANTH 232, MU 232, or MU 280A2.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C.

ANTH 235 Indigenous Peoples of North America Credits: 3 (3-0-0)
Course Description: Explores Native groups of North America from an anthropological perspective, and utilizes a culture area framework as a basis for investigation. Culture area framework is largely based on historical material—how these people have lived in the recent past. Evaluating how these groups live in the present. Contemporary issues, globalization, and local responses to local concerns.
Prerequisite: None.
Registration Information: Sections may be offered: Online. Credit not allowed for both ANTH 235 and ANTH 280A2.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 260 Introduction to Field Archaeology Credits: 2 (1-2-0)
Course Description: Field methods including map preparation and interpretation, site location and recording, site excavation, and stratigraphy.
Prerequisite: ANTH 140.
Registration Information: Must register for lecture and laboratory.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 274 Human Diversity Credits: 3 (3-0-0)
Course Description: Explore human diversity, both physical and genetic, within an evolutionary framework. The scientific method is applied to the sociocultural contexts that give rise to prejudices in order to critically evaluate misconceptions regarding race, gender, and human behaviors deemed 'natural'. Approaching human diversity from an evolutionary perspective dismantles biases that justify prejudice and result in unequal access to power and resources as well as negative health impacts.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 275 Introduction to Forensic Anthropology Credits: 3 (3-0-0)
Also Offered As: SOC 275.
Course Description: Forensic anthropological theory and methods including estimation of age-at-death, sex, stature, ancestry, and trauma analysis.
Prerequisite: None.
Registration Information: Credit not allowed for both ANTH 275 and SOC 275. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANTH 295 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 310 Peoples and Cultures of Africa Credits: 3 (3-0-0)
Course Description: Sub-Saharan lifestyles including marriage and family, traditional government, religion and magic, ecology and economy, art, music, and literature.
Prerequisite: ANTH 100.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 312 Modern Indian Culture and Society Credits: 3 (3-0-0)
Course Description: Anthropological contributions to the understanding of contemporary India.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 313 Modernization and Development Credits: 3 (3-0-0)
Course Description: Processes by which cultures change and modernize, 1989 to the present.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 314 Southeast Asian Cultures and Societies Credits: 3 (3-0-0)
Course Description: Colonial and post-colonial cultures, globalization processes, and changing ethnic and gender identities in Southeast Asian societies.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 315 Global Mobilities—The African Diaspora Credits: 3 (3-0-0)
Course Description: Globalization and transnationalism with a focus on the circulation of people, ideas, and cultural products and practices between Africa and the rest of the world. By situating Africans as both producers and consumers of transnational ideas and products, we will develop an understanding of Africa beyond popular representations of violence and crisis.
Prerequisite: ANTH 100 or ANTH 200 or GR 100 or SOC 100.
Registration Information: Junior standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 317 Anthropology of Human Rights Credits: 3 (3-0-0)
Course Description: Human rights from the perspective of cultural anthropology through its theoretical and practical dimensions. Contemporary human rights debates within the context of cultural plurality in a globalized world. Engages the intersection between global dynamics and community experiences by addressing the human rights dimensions of refugees and migration, indigenous communities, women and children, health, religious practices, among others.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 319 Latin American Peasantries Credits: 3 (3-0-0)
Course Description: Sociocultural, economic, and political responses of Latin American peasantries to poverty and global processes.
Prerequisite: ANTH 100 or ANTH 200 or ETST 100.
Registration Information: Credit not allowed for both ANTH 319 and ETST 319.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 322 The Anthropology of Religion Credits: 3 (3-0-0)
Course Description: Major anthropological theories and descriptions of religious beliefs and practices. Religion in a cross-cultural and evolutionary perspective.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 329 Cultural Change Credits: 3 (3-0-0)
Course Description: Cultural change and effects of directed global forces; colonial origins of underdevelopment on small-scale societies.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 330 Human Ecology Credits: 3 (3-0-0)
Course Description: Roles of technology, economics, social organization, and ideology in human adaptations to and survival in natural and cultural environments.
Prerequisite: (ANTH 100 or ANTH 200) and (ANTH 120 or BZ 101 or LAND 220 or LIFE 220).
Registration Information: Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 333 Anthropology of Sex and Reproduction Credits: 3 (3-0-0)
Course Description: Contemporary scholarship on issues in the anthropology of reproduction, including the relationship between production and reproduction and between the corporeal body and the body politic, the disciplinary power of the state, public controversies such as abortion and maternal-fetal conflict, and the symbolism and metaphors of procreation and parenthood. We will use "reproduction" as an analytic strategy to shed light on the cultural politics of gender, power, and sexuality.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sophomore standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 334 Narrative Traditions and Social Experience Credits: 4 (3-2-0)
Course Description: Relationship between narrative traditions and social contexts of their creation.
Prerequisite: ANTH 100 or ANTH 200 or E 140 or SOC 100.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 335 Language and Culture Credits: 3 (3-0-0)
Course Description: Human language and primate communication, nonverbal channels, sociolinguistics, and language change.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 336 Art and Culture Credits: 3 (3-0-0)
Course Description: Art expression is a defining factor in cultural identity and representation in a modern world where geographical and political borders are diminishing.
Prerequisite: ANTH 100 or ANTH 200.
Restriction: .
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 338 Gender and Anthropology Credits: 3 (3-0-0)
Course Description: Theory, themes, and debates in anthropological gender studies, ethnographic survey of women and men cross-culturally.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 340 Medical Anthropology Credits: 3 (3-0-0)
Course Description: Cultural adaptation to disease; non-Western theories of health and disease; categories, causes, cures; learned roles of patients and healers.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 343 Applied Medical Anthropology Credits: 3 (3-0-0)
Course Description: How and why we get sick and what sickness means from biological, social and cultural perspectives.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 350 Archaeology of North America Credits: 3 (3-0-0)
Course Description: Native American life, tools, architecture, religion, food-getting from cultures of 12,000 years ago or earlier until European contact.
Prerequisite: ANTH 140.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 351 Archaeology of Europe and Africa Credits: 3 (3-0-0)
Course Description: Human culture, tools, art, religion, social life, subsistence, and paleoecology from 4 million B.C. to 1200 B.C. in the Old World.
Prerequisite: ANTH 140.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 352 Geoarchaeology Credits: 3 (3-0-0)
Course Description: Analytical techniques, concepts, and field methodologies from the earth sciences to better understand the archaeological record.
Prerequisite: ANTH 140.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 353 Archaeology of Rock Art Credits: 3 (3-0-0)
Course Description: Study of prehistoric and recent rock art worldwide from an anthropological and cross-cultural perspective. Provide a strong understanding of what rock art is, how it is recorded, analyzed, and interpreted by archaeologists, and why ancient symbolism and sites are considered important in contemporary society.
Prerequisite: None.
Registration Information: Sophomore standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 358 Archaeologies of Graffiti Credits: 3 (3-0-0)
Course Description: An in-depth examination of graffiti as a human social behavior and form of material culture in the past and present. Examines the form, function, and context of graffiti across cultures and through time, with regard to the circumstances of its creation. Addresses what lies behind the human urge to leave a mark.
Prerequisite: ANTH 100 or ANTH 120 or ANTH 140 or ANTH 200.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 359 Colorado Prehistory Credits: 3 (2-0-1)
Course Description: Human behavioral responses to environmental diversity, cultural adaptation, Pleistocene and recent climates, anthropogenic environmental change.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 360 Archaeological Investigation Credits: 3 (2-2-0)
Course Description: Investigation of the archaeological record, how the record was formed, and how archaeological data are analyzed and interpreted.
Prerequisite: ANTH 140.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 365 Quantifying Anthropology Credits: 3 (3-0-0)
Course Description: Managing, quantifying and illustrating anthropological data-sets with appropriate software.
Prerequisite: ANTH 100 or ANTH 120 or ANTH 140 or ANTH 200.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 370 Primates Credits: 3 (3-0-0)
Course Description: Behavioral patterns, ecological relationships, and communication of nonhuman primates.
Prerequisite: ANTH 120 or BZ 101.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 371 Growing Up Primate Credits: 3 (3-0-0)
Course Description: Primates generally have extended periods of growth compared to other mammals; however, there is considerable variation across the Primate Order. Evolution of primate growth and reproductive strategies, critically evaluates current models of life history variation, examines the ways that primate taxa negotiate trade offs (e.g. current versus future reproduction), and explains the role of human sociality in the evolution of our unique life history parameters.
Prerequisite: ANTH 120 or BZ 101.
Registration Information: Junior standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 372 Human Osteology Credits: 3 (2-2-0)
Course Description: Human bones and teeth in a review of functional human evolution.
Prerequisite: ANTH 120 or BZ 101 or BZ 110 or LIFE 102.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 373 Human Evolution Credits: 3 (3-0-0)
Course Description: Current topics and debates in human evolution concentrating on biocultural changes in the human lineage.
Prerequisite: ANTH 120 or BZ 110.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANTH 374 Human Biological Variation Credits: 3 (2-0-1)
Course Description: Biological diversity of human populations; history of development of race concept.
Prerequisite: ANTH 120 or BZ 101 or BZ 110 or LIFE 102.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 375 Evolution of Primate Behavior Credits: 3 (3-0-0)
Course Description: Primate behavior from an evolutionary perspective, drawing on a variety of studies of humans, primates, and mammals.
Prerequisite: ANTH 120 or BZ 110 or LIFE 102.
Registration Information: Junior standing. Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 376 Evolution of Human Adaptation Credits: 3 (2-0-1)
Course Description: Unique characteristics of humans: bipedalism, encephalization, dentition, birth process, an attenuated period of development.
Prerequisite: ANTH 120 or BZ 110 or LIFE 102.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 377 Anthropology Perspectives-Evolution, Society Credits: 3 (3-0-0)
Course Description: Evolutionary science in educating the public is investigated and anthropological knowledge of human evolutionary biology is examined.
Prerequisite: ANTH 120.
Registration Information: Credit not allowed for both ANTH 377 and ANTH 380A2.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 378 Bipedal Apes Credits: 3 (3-0-0)
Course Description: Human bipedal walking within a comparative framework of primate locomotion and anatomy. Specific focus is on kinematics and kinetics of soft- and hard-tissues including analysis of extant primate locomotion, morphology, and development. Discussions focus on debates in primate functional anatomy and locomotion including hypotheses surrounding the origins and evolution bipedal walking and running and possible maladaptations of being a human biped.
Prerequisite: ANTH 120 or BZ 101.
Registration Information: Junior standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 379 Evolutionary Medicine and Human Health Credits: 3 (3-0-0)
Course Description: Evolutionary medicine refers to the application of evolutionary theory to the study of human health, disease, and modern medicine. This theoretical perspective provides a deeper lens with which to investigate health, moves us beyond mechanistic explanations of disease, and constructs an anthropological framework for interpreting the evolution of human physiological diversity.
Prerequisite: ANTH 120 or BZ 101 or BZ 110 or LIFE 102.
Registration Information: Sophomore standing.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 400 History of Theory-Anthropology and Geography Credits: 3 (3-0-0)
Also Offered As: GR 400.
Course Description: Anthropological/Geographical theory from its beginnings with Aristotle through recent developments into the 20th century.
Prerequisite: (ANTH 100 or ANTH 200) and (ANTH 140 and ANTH 120 and ANTH 121 or GR 100).
Registration Information: Junior or senior standing. Sections may be offered: Online. Credit not allowed for both ANTH 400 and GR 400.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 401 Psychological Anthropology Laboratory Credit: 1 (0-2-0)
Course Description: Practical research techniques drawn from psychological and cognitive anthropology for investigating the relationship between shared group culture and individual thought and practice. Mixed qualitative and quantitative methods, including using field observations, interviews, and surveys to illuminate "cultural domains" of thought. Emphasis on collaborative group research and hands-on training involving actual field research and data collection and analysis via appropriate software packages.
Prerequisite: ANTH 322, may be taken concurrently or ANTH 423, may be taken concurrently or ANTH 444, may be taken concurrently or ANTH 445, may be taken concurrently.
Registration Information: Junior standing. Repeatable for credit.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 405 Public Anthropology and Global Challenges Credits: 3 (3-0-0)
Course Description: Value of taking scholarship to the communities. Public scholarship is pointed at many publics and intended to engage actively in the process of solving urgent problems in contrast to traditional scholarship. Focus on the public discourse that addresses disasters, climate change, and global health issues. Critical look at how academic knowledge in these realms serves the public interest.
Prerequisite: ANTH 300 to 499 - at least 3 credits or SOC 300 to 499 - at least 3 credits.
Registration Information: Junior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 411 Indians of South America Credits: 3 (0-0-3)
Course Description: Ethnographic and cultural characteristics of South American indigenous groups and the current critical issues they face.
Prerequisite: ANTH 100 or ANTH 200 or ANTH 413 or ANTH 414 or ETST 414.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 412 Indians of North America Credits: 3 (3-0-0)
Course Description: Native American peoples, their cultural variation across the continent, and cultural encounters with colonial expansion.
Prerequisite: ANTH 100 or ANTH 200 or ANTH 413 or ANTH 414 or ETST 414.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 413 Indigenous Peoples Today Credits: 3 (3-0-0)
Course Description: Contemporary cultural and social issues of indigenous peoples around the globe, including North and South American Indians and Australian Aborigines.
Prerequisite: ANTH 200 or ANTH 412 or ANTH 414 or ETST 414.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 414 Development in Indian Country Credits: 3 (3-0-0)
Also Offered As: ETST 414.
Course Description: Critical examination of history, public policy, and tribal strategies for economic development and natural resource management in Indian Country.
Prerequisite: None.
Registration Information: Credit not allowed for both ANTH 414 and ETST 414.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 415 Indigenous Ecologies and the Modern World Credits: 3 (3-0-0)
Course Description: Impact of the modern world in indigenous peoples' relationship to their environments and natural resources.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 416 Gender, Culture, and Health Credits: 3 (3-0-0)
Course Description: Examine the role of anthropology in current global health issues paying particular attention to culture and gender.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 417 Indigenous Environmental Stewardship Credits: 3 (3-0-0)
Course Description: Sustainability and environmental stewardship are not necessarily modern day concepts. Indigenous peoples of North America have established traditions and beliefs about harmony and kinship with nature. Focus upon stories and belief systems and their influence upon culture, economics, politics, American history, environmental justice and law.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 420 Digital Digging--Geophysics in Archaeology Credits: 3 (3-0-0)
Course Description: Introduction to the geophysical methods archaeologists use to prospect for new sites, and develop new questions for known sites. Examines how common geophysical methods work to detect subsurface signatures for human activity. Provides hands-on experience in data collection, processing, and analysis for multiple instruments. Presents diverse theoretical perspectives from the social sciences that can be applied to interpret subsurface spatial signatures at archaeological sites.
Prerequisite: ANTH 100 or ANTH 120 or ANTH 140 or ANTH 200.
Registration Information: Sophomore standing.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 422 Comparative Legal Systems Credits: 3 (3-0-0)
Also Offered As: SOC 422.
Course Description: Traditional approaches to law, competing concepts of law in the global system, and experiences of minorities in state legal systems.
Prerequisite: ANTH 100 or SOC 100.
Registration Information: Credit not allowed for both ANTH 422 and SOC 422.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 423 Cultural Psychiatry Credits: 3 (3-0-0)
Course Description: Social determinants of mental health. Cross-cultural health and healing. Cultural contexts of U.S./Western and Indigenous/non-Western psychiatries.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 438 Approaches to Community-Based Development Credits: 3 (0-0-3)
Course Description: Explores the structure and practice of community development globally, engaging in critical analysis of different approaches and their impact.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 439 Community Mobilization Credits: 3 (0-0-3)
Course Description: Structural, social, and psychological barriers that inhibit cooperation and collective action.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 440 Theory in Cultural Anthropology Credits: 3 (3-0-0)
Course Description: Theoretical paradigms used to explain culture including evolutionary, functional, ecological, political economy, postmodernism, and hegemony.
Prerequisite: ANTH 100 or ANTH 200.
Terms Offered: Fall, Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 441 Method in Cultural Anthropology Credits: 3 (3-0-0)
Course Description: Methodological orientations and research techniques. Ethnographic and cross-cultural approaches including quantitative and formal models.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 442 Ethnographic Field School Credits: Var[3-8] (0-0-0)
Course Description: Directed fieldwork with American Indian communities; methodology, protocols, and social relations of ethnographic field research.
Prerequisite: ANTH 100 or ANTH 200 or ANTH 100 to 99999 - at least 9 credits.
Registration Information: Required field trips.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

ANTH 443 Ethnographic Field Methods Credits: 3 (0-6-0)
Course Description: Directed experiential preparation for applied ethnographic field methods and research questions.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 444 Cultures of Virtual Worlds–Research Methods Credits: 3 (3-0-0)
Course Description: Methodologies and directed research related to virtual worlds and internet, gaming, play, and fan communities.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Junior standing.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 445 Psychological Anthropology Credits: 3 (3-0-0)
Course Description: Cross-cultural exploration of the human mind by studying the ideas, desires, and practices of individuals in various sociocultural settings.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 446 New Orleans and the Caribbean Credits: 3 (3-0-0)
Course Description: New Orleans and the Caribbean connections through colonization, slavery, modernity, legacies of race, gender and class, the expressive arts.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 447 Gender Equity in Development Credits: 3 (0-0-3)
Course Description: Various forms of women's power, and potentials for disempowerment within the context of international development.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 448 Development and Empowerment Credits: 3 (0-0-3)
Course Description: Development as an economic process of wealth accumulation, as well as a socio-political process of empowerment.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 449 Community Development from the Ground Up Credits: 3 (3-0-0)
Course Description: Participatory methods in the monitoring and evaluation of development projects, where multiple stakeholders are involved in the process.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 450 Hunter-Gatherer Ecology Credits: 3 (0-0-3)
Course Description: Development of anthropological method and theory; study of contemporary and prehistoric foraging peoples.
Prerequisite: ANTH 100 and ANTH 120 and ANTH 121 and ANTH 140.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 451 Andean Archaeology and Ethnohistory Credits: 3 (3-0-0)
Course Description: Prehistory and colonial experiences of native Andean peoples.
Prerequisite: ANTH 100 or ANTH 140.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 452 Archaeology of Mesoamerica Credits: 3 (3-0-0)
Course Description: Ancient cultures and civilizations in Middle America.
Prerequisite: ANTH 140.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 453 Impacts on Ancient Environments Credits: 3 (3-0-0)
Course Description: Major issues and case studies in the archaeology of ancient human societies and their environmental impacts.
Prerequisite: ANTH 140.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 454 Anthropological Perspectives on Food Credits: 3 (3-0-0)
Course Description: A long term perspective on the political economy of human food ways from ancient hunter-gatherers to the present. Topics will include foraging practices, domestication, feasting and emergent social complexity, the role of food in ancient states, and globalization, as well as the modern food economy. Lectures and readings will be based on research in archaeology, cultural anthropology, and biological anthropology.
Prerequisite: ANTH 100 and ANTH 120 or ANTH 100 and ANTH 140 or ANTH 100 and ANTH 200 or ANTH 120 and ANTH 140 or ANTH 120 and ANTH 200 or ANTH 140 and ANTH 200.
Registration Information: Junior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 455 Great Plains Archaeology Credits: 3 (3-0-0)
Course Description: Prehistoric people on Great Plains from earliest hunter-gatherers to historic contact; cultural responses to changing conditions.
Prerequisite: ANTH 140.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 456 Archaeology and the Public Credits: 3 (3-0-0)
Course Description: Applied archaeology in public settings, including publication, museum display, education, the illicit artifact trade, and other ethical issues.
Prerequisite: (ANTH 140) and (ANTH 252 or ANTH 350 or ANTH 351 or ANTH 352 or ANTH 451 or ANTH 452 or ANTH 453 or ANTH 455 or ANTH 460 or ANTH 465).
Registration Information: 3 additional credits of archaeology required. Required field trips.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 457 Lithic Technology Credits: 3 (2-2-0)
Course Description: Method and theory behind production, use, and discard of stone tools by prehistoric peoples. Hands-on application in laboratory setting.
Prerequisite: ANTH 140.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 458 Archaeology and Cultural Resource Management Credits: 3 (3-0-0)
Course Description: Cultural Resource Management as a career, the network of regulations that form the backbone of the industry, and the process for conducting a CRM investigation as an archaeologist. Topics include cultural resource legislation, project planning, execution, management, client communications, site analysis and evaluation, effects determinations, and agency and tribal consultations. Topical issues including case studies and industry trends will be explored.
Prerequisite: ANTH 100 to 499 - at least 6 credits.
Registration Information: Offered as an online course only.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 459 Mediterranean Archaeology Credits: 3 (3-0-0)
Course Description: Contextualization of historical and socio-political trends, influences, and impetuses converge to a holistic understanding of what it meant to be a Greek or Roman from c. 1300 BCE – 330 CE. Basic sets of evidence available to scholars of this world (archaeology, epigraphy, philology, glyptic, etc.), and how Mediterranean archaeologists have historically approached this evidence.
Prerequisite: ANTH 140.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 460 Field Class in Archaeology Credits: Var[3-8] (0-0-0)
Course Description: Directed fieldwork in local archaeology, site survey, and excavation; recovery, preservation, cataloging, analysis of artifactual and skeletal materials.
Prerequisite: None.
Registration Information: Written consent of instructor. Required field trips.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ANTH 461 Anthropological Report Preparation Credits: 3 (0-0-3)
Course Description: Producing written and oral presentations for anthropological research, employment, or graduate work. Grant writing and manuscript preparation.
Prerequisite: ANTH 460.
Registration Information: Written consent of instructor.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 462 Anthropology Curation and Exhibition Methods Credits: 3 (3-0-0)
Course Description: Current methods and ethics in museum curation, conservation, collections management policies and procedures, exhibition development, and other tasks associated with managing, preserving and displaying anthropological collections (both artifacts and their associated documentation). Practical, hands-on experience in artifact care, management, preservation, and exhibition development.
Prerequisite: None.
Registration Information: Sophomore standing. 3 credits of ANTH or ART or HIST.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 465 Zooarchaeology Credits: 3 (2-2-0)
Course Description: Analysis of animal bones from archaeological sites to develop interpretations of past human behavior.
Prerequisite: ANTH 120 and ANTH 140.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

ANTH 469 Archaeology Seminar in Mesopotamian Prehistory Credits: 3 (0-0-3)
Course Description: Origins of human society from the stone age to urban civilizations using architecture, art, tools, and other material remains.
Prerequisite: ANTH 100 to 99999 - at least 6 credits.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 470 Paleontology Field School Credits: 4 (2-4-0)
Course Description: Field methods in fossil excavation, preservation, and curation; the evolution of the primate order.
Prerequisite: ANTH 120 or BZ 110 or LIFE 102.
Registration Information: Required field trips.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANTH 472 Human Biology Credits: 3 (3-0-0)
Course Description: Human biological responses to environmental conditions and constraints including diet, nutrition, disease, climate, culture change, and urbanization.
Prerequisite: ANTH 120 or BZ 110 or LIFE 102.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 473 The Neandertals Credits: 3 (2-0-1)
Course Description: Socio-historical foundations of questions regarding Neandertal paleobiology and culture and the Neandertal role in the evolution of Homo sapiens.
Prerequisite: (ANTH 120 or BZ 110) and (ANTH 372 or ANTH 373 or ANTH 374 or ANTH 375 or ANTH 376).
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 474 Human Skeleton Analysis Credits: 3 (2-2-0)
Course Description: Focus on methods and techniques used to reconstruct identity and behavior from the human skeleton applicable to all areas of skeletal biology, including bioarchaeology, paleoanthropology, and forensic anthropology.
Prerequisite: (ANTH 120 or BZ 101) and (ANTH 372).
Registration Information: Senior standing. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 475 Methods of Analysis in Paleoanthropology Credits: 3 (3-0-0)
Course Description: Practical discussion of techniques used to reconstruct dietary and locomotor behavior and evolutionary relationships in human fossil remains.
Prerequisite: ANTH 373.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 478 Heritage Resource Management Credits: 3 (3-0-0)
Also Offered As: HIST 478.
Course Description: Cultural resource laws and policy; practices commonly employed in management and preservation of these diverse resources.
Prerequisite: None.
Restriction: .
Registration Information: Junior or senior standing. Credit not allowed for both ANTH 478 and HIST 478.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 479 International Development Theory and Practice Credits: 3 (3-0-0)
Also Offered As: IE 479.
Course Description: Contemporary issues in international community and economic development, with practical and theoretical analysis from interdisciplinary perspectives.
Prerequisite: None.
Restriction: Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Junior or senior standing. Credit not allowed for both ANTH 479 and IE 479.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 482A Study Abroad: Communities and Conservation in South Africa Credits: 6 (0-0-6)
Also Offered As: ESS 482A.
Course Description: Travel to the wildest areas of savanna South Africa to work and learn from rural and urbanizing communities. Insights into the innovative forms of community-based natural resource management emerging in South Africa. Understand the new landscapes of conservation associated with post-apartheid South Africa. Explore the problems faced by the millions of people living in poverty at the edge of protected areas.
Prerequisite: None.
Registration Information: Written consent of instructor. Pre-South Africa: during the spring semester prior to the actual study abroad experience, students will meet in March and April for workshops and guest lectures on the CSU campus. In South Africa: travel approximately June 10 – July 2. Post-South Africa: students and instructors will schedule 20 hours of consulting time while students work on group projects over 6 weeks. Credit not allowed for both ANTH 482A and ESS 482A.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 484 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANTH 486 Practicum Credits: Var[1-6] (0-0-0)
Course Description: Application of anthropological methods under actual project conditions.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 487 Internship Credits: Var[1-9] (0-0-0)
Course Description: Academic-based work experience with selected organizations or agencies. Supervised application of anthropological principles.
Prerequisite: ANTH 100 to 499 - at least 9 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 492A Seminar: Archaeology Credits: 3 (0-0-3)
Course Description:
Prerequisite: ANTH - at least 6 credits.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 492B Seminar: Biological Anthropology Credits: 3 (0-0-3)
Course Description:
Prerequisite: ANTH - at least 6 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 493 Capstone Seminar Credit: 1 (0-0-1)
Course Description: Linkages between anthropological subfields and how professional anthropologists approach issues.
Prerequisite: None.
Registration Information: Concurrent registration in a 4A course (see department list). Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 496 Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 500 Development of Anthropological Theory Credits: 3 (3-0-0)
Course Description: Contemporary development of anthropological thought.
Prerequisite: None.
Restriction: Must not be a: Undergraduate.
Registration Information: Undergraduates must have written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 501 Psychiatric Anthropology Laboratory Credit: 1 (0-2-0)
Course Description: Use tools from psychiatric anthropology to construct culturally-sensitive scales for assessing mental health and subjective well-being. Mixed qualitative and quantitative methods, including using field observations, interviews, and surveys to build and assess well-being measures. Emphasis on collaborative group research and hands-on training involving field research and data collection and analysis via appropriate software packages.
Prerequisite: ANTH 543, may be taken concurrently or ANTH 545, may be taken concurrently or ANTH 546, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Repeatable for credit.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 505 Resilience, Well-Being, and Social Justice Credits: 3 (3-0-0)
Course Description: Concepts of resilience, well-being, and social justice in the context of a rapidly changing planet. These concepts are rarely integrated yet each is understood to help diagnose, measure, and solve global-scale problems. Engagement with many views from many fields, including the anthropological lens of a community-level scale, cross-cultural comparison, and holistic analyses.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 515 Culture and Environment Credits: 3 (3-0-0)
Course Description: Theoretical accounts of societies' variable relationships to their environments, indigenous peoples' interactions with nature in context of modernity.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 520 Women, Health, and Culture Credits: 3 (3-0-0)
Course Description: Women's experiences and interpretations of their health; cultural, political, and economic forces affecting women's health.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 521 Gender, Sexuality, and Culture Credits: 3 (3-0-0)
Course Description: Gender and sexuality cross-culturally; theory, cultural constructions, colonialism, class, race, ethnicity, health, violence.
Prerequisite: None.
Restriction: Must not be a: Undergraduate.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 528 Economic Anthropology Credits: 3 (0-0-3)
Course Description: Theoretical approaches to the cultural context of economic activity.
Prerequisite: ANTH - at least 9 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 529 Anthropology and Sustainable Development Credits: 3 (0-0-3)
Course Description: Global development goals, poverty and hunger, environmental sustainability, education, and equity.
Prerequisite: ANTH - at least 9 credits.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 530 Human-Environment Interactions Credits: 3 (3-0-0)
Course Description: Paradigms and concepts in ecological anthropology with an emphasis on adaptation and resilience.
Prerequisite: ANTH 000 to 99999 - at least 9 credits.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 532 The Culture of Disaster Credits: 3 (0-0-3)
Course Description: Study of how the human impacts of disaster and the process of recovery are shaped by cultural as well as structural realities.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 535 Globalization and Culture Change Credits: 3 (0-0-3)
Course Description: Evolving paradigms and patterns of globalization and international development; cultural responses -- resistance, dependency, fragmented identities.
Prerequisite: ANTH - at least 9 credits.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 538 Food, Hunger, and Culture Credits: 3 (0-0-3)
Course Description: Explores cultural and social understandings of food cross-culturally, including the symbolic meanings that people attribute to food and its consumption. Critically investigates the intersecting political, economic, social, and cultural influences on hunger, malnutrition, and other health concerns associated with food and nutrition globally. Assesses applied anthropological approaches to reducing hunger and other nutrition related health problems.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program.
Registration Information: Graduate standing. Credit not allowed for both ANTH 538 or ANTH 581A2.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 539 Anthropology of Modernity Credits: 3 (3-0-0)
Course Description: Critical examination of the institutions, values, and processes which constitute the modern world. Impact of modern forces on "traditional" peoples.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 540 Medical Anthropology Credits: 3 (0-0-3)
Course Description: Cultural and biocultural approaches to health, illness, and the body; theory and application in medical anthropology.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 541 Seminar in Archaeological Method Credits: 3 (1-0-2)
Course Description: Methods of archaeological recovery and interpretation, and process of archaeological analysis and reporting.
Prerequisite: ANTH - at least 9 credits.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 542 Seminar in Archaeological Theory Credits: 3 (1-0-2)
Course Description: Theories of recovery, reconstruction, and interpretation of the archaeological record.
Prerequisite: ANTH - at least 9 credits.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 543 Foundations of Ethnographic Research Credits: 3 (3-0-0)
Course Description: Mixed qualitative and quantitative field methods to address practical real-world issues. Emphasis on linking theory and method, project formulation, hands-on experience with data collection and analysis, and practical applications such as preparing thesis/dissertation proposals and writing grants. Discussion of a range of anthropological approaches to field research, including applied, public, collaborative, participatory, and community-based ethnographic research.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program.
Registration Information: Graduate standing. Credit not allowed for both ANTH 543 and ANTH 643.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 544 From Death to Discovery Credits: 3 (1-0-2)
Course Description: Theoretical perspectives on the decay and fossilization of organisms between their death and discovery.
Prerequisite: ANTH 000 to 99999 - at least 9 credits.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 545 Global Mental Health--Theory and Method Credits: 3 (3-0-0)
Course Description: Cross-cultural study of mental health and healing; cultural, clinical, and biological perspectives; integration of theory and method.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 546 Culture, Mind, and Cognitive Science Credits: 3 (3-0-0)
Course Description: Anthropological contributions to cognitive science. Culture, mind, and social context. Theory building and practical applications.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 547 Mind, Medicine, and Culture Credits: 4 (3-2-0)
Course Description: Cultural-psychological influences on health and healing; mind-body medicine; complementary and alternative medicine; indigenous and spiritual healing.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 548 Theoretical Topics in Cultural Anthropology Credits: 3 (3-0-0)
Course Description: Major theoretical currents in cultural anthropology from the 19th-century to the present. Classical theory alongside contemporary texts that revise or revisit early works. Focus on some major theories and themes that are important in cultural anthropology since the 1960s.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 550A Regional Prehistory: Great Plains Credits: 3 (0-0-3)
Course Description:
Prerequisite: ANTH 350.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 550B Regional Prehistory: Great Basin Credits: 3 (0-0-3)
Course Description:
Prerequisite: ANTH 350.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 550C Regional Prehistory: Southwestern Credits: 3 (0-0-3)
Course Description:
Prerequisite: ANTH - at least 9 credits.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 551 Historical Archaeology Credits: 3 (3-0-0)
Course Description: Theory, methods, and issues in historical archaeology.
Prerequisite: None.
Restriction: Must not be a: Undergraduate.
Registration Information: Graduate standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 553 Archaeology of Complex Societies Credits: 3 (0-0-3)
Course Description: Issues in development and organization of complex societies with emphasis on the Americas.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 554 Ecological and Social Agent-based Modeling Credits: 3 (2-2-0)
Also Offered As: NR 554.
Course Description: Exploring the use and making of agent-based models featuring interacting individuals in ecological and social simulation, with examples and projects.
Prerequisite: None.
Restriction: .
Registration Information: Junior or senior standing. Credit not allowed for both ANTH 554 and NR 554.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 555 Paleoindian Archaeology Credits: 3 (0-0-3)
Course Description: Archaeology of the Americas during late Pleistocene/early Holocene; background and development of contemporary models.
Prerequisite: ANTH 140.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 566 Field Methods Training in Online Environments Credits: 3 (2-2-0)
Course Description: Collaborative analysis of ethnographic field data collected in online virtual worlds; mixed methods applicable to other built and natural places.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 570 Contemporary Issues-Biological Anthropology Credits: 3 (0-0-3)
Course Description: Theory and applications in biological anthropology focusing on syntheses and interpretations of human biology, variation, adaptability, and evolution.
Prerequisite: None.
Registration Information: Six credits in biological anthropology.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 571 Anthropology and Global Health Credits: 3 (3-0-0)
Course Description: Global health concerns and problems including poverty, urbanization, malnutrition, diet, war and refugees, climate, and environment.
Prerequisite: None.
Restriction: Must not be a: Undergraduate.
Registration Information: Graduate standing.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 572 Human Origins Credits: 3 (0-0-3)
Course Description: Major trends in human evolution through use of detailed case studies and regionally focused primary research.
Prerequisite: None.
Restriction: Must not be a: Undergraduate.
Registration Information: Graduate standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 573 Paleoclimate and Human Evolution Credits: 3 (3-0-0)
Course Description: Methods used to reconstruct past environments and understand the effects of past climate on the major trends of human evolution.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 617 Place, Space and Adaptation Credits: 3 (3-0-0)
Course Description: Critical evaluation of the nexus between space, society and environment. An interdisciplinary approach to studying the ways biological, material, historical, political-economic and cultural processes combine to shape human-environment relationships in place-based contexts.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 660 Field Archaeology Credits: Var[2-10] (0-0-0)
Course Description: Field applications of nondestructive survey methods, advanced cartographic and excavation methods, project supervision skills.
Prerequisite: ANTH 460.
Restriction: Must be a: Graduate, Professional.
Registration Information: Two seasons of field experience may substitute for ANTH 460. Required field trips.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ANTH 679 Applications of International Development Credits: 3 (3-0-0)
Also Offered As: IE 679.
Course Description: In-depth interdisciplinary analysis of theoretical and practical issues in implementing economic and community-based international development programs.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Credit not allowed for both ANTH 679 and IE 679.
Terms Offered: Fall, Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 686 Practicum-Field Archaeology Credits: Var[1-18] (0-0-0)
Course Description: Direction of anthropological fieldwork under professional supervision.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 692 Seminar Credits: 3 (0-0-3)
Course Description: Current trends of research in archaeology; cultural and physical anthropology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 696 Group Study-Anthropological Theory Credits: Var[1-3] (0-0-0)
Course Description: Intensive analysis of selected topics and theories in anthropology, both historical and contemporary.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 792 Special Topics in Anthropology Credits: 3 (0-0-3)
Course Description: A seminar course offering special topics each time the course is taught. Recent readings from the literature will be used to foster discussion.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 795 Independent Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Apparel + Merchandising-AM (AM)

Courses

AM 101 Fashion Industries Credits: 3 (3-0-0)
Course Description: Development, organization, and trends of domestic and foreign fashion industries.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AM 110 Apparel and Merchandising Digital Technology Credits: 3 (2-2-0)
Course Description: Introduction to computer technologies used in apparel and merchandising industries.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 130 Awareness and Appreciation of Design Credits: 3 (3-0-0)
Course Description: Awareness and appreciation of design as it exists in the context of everyday life and is expressive of cultural character and human creativity. Awareness and appreciation of design comes as a natural consequence of learning how to recognize and interpret the elements from which it is created.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B.

AM 143 Introduction to Apparel Design Credits: 4 (2-4-0)
Course Description: Apparel and garment-pattern development, construction, quality, skill development in technical drawing and rendering.
Prerequisite: None.
Registration Information: Acceptance into Apparel Design and Production program concentration required. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 240 Computer-Aided Apparel Design Credits: 3 (0-6-0)
Course Description: Apparel design using the computer to generate drawings for fabric, graphic logo, and apparel.
Prerequisite: AM 143.
Registration Information: Portfolio review required.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 241 Apparel Production Credits: 3 (1-4-0)
Course Description: Production processes of sewn textile products, flat pattern, pattern grading, marker making, and writing specifications.
Prerequisite: (AM 143) and (MATH 117) and (MATH 118) and (MATH 124, may be taken concurrently).
Registration Information: Portfolio review required. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 243 Adobe Photoshop for Textile Design Credits: 3 (3-0-0)
Course Description: Textile design using Adobe Photoshop to generate drawings for surface and structural textile design.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AM 244 Illustration for Apparel Design Credits: 3 (1-4-0)
Course Description: Illustration skills using traditional media/CAD applications and analysis of visual communication.
Prerequisite: AM 143.
Registration Information: Portfolio review required. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AM 250 Clothing, Adornment and Human Behavior (GT-SS3) Credits: 3 (3-0-0)
Course Description: Psychological, sociological and cultural factors influencing clothing and adornment.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

AM 270 Merchandising Processes Credits: 3 (3-0-0)
Course Description: Forecasting, planning, developing, and presenting merchandise lines to meet target market demands.
Prerequisite: (AM 101 with a minimum grade of C and AM 130 with a minimum grade of C and DM 120 with a minimum grade of C) and (MATH 124 or MATH 141).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 275 Product Development I Credits: 3 (3-0-0)
Course Description: Fundamental techniques and skills applied to the development of apparel and textile products.
Prerequisite: AM 101 with a minimum grade of C and AM 110 and AM 130 with a minimum grade of C and MATH 124.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 290 Workshop Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 321 Advanced Textiles Credits: 3 (3-0-0)
Course Description: Textile product serviceability; effect of fiber structure on properties and performance; new developments.
Prerequisite: DM 120.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 330 Textile and Apparel Economics Credits: 3 (3-0-0)
Course Description: Manufacture of textile and apparel products; structure of the industries; international trade and consumption.
Prerequisite: (AM 270 with a minimum grade of C) and (AREC 202 with a minimum grade of C or ECON 202 with a minimum grade of C).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AM 335 Textiles and Apparel Supply Chains Credits: 3 (3-0-0)
Course Description: Managing the flow of materials, information, and finances as they move in a process from supplier to retailers and consumers in a global environment.
Prerequisite: AM 270.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 341 Computer-Aided Apparel Production Credits: 3 (1-4-0)
Course Description: Computer-aided design technology used in apparel sketching, pattern drafting, grading, and marker making.
Prerequisite: AM 241.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 342 Computer-Aided Textile Design Credits: 3 (2-2-0)
Course Description: Ethnic textile design traditions and current approaches to textile production in industry and in individual design studios; computer-aided technology and multicultural research used to create repeat, knit, and woven textile designs.
Prerequisite: AM 110.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 344 Adobe Illustrator for Apparel Design Credits: 3 (0-0-3)
Course Description: Apparel design using Adobe Illustrator to generate drawings for garment technical sketching, fashion illustration, and graphic logos.
Prerequisite: AM 243, may be taken concurrently.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AM 345 Draping Design Credits: 3 (0-6-0)
Course Description: Apparel designing through basic draping techniques.
Prerequisite: AM 241.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 346 Apparel Line Concept Development and Planning Credits: 3 (2-2-0)
Course Description: Use of computer-aided design software to transfer apparel design concepts to garment pattern completion. Develop ideation sketches, fashion illustrations, technical flat drawings, and garment patterns for an original design line.
Prerequisite: AM 244 and AM 341, may be taken concurrently and AM 345, may be taken concurrently and DM 272.
Restriction: .
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 363 Historic Costume Credits: 3 (3-0-0)
Course Description: Influence of social, political, and economic conditions on costume of predynastic Egypt to present time.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 364 History of Fashion Designers/Manufacturers Credits: 3 (0-0-3)
Course Description: Fashion designers and manufacturers who established the field and their contemporaries.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AM 366 Merchandising Promotion Credits: 3 (3-0-0)
Course Description: Activities used to influence sale of merchandise and services; to promote trends and ideas.
Prerequisite: (AM 270 or MKT 300 or MKT 305) and (DM 272).
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AM 371 Merchandising Systems Credits: 4 (3-2-0)
Course Description: Business mathematics and current practices related to acquisition, negotiation, distribution, and sale of merchandise.
Prerequisite: (ACT 205 or ACT 210) and (AM 270 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 373 Apparel Design and Retail Entrepreneurship Credits: 3 (3-0-0)
Course Description: Entrepreneurship opportunities relative to apparel design, product development, and merchandising; development of understanding to initiate an apparel products and/or services business.
Prerequisite: AM 270 and ECON 202.
Registration Information: Junior standing. Required field trips. Credit not allowed for both AM 373 and DM 380A1.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AM 375 Product Development II Credits: 3 (2-2-0)
Course Description: Product design and development for apparel and other soft goods through industry-driven projects.
Prerequisite: DM 272 with a minimum grade of C and AM 270 with a minimum grade of C and AM 275.
Registration Information: Must register for lecture and lab. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 384 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 421 Textiles Product Quality Assessment Credits: 3 (2-2-0)
Course Description: Role of quality assurance in product development, production, performance, and user satisfaction with sewn products and the textile and other components of those products.
Prerequisite: DM 120.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 430 International Retailing Credits: 3 (3-0-0)
Course Description: Application of retail principles to analyze the internationalization process of retailing.
Prerequisite: AM 330 and DM 360 or MKT 360.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AM 446 Apparel Design and Production Credits: 3 (1-4-0)
Course Description: Computer-aided design technology used in apparel sketching, pattern drafting, grading and marker making; final portfolio preparation and review.
Prerequisite: AM 341 and AM 342.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 450 Social-Psychological Aspects of Clothing Credits: 3 (3-0-0)
Course Description: Psychological and social factors influencing clothing and its effect on others.
Prerequisite: AM 250 and PSY 100 or SOC 100.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AM 460 Historic Textiles Credits: 3 (3-0-0)
Course Description: Historic development of textiles from a global perspective, focusing on textiles produced by diverse cultures.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AM 466 Retail Environment Design and Planning Credits: 3 (2-2-0)
Course Description: Application of design/merchandising principles to retail selling environments, including traditional store design/layout, direct mail, and websites.
Prerequisite: AM 130 and AM 270.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AM 475 Product Development III Credits: 3 (3-0-0)
Course Description: Technology-based product innovation for positive social and environmental impacts.
Prerequisite: AM 335 and AM 375.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 479 Merchandising Policies and Strategies Credits: 3 (3-0-0)
Course Description: Examination of merchandising environment as influenced by its structure, and economic, legal, demographic, and psychographic trends.
Prerequisite: (AM 270 and AM 330 and AM 366 and AM 371) and (DM 360 or MKT 360).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 495A Independent Study: Merchandising Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 495B Independent Study: Apparel Design and Production Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 495D Independent Study: Textiles and Clothing Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 496A Group Study: Merchandising Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 496B Group Study: Apparel Design Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 496C Group Study: Apparel Production Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 496D Group Study: Textiles and Clothing Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 525 Application of Textile Technology to Design Credits: 3 (1-2-1)
Course Description: Advanced study of textile technology in apparel, merchandising and interior design; recent advances in the field.
Prerequisite: AM 321 or AM 421.
Registration Information: Must register for lecture, laboratory, and recitation.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AM 546 Theoretical Apparel Design Credits: 3 (1-2-1)
Course Description: Applications of theoretical frameworks and computer-aided design techniques for the development of wearable and fiber art.
Prerequisite: None.
Registration Information: Must register for lecture, laboratory, and recitation.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 550 Appearance, Self, and Society Credits: 3 (0-0-3)
Course Description: Analysis of social science theories and concepts as they apply to appearance and dress research.
Prerequisite: AM 450 or PSY 000 to 9999 - at least 6 credits or SOC 000 to 9999 - at least 6 credits.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AM 572 Merchandising Theories and Strategies Credits: 3 (0-0-3)
Course Description: Theoretical perspective on the design and development of merchandising strategies for U.S. and global production, distribution, and consumption.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing or written consent of instructor.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AM 590B Workshop: Apparel Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Applied Statistics-STAA (STAA)

Courses

STAA 551 Regression Models and Applications Credits: 2 (2-0-0)
Course Description: Model estimation and goodness of fit for linear models; confidence intervals for prediction and estimation; lack of fit, model diagnostics, transformations, model selection, influential observations, collinearity, interaction, weighted least squares, imputation.
Prerequisite: MATH 369 and STAT 315.
Restriction: Must be a: Graduate.
Registration Information: Admission to the Master of Applied Statistics or admission to the Graduate Certificate in Theory and Applications of Regression Models. Written consent of instructor. This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 552 Generalized Regression Models Credits: 2 (2-0-0)
Course Description: Categorical data analysis, estimation and testing for contingency tables, introduction to generalized linear models, logit and probit models for binary regression, extensions to nominal and ordinal multicategory responses, count data, Poisson and negative binomial regression, log-linear models.
Prerequisite: STAA 551, may be taken concurrently or STAT 512 or STAT 540.
Registration Information: Written consent of instructor. This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 553 Experimental Design Credits: 2 (2-0-0)
Course Description: Analysis of variance, covariance, randomized block, latin square, factorial, balanced and unbalanced designs. Applications to agriculture, biosciences. Implementation in SAS and R.
Prerequisite: (STAA 551 or STAT 540) and (STAA 562 or STAT 530).
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Written consent of instructor. This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 554 Mixed Models Credits: 2 (2-0-0)
Course Description: Topics in linear models that have both fixed and random predictors: split-plot and related designs, mixed-effects factorials, repeated measures, random coefficients, and spatial models for designed experiments. Introduction to generalized linear and nonlinear mixed models. Statistical topics will be integrated with implementation in SAS and R.
Prerequisite: STAA 552.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Must have concurrent registration in STAA 553. Written consent of instructor. This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 555 Statistical Consulting Skills Credit: 1 (1-0-0)
Also Offered As: STAT 555.
Course Description: Skills necessary to collaborate with non-statisticians. Communicate both verbally and in writing with collaborators while honing in on study objectives and identifying measures and factors. Readings of selected papers and texts and mock client sessions and shadowing. Common statistical tools necessary for statistical consulting will be reviewed.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered online. Credit not allowed for both STAA 555 and STAT 555.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 556 Statistical Consulting Credits: 2 (2-0-0)
Course Description: Effective consulting to meet with clients, analyze real data, and prepare reports.
Prerequisite: STAA 500 to 599 - at least 28 credits.
Registration Information: Written consent of instructor. This is a partial semester course. Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 561 Probability with Applications Credits: 2 (2-0-0)
Course Description: Random variables, continuous and discrete distributions, expectations, joint and conditional distributions, moments and moment generating functions, transformations, order statistics.
Prerequisite: MATH 369 or STAT 315.
Restriction: Must be a: Graduate.
Registration Information: Admission to the Master of Applied Statistics or admission to the Graduate Certificate in Theory and Applications of Regression Models. Written consent of instructor. This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 562 Mathematical Statistics with Applications Credits: 2 (2-0-0)
Course Description: Theory and applications of estimations, testing, and confidence intervals. Computer simulations, sampling from the normal distribution.
Prerequisite: STAA 561, may be taken concurrently or STAT 520.
Registration Information: Written consent of instructor. This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 565 Quantitative Reasoning Credit: 1 (1-0-0)
Course Description: Confounding, types of bias such as selection bias and regression effect bias, Simpson's paradox, experiments versus observational studies.
Prerequisite: STAA 551 or STAT 512, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 566 Data Visualization Methods Credit: 1 (1-0-0)
Course Description: Principles of effective graphs, data visualization methods, grammar of graphics, multi-panel conditioning, exploratory data analysis using graphics, 3D plotting, ROC curves, data wrangling.
Prerequisite: STAA 551, may be taken concurrently or STAT 512, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Admission to Master of Applied Statistics program or Graduate Certificate in Data Analysis. This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 567 Computational and Simulation Methods Credit: 1 (1-0-0)
Course Description: Statistical computation and simulation methods used to estimate probability distribution of non-standard test statistics, find estimators, test hypotheses, and compute confidence intervals. Optimization, bootstrapping, pivoting techniques.
Prerequisite: (STAA 551, may be taken concurrently or STAT 512, may be taken concurrently or STAT 540, may be taken concurrently) and (STAA 561, may be taken concurrently or STAT 511A or STAT 511B or STAT 520, may be taken concurrently).
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Written consent of instructor. This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 568 Topics Industrial/Organizational Statistics Credit: 1 (1-0-0)
Course Description: Six Sigma techniques, DMAIC, CT trees, VOC tools, data collection, process capability, capability metrics, graphical data exploration, and process control.
Prerequisite: (STAA 553, may be taken concurrently or STAT 512, may be taken concurrently) and (STAA 561 or STAT 511A or STAT 520).
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 571 Survey Statistics Credits: 2 (2-0-0)
Course Description: Survey design, simple random, stratified, and cluster samples. Estimation and variance estimation.
Prerequisite: (STAA 551 or STAT 540) and (STAA 562 or STAT 530).
Registration Information: Written consent of instructor. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 572 Nonparametric Methods Credits: 2 (2-0-0)
Course Description: Rank-based methods, nonparametric inferential techniques, scatterplot smoothing, nonparametric function estimation, environmental applications.
Prerequisite: (STAA 551, may be taken concurrently or STAT 512, may be taken concurrently or STAT 540, may be taken concurrently) and (STAA 561, may be taken concurrently or STAT 511A or STAT 511B or STAT 520, may be taken concurrently).
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 573 Analysis of Time Series Credits: 2 (2-0-0)
Course Description: Exploratory analysis of time series, including periodicity and trends, moving average and auto-regressive models, estimation and forecasting. Financial and environmental applications.
Prerequisite: (STAA 551, may be taken concurrently or STAT 540, may be taken concurrently) and (STAA 561, may be taken concurrently or STAT 520, may be taken concurrently).
Restriction: Must be a: Graduate.
Registration Information: Admission to Master of Applied Statistics program or Graduate Certificate in Data Analysis; students in the Graduate Certificate in Data Analysis require permission of the instructor. This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 574 Methods in Multivariate Analysis Credits: 2 (2-0-0)
Course Description: Multivariate ANOVA, principal components, factor analysis, cluster analysis, discrimination analysis.
Prerequisite: STAA 551, may be taken concurrently and STAA 561.
Registration Information: Written consent of instructor. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 575 Applied Bayesian Statistics Credits: 2 (2-0-0)
Course Description: Bayesian analysis of statistical models, prior and posterior distributions, computing methods, interpretation.
Prerequisite: (STAA 552) and (STAA 562 or STAT 530) and (STAA 567).
Registration Information: Written consent of instructor. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 576 Methods in Spatial Statistics Credits: 2 (2-0-0)
Course Description: Covariance estimation, covariance/variogram models, spatial regression models, spatial prediction, spatial point patterns.
Prerequisite: (STAA 552) and (STAA 561 or STAT 520).
Restriction: Must not be a: Graduate.
Registration Information: Graduate standing. Written consent of instructor. This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 577 Statistical Learning and Data Mining Credits: 2 (2-0-0)
Course Description: Applications-oriented overview into how to use statistical methods to do data mining, inference, and prediction.
Prerequisite: STAA 551, may be taken concurrently and STAA 561.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 578 Machine Learning Credits: 2 (2-0-0)
Course Description: K-means clustering, perceptron algorithm, evaluating model performance, neural networks, learning theory and dimension reduction.
Prerequisite: STAA 577, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Sections may be offered: Online. Credit not allowed for both CS 545 and STAA 578.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Art-ART (ART)

Courses

ART 100 Introduction to the Visual Arts (GT-AH1) Credits: 3 (3-0-0)
Course Description: Exploration of the development of visual arts.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Arts & Expression (GT-AH1).

ART 105 Issues and Practices in Art Credit: 1 (1-0-0)
Course Description: Current issues, practices, and resources in the visual arts; integration of unified vocabulary in various art disciplines.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 110 Global Art History I Credits: 3 (3-0-0)
Course Description: Art and architecture of the ancient world.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 111 Global Art History II Credits: 3 (3-0-0)
Course Description: Art and architecture in the era of global connection.
Prerequisite: ART 110.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 120 Foundations--Time and Structure Credits: 3 (0-6-0)
Course Description: Establishes a foundational understanding of digital literacy as part of a creative practice through the development of experimental media artworks in relation to interdisciplinary concepts.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 135 Foundations - Form and Observation Credits: 3 (0-6-0)
Course Description: Foundational understanding of visual literacy as part of a creative practice through the development of two-dimensional artworks exploring form through observational methods in relation to interdisciplinary concepts.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 136 Introduction to Figure Drawing Credits: 3 (0-6-0)
Course Description: Human form as basis for self-expression through various drawing media.
Prerequisite: ART 135.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 160 Foundations - Color and Composition Credits: 3 (0-6-0)
Course Description: Establishes a foundational understanding of color and composition as part of a creative practice through the development of artworks using two-dimensional methods in relation to interdisciplinary concepts.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 170 Foundations - Materials and Space Credits: 3 (0-6-0)
Course Description: Establishes a foundational understanding of materials and space as part of a creative practice through the development of three-dimensional artworks in relation to interdisciplinary concepts.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 200 Media Arts in Context Credits: 3 (3-0-0)
Course Description: History and contemporary practice of media-based arts. Addresses printmaking, graphic design, photography, film, video, computer-generated imagery, digital fabrication, and other cognate disciplines.
Prerequisite: None.
Registration Information: Offered as an online course only.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B.

ART 212 Global Art History III Credits: 3 (3-0-0)
Course Description: Global modern and contemporary art and architecture.
Prerequisite: ART 111.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 230 Photo Image Making I Credits: 3 (0-6-0)
Course Description: Photographic imagery as an art medium; exploration of silver-based (film) materials.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 235 Intermediate Drawing I Credits: 3 (0-6-0)
Course Description: Drawing using models and various still life material.
Prerequisite: ART 136.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 240 Pottery I Credits: 3 (0-6-0)
Course Description: Basic techniques of studio ceramics and wheel throwing; exploration of expressive potential in pottery.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 245 Metalsmithing and Jewelry I Credits: 3 (0-6-0)
Course Description: Basic metal techniques; forming and construction; surface treatment and finishing processes; behavior and mechanical properties of metals.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 250 Fibers I Credits: 3 (0-6-0)
Course Description: Fibers and fabric as expressive media; weaving and basic fiber structures; fabric painting and surface techniques.
Prerequisite: (ART 110 and ART 135) and (ART 160 or ART 170).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 253 Digital Fabrication Credits: 3 (0-6-0)
Course Description: Practical and technical skills within a historical and theoretical context for using computers, in combination with traditional and analog fabrication processes, to shape physical materials and make creative works. Introduces 3D Computer Aided Design (CAD), Computer Aided Machining (CAM), and Computer Numeric Controlled (CNC) Machining including 3D printing, Laser Cutting, and CNC Routing/Milling.
Prerequisite: ART 110 or ART 135 or ART 136 or ART 160 or ART 170.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 255 Introduction to Graphic Design Credits: 3 (0-6-0)
Course Description: Problems emphasizing typography, layout, symbols, illustration, and package design.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Registration Information: 2.55 GPA or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 256 Introduction to Electronic Art Credits: 3 (0-6-0)
Course Description: Introduction to digital media and internet-based design.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 260 Painting I Credits: 3 (0-6-0)
Course Description: Basic oil painting procedures, techniques, and concepts.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 265 Printmaking I-Intaglio and Relief Credits: 3 (0-6-0)
Course Description: Problems in composition utilizing basic techniques and principles of printmaking processes.
Prerequisite: (ART 110 and ART 135) and (ART 160 or ART 170).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 266 History and Practice of Non-Toxic Printmaking Credits: 3 (1-4-0)
Course Description: Brief history of traditional printmaking practices to provide exposure to contemporary non-toxic printmaking practices through a hands-on studio.
Prerequisite: None.
Restriction: .
Registration Information: Must register for lecture and laboratory. Offered as Mixed Face-to-Face only. Credit not allowed for both ART 266 and ART 380A2.
Grade Mode: Traditional.
Special Course Fee: No.

ART 270 Sculpture I Credits: 3 (0-6-0)
Course Description: Introduction to sculptural techniques and concepts.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 295A Independent Study: Painting Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295B Independent Study: Printmaking Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295C Independent Study: Sculpture Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 295D Independent Study: Fibers Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295E Independent Study: Metalsmithing and Jewelry Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 295F Independent Study: Drawing Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295G Independent Study: Graphic Design Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295H Independent Study: Art History Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295I Independent Study: Art Education Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295J Independent Study: Pottery Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295K Independent Study: Photo Image Making Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 310 History of American Art to 1945 Credits: 3 (3-0-0)
Course Description: American art from 17th century to 1945.
Prerequisite: ART 212.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 311 Art of West and Central Africa Credits: 3 (3-0-0)
Course Description: Focuses on the arts of West and Central Africa from prehistory through contemporary visual expressions, and engages with current art historical theoretical approaches and practices in order to gain a nuanced understanding of the arts in these respective regions and their relationship to global art production.
Prerequisite: ART 212.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 312 Pre-Columbian Art of Mesoamerica Credits: 3 (3-0-0)
Course Description: Artistic and architectural traditions of major ancient civilizations in Mesoamerica, including the Olmecs, Maya, Teotihuacanoes, Mixtecs, and Aztecs, from 1200 bce until the sixteenth-century conquest by Spain.
Prerequisite: ART 212.
Grade Mode: Traditional.
Special Course Fee: No.

ART 313 Art of East and Southern Africa Credits: 3 (3-0-0)
Course Description: Arts of southern and East Africa from prehistory through contemporary visual expressions, and engages with current art historical theoretical approaches and practices to gain a nuanced understanding of the arts in these respective regions and their relationship to global art production.
Prerequisite: ART 212.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 314 Women in Art History Credits: 3 (3-0-0)
Course Description: Women as artists in history of art and women's media in art.
Prerequisite: ART 212.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 315 United States Art 1945-1980 Credits: 3 (3-0-0)
Course Description: Visual art in the United States 1945-1980.
Prerequisite: ART 212.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 316 Art of the Pacific Credits: 3 (3-0-0)
Course Description: Arts of Australia, Indonesia, Melanesia, Micronesia, and Polynesia.
Prerequisite: ART 212.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 317 Native North American Art Credits: 3 (3-0-0)
Course Description: Introduction to historic and contemporary art forms of Native North America, emphasizing the cultural and political contexts.
Prerequisite: ART 212.
Registration Information: Written consent of instructor for non-Art majors.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 320 Global Encounters in Art Credits: 3 (3-0-0)
Course Description: Comparative topics in global art.
Prerequisite: ART 212.
Grade Mode: Traditional.
Special Course Fee: No.

ART 321A Travel Abroad: Studio Workshop in Italy-Drawing Credits: Var[3-5] (0-0-0)
Course Description: Exploration of studio techniques in Italy.
Prerequisite: ART 135.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 321B Travel Abroad: Studio Workshop in Italy-Photo Image Making Credits: Var[3-5] (0-0-0)
Course Description: Exploration of studio techniques in Italy.
Prerequisite: ART 230.
Registration Information: ART 230 or portfolio review; written consent of instructor.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 321C Travel Abroad: Studio Workshop in Italy-Fibers Credits: Var[3-5] (0-0-0)
Course Description: Exploration of studio techniques in Italy.
Prerequisite: ART 250.
Registration Information: ART 250 or portfolio review; written consent of instructor.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 321D Travel Abroad: Studio Workshop in Italy-Sculpture Credits: Var[3-5] (0-0-0)
Course Description: Exploration of studio techniques in Italy.
Prerequisite: ART 270.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 325 Concepts in Art Education Credits: 3 (3-0-0)
Course Description: Artistic learning in children, adolescents, adults, and special populations.
Prerequisite: EDUC 275.
Registration Information: Admission to Teacher Licensure Program required.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 326 Art Education Studio Credits: 4 (0-8-0)
Course Description: Art areas required for teacher licensure as indicated by individual student needs.
Prerequisite: None.
Registration Information: Junior or senior standing; admission to Teacher Licensure Program required.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 327 Issues in Art Education and the Public Credits: 3 (3-0-0)
Course Description: Introduce students to the concepts relating to Art Education in contemporary society.
Prerequisite: None.
Registration Information: Junior standing. This is a partial semester course. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 330 Photo Image Making II Credits: 4 (0-8-0)
Course Description: Studio course designed to develop the growth of photographic expression.
Prerequisite: ART 230.
Registration Information: ART 230 or portfolio review.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 331 Photo Image Making III Credits: 4 (0-8-0)
Course Description: Studio course designed to further growth of concept, materials in photographic expression as an art medium.
Prerequisite: ART 330.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 335 Intermediate Drawing II Credits: 4 (0-8-0)
Course Description: Assigned and independent drawing projects; use of traditional and non-traditional materials.
Prerequisite: ART 235.
Registration Information: May be taken 3 times for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 336 Intermediate Drawing III Credits: 4 (0-8-0)
Course Description: Assigned and independent drawing projects; art theory and criticism; readings and written assignments.
Prerequisite: ART 335.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 340 Pottery II Credits: 4 (0-8-0)
Course Description: Studio ceramic and wheel throwing techniques; surface treatment, kiln firing, clay and glaze formulation.
Prerequisite: ART 240.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 341 Pottery III Credits: 4 (0-8-0)
Course Description: Form and surface exploration; supportive ceramic technologies; expression in historical pottery.
Prerequisite: ART 340.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 345 Metalsmithing and Jewelry II Credits: 4 (0-8-0)
Course Description: Raising and casting techniques in combination with construction; metal spinning.
Prerequisite: ART 245.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 346 Metalsmithing and Jewelry III Credits: 4 (0-8-0)
Course Description: Forging and enameling techniques on nonferrous and ferrous metals; stone setting.
Prerequisite: ART 245.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 350 Fibers II Credits: 4 (0-8-0)
Course Description: Intermediate fiber structures and fabric and surface design; dyes and pigments; continued investigation of fibers and fabric as expressive media.
Prerequisite: ART 250.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 351 Fibers III Credits: 4 (0-8-0)
Course Description: Investigation of fibers and fabric as expressive media; research in historic textiles.
Prerequisite: ART 250.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 355 Typography and Design Systems Credits: 4 (0-8-0)
Course Description: Emphasis on typographic solutions for advertising, corporate identity, packaging, and publication design.
Prerequisite: ART 255.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 356 Illustration Credits: 4 (0-8-0)
Course Description: Problems emphasizing media, experimental techniques, and compositions.
Prerequisite: ART 255.
Registration Information: Six credits in drawing required in addition to ART 255.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 357 Interactive Media Credits: 4 (0-8-0)
Course Description: Technical, conceptual, and historic aspects of creating interactive electronic media.
Prerequisite: ART 255 or ART 256.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 358 Experimental Video Credits: 4 (0-8-0)
Course Description: History, theory, application of experimental video and digital special effects, animation and video techniques as they apply to experimental video.
Prerequisite: ART 255 or ART 256.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 360 Painting Methods and Materials Credits: 4 (0-8-0)
Course Description: Experimentation with the painting process in relationship to method, material and tools.
Prerequisite: ART 361.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 361 Figure Painting Credits: 4 (0-8-0)
Course Description: Composition and techniques in oil and/or acrylic emphasizing the human figure.
Prerequisite: ART 235 and ART 260.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 365 Printmaking II-Lithography Credits: 4 (0-8-0)
Course Description: Preparation, processing, and printing techniques in stone and metal plate lithography.
Prerequisite: ART 136.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 366 Printmaking III-Studio Workshop Credits: 4 (0-8-0)
Course Description: Advanced intaglio, relief, planographic, and stencil processes in the workshop, continued emphasis on individual creative growth.
Prerequisite: ART 365.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 370 Sculpture II Credits: 4 (0-8-0)
Course Description: Intermediate-level exploration of materials, concepts, process, and outcomes rooted in the sculpture area.
Prerequisite: ART 270.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 371 Sculpture III Credits: 4 (0-8-0)
Course Description: Intermediate-level development of studio practice, exploration of technical process, theory and professionalism.
Prerequisite: ART 270.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 382A Study Abroad in Japan: Art History Credits: 3 (0-0-3)
Course Description: History of Japanese art and architecture experienced on location in Japan.
Prerequisite: ART 110 or ART 120 or ART 135 or ART 160 or ART 170.
Term Offered: Summer (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

ART 382B Study Abroad in Japan: Studio Art Credits: 3 (0-0-3)
Course Description: Investigation of Japanese art and design experienced on location in Japan.
Prerequisite: ART 110 or ART 120 or ART 135 or ART 160 or ART 170.
Term Offered: Summer (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

ART 382C Study Abroad: Art Meets Environment in Baja California Sur Credits: 3 (0-0-3)
Course Description: Explores the intersection of visual arts, community and environment in Baja California Sur through direct experience, creative practice, collaborative processes and contemporary and historical art theory.
Prerequisite: CO 150.
Registration Information: Sophomore standing. Written consent of instructor. Offered as Mixed Face-to-Face.
Grade Mode: Traditional.
Special Course Fee: No.

ART 384 Supervised College Teaching Credits: Var[1-4] (0-0-0)
Course Description: Supervised assistance in instruction.
Prerequisite: None.
Registration Information: Junior or senior standing; written consent of instructor. Maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 392 Undergraduate Professional Practices Seminar Credits: 3 (0-0-3)
Course Description: Skills and tools beneficial in pursuing professional and/or academic goals in the visual arts.
Prerequisite: None.
Registration Information: Junior standing.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 400 BFA Portfolio Credit: 1 (1-0-0)
Course Description: Effectively submit capstone work to the University's Digital Repository and a Juried BFA Exhibition while teaching best practices for managing and sharing work after graduation.
Prerequisite: None.
Registration Information: Senior standing. Written consent of instructor. This is a partial semester course.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ART 410 Greek Art Credits: 3 (3-0-0)
Course Description: Aegean and Greek architecture, painting, and sculpture.
Prerequisite: ART 212.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 411 History of Medieval Art Credits: 3 (3-0-0)
Course Description: Early Christian, Byzantine, Islamic, Romanesque, and Gothic visual art forms.
Prerequisite: ART 212.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 412 History of Renaissance Art Credits: 3 (3-0-0)
Course Description: Architecture, sculpture, painting, and minor arts, 1300 to 1600.
Prerequisite: ART 212.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 414 History of Baroque and Rococo Art Credits: 3 (3-0-0)
Course Description: 17th- and 18th-century visual arts.
Prerequisite: ART 212.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 415 History of 19th Century European Art Credits: 3 (3-0-0)
Course Description: Architecture, sculpture, painting, and other arts in Europe, 1780 - 1900.
Prerequisite: ART 212.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 416 History of European Art, 1900 to 1945 Credits: 3 (3-0-0)
Course Description: Visual arts in Europe, 1900 to 1945.
Prerequisite: ART 212.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 417 Roman Art Credits: 3 (3-0-0)
Course Description: Roman sculpture, painting, and architecture.
Prerequisite: ART 212.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 418 Contemporary Artists and Art Critics Credits: 3 (3-0-0)
Course Description: Critical study of contemporary artists and art criticism.
Prerequisite: ART 212.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 419 Historiography and Methodology of Art History Credits: 3 (3-0-0)
Course Description: Historiography/methodology/research methods in art history.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 420 Travel Abroad-Art History in Italy Credits: Var[3-5] (0-0-0)
Course Description: Art historical study of painting, sculpture, and architecture in Italy.
Prerequisite: ART 212.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 421 Art and Environment Credits: 3 (0-6-0)
Course Description: Interdisciplinary studio/seminar course investigating art's relationship to the environment through readings, field trips, presentations and studio practice.
Prerequisite: ART 136 and ART 160 and ART 170 and ART 200 to 299 - at least 6 credits.
Registration Information: Required field trips. Credit allowed for only one of the following: ART 380A1, ART 421, ART 521 or ART 680A1.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 425 Integrated Visual Studies Credits: 4 (4-0-0)
Course Description: Interdisciplinary and guided study linking systems of knowledge. Students are afforded the space to draw on their breadth of information and artistic mediums to create a capstone project that demonstrates an ability to communicate effectively across verbal, visual, and written forms. Develop skills as makers and thinkers, fostering critical awareness of how society reflects and produces visual meaning.
Prerequisite: None.
Registration Information: Senior standing. Written consent of advisor. 21 credits of upper-division coursework in the BA-Integrated Visual Studies concentration.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 430 Advanced Photo Image Making I Credits: 4 (0-8-0)
Course Description: Advanced problems in use of photo image making as an art medium.
Prerequisite: ART 331.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 431 Advanced Photo Image Making II Credits: 4 (0-8-0)
Course Description: Studio course to refine individual directions and professional goals in photography as an art medium.
Prerequisite: ART 430.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 435 Advanced Drawing I Credits: 4 (0-8-0)
Course Description: Independent projects and identification of personal artistic direction; research in art-related topics.
Prerequisite: ART 336.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 436 Advanced Drawing II Credits: 4 (0-8-0)
Course Description: Capstone course; production of professional exhibition-quality work.
Prerequisite: ART 435.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 440 Pottery IV Credits: 4 (0-8-0)
Course Description: Advanced individual research in pottery form and expression; supportive technology; expression in contemporary American pottery.
Prerequisite: ART 341.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 441 Pottery V Credits: 4 (0-8-0)
Course Description: Advanced individual research in pottery form and expression of personal subject matter; supportive technology.
Prerequisite: ART 440.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 445 Metalsmithing and Jewelry IV Credits: 4 (0-8-0)
Course Description: Chasing and repousse techniques in two- and three-dimension; inlay, engraving, and etching techniques.
Prerequisite: ART 345 and ART 346.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 446 Metalsmithing and Jewelry V Credits: 4 (0-8-0)
Course Description: Advanced techniques: granulation, electroforming, photoetching, makume, niello, ferrous metals techniques.
Prerequisite: ART 345 and ART 346.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 450 Fibers IV Credits: 4 (0-8-0)
Course Description: Advanced studio problems in expressive use of fibers and fabric.
Prerequisite: ART 350 and ART 351.
Registration Information: Maximum of 8 credits allowed in the course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 451 Fibers V Credits: 4 (0-8-0)
Course Description: Advanced studio problems in expressive use of fibers and fabric.
Prerequisite: ART 351 or ART 450.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 455 Advanced Typography and Design Systems Credits: 4 (0-8-0)
Course Description: Two- and three-dimensional solutions for advertising, corporate identity, packaging, and publication design.
Prerequisite: ART 355.
Registration Information: Maximum of 8 credits allowed in course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 456 Advanced Illustration Credits: 4 (0-8-0)
Course Description: Projects in editorial and reportorial illustration emphasizing techniques applied to solving problems in advanced composition.
Prerequisite: ART 356.
Registration Information: Maximum of 8 credits allowed in course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 457 Advanced Interactive Media Credits: 4 (0-8-0)
Course Description: Technical, conceptual, and historic aspects of creating interactive electronic media.
Prerequisite: (ART 255 or ART 256) and (ART 357).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 458 Advanced Experimental Video Credits: 4 (0-8-0)
Course Description: Advanced experimental video and visual effects.
Prerequisite: (ART 255 or ART 256) and (ART 358).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 460 Advanced Painting I Credits: 4 (0-8-0)
Course Description: Advanced composition and exploration of individual creative expression.
Prerequisite: ART 360 and ART 361.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 461 Advanced Painting II Credits: 4 (0-8-0)
Course Description: Continuation in direction of individual creative expression.
Prerequisite: ART 460.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 465 Printmaking IV-Studio Workshop Credits: 4 (0-8-0)
Course Description: Advanced printmaking workshop; intaglio, relief, planographic, and stencil; continued emphasis on individual creative growth.
Prerequisite: ART 366.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 466 Printmaking V-Studio Workshop Credits: 4 (0-8-0)
Course Description: Advanced printmaking concepts in studio and research problems.
Prerequisite: ART 465.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 470 Sculpture IV Credits: 4 (0-8-0)
Course Description: Development of individual expression using sculptural techniques.
Prerequisite: ART 370 and ART 371.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 471 Sculpture V Credits: 4 (0-8-0)
Course Description: Advanced expression using sculptural techniques.
Prerequisite: ART 470.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 482A Study Abroad: Art History in Italy Credit: 1 (0-0-1)
Course Description: Special topics in Italian art history; most classes will be taught on-site at museums, churches, and galleries in Italy. Focus on the art and architecture of the famed Michelangelo Buonarroti.
Prerequisite: ART 212.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 487 Internship Credits: Var[1-4] (0-0-0)
Course Description: Supervised work experience in an approved location.
Prerequisite: None.
Registration Information: Junior or senior standing; written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 492A Seminar: Art History Credits: 3 (0-0-3)
Course Description: Topical studies in Art History.
Prerequisite: ART 212.
Grade Mode: Traditional.
Special Course Fee: No.

ART 492B Seminar: Art Education Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Registration Information: Must have concurrent registration in ART 326.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 495A Independent Study: Painting Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 495B Independent Study: Printmaking Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 495C Independent Study: Sculpture Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 495D Independent Study: Fibers Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 495E Independent Study: Metalsmithing and Jewelry Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 495F Independent Study: Drawing Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 495G Independent Study: Graphic Design Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 495H Independent Study: Art History Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 495I Independent Study: Art Education Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 495J Independent Study: Pottery Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 495K Independent Study: Photo Image Making Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: ART 330.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 496A Group Study: Painting Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 496B Group Study: Printmaking Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 496C Group Study: Sculpture Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 496D Group Study: Fibers Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 496E Group Study: Metalsmithing and Jewelry Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 496F Group Study: Drawing Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 496G Group Study: Graphic Design Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 496H Group Study: Art History Credits: 3 (3-0-0)
Course Description: Topical studies in Art History.
Prerequisite: ART 212.
Registration Information: Maximum of 9 credits allowed in course.
Grade Mode: Traditional.
Special Course Fee: No.

ART 496I Group Study: Art Education Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 496J Group Study: Pottery Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 496K Group Study: Photo Image Making Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 510A Advanced Study in Art History: American Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510B Advanced Study in Art History: African Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510C Advanced Study in Art History: Pre-Colombian Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 510E Advanced Study in Art History: United States Art Since 1945 Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510F Advanced Study in Art History: Greek Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510G Advanced Study in Art History: Medieval Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510H Advanced Study in Art History: Renaissance Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510I Advanced Study in Art History: Baroque and Rococo Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510J Advanced Study in Art History: 19th-Century European Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510K Advanced Study in Art History: 20th Century European Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510L Advanced Study in Art History: West and Central Africa Credits: 3 (3-0-0)
Course Description: Focuses on the arts of West and Central Africa from prehistory through contemporary visual expressions. Engages with current art historical theoretical approaches and practices in order to gain a nuanced understanding of the arts in these respective regions and their relationship to global art production.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 510M Advanced Study in Art History: Roman Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510N Advanced Study in Art History: Graphic Design Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510O Advanced Study in Art History: Women in Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510P Advanced Study in Art History: Pacific Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510Q Advanced Study in Art History: Contemporary Art and Art Critics Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510R Advanced Study in Art History: Native North American Art Credits: 3 (3-0-0)
Course Description: Graduate study in the history of Native North American art.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 514 Contemporary American Art Critics and Artists Credits: 3 (0-0-3)
Course Description: Issues in contemporary American art are explored through the work of critics and artists who visit through the Critic and Artist Residency Series.
Prerequisite: ART 510E.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 515 Seminar-Contemporary Art Theory Credits: 3 (0-0-3)
Course Description: Relationship between critical theory and the visual arts; how artists and critics apply theory in their work.
Prerequisite: ART 510E.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 521 Art and Environment - Advanced Study Credits: 3 (0-6-0)
Course Description: Interdisciplinary studio/seminar course investigating art's relationship to the environment through readings, field trips, presentations and studio practice.
Prerequisite: None.
Registration Information: Graduate standing in the Art and Art History Department. Required field trips. Credit allowed for only one of the following: ART 380A1, ART 421, ART 521 or ART680A1.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 575A Studio Problems: Painting Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: .
Registration Information: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 575B Studio Problems: Printmaking Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: .
Registration Information: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 575C Studio Problems: Sculpture Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: .
Registration Information: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 575D Studio Problems: Fibers Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: .
Registration Information: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 575E Studio Problems: Metalsmithing and Jewelry Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 575F Studio Problems: Drawing Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: .
Registration Information: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 575G Studio Problems: Graphic Design Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: .
Registration Information: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 592 Art History Seminar Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Registration Information: Required for course admittance: Twenty-one credits of art history.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 675A Studio Problems: Painting Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575A - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 675B Studio Problems: Printmaking Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575B - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 675C Studio Problems: Sculpture Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575C - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 675D Studio Problems: Fibers Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575D - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 675E Studio Problems: Metalsmithing and Jewelry Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575E - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 675F Studio Problems: Drawing Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575F - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 675G Studio Problems: Graphic Design Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575G - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 695A Independent Study: Painting Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 695B Independent Study: Printmaking Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 695C Independent Study: Sculpture Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 695D Independent Study: Fibers Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 695E Independent Study: Metalsmithing and Jewelry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 695F Independent Study: Drawing Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 695G Independent Study: Graphic Design Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 695H Independent Study: Art History Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696A Group Study: Painting Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696B Group Study: Printmaking Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696C Group Study: Sculpture Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696D Group Study: Fibers Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696E Group Study: Metalsmithing and Jewelry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696F Group Study: Drawing Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696G Group Study: Graphic Design Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696H Group Study: Art History Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696I Group Study: Multiple Media Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 699A Thesis: Painting Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575A and/or ART 675A.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 699B Thesis: Printmaking Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575B and/or ART 675B.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 699C Thesis: Sculpture Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575C and/or ART 675C.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 699D Thesis: Fibers Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575D and/or ART 675D.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 699E Thesis: Metalsmithing and Jewelry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575E and/or ART 675E.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 699F Thesis: Drawing Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575F and/or ART 675F.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 699G Thesis: Graphic Design Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575G and/or ART 675G.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Astronomy-AA (AA)

Courses

AA 100 Introduction to Astronomy (GT-SC2) Credits: 3 (3-0-0)
Course Description: Description of the various objects found in the heavens as well as the principles and techniques employed in investigations of these objects.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

AA 101 Astronomy Laboratory (GT-SC1) Credit: 1 (0-2-0)
Course Description: Conduct observations, experiments, and simulations to develop an intuitive understanding of astronomical phenomena.
Prerequisite: AA 100, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

AA 495 Independent Study in Astrophysics Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Atmospheric Science-ATS (ATS)

Courses

ATS 150 Science of Global Climate Change Credits: 3 (3-0-0)
Course Description: Physical basis of climate change. Energy budget of the earth, the greenhouse effect, carbon cycle, paleoclimate, projections of 21st-century climate.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 350 Introduction to Weather and Climate Credits: 2 (2-0-0)
Course Description: Behavior of atmosphere and its influence upon human's activities.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 351 Introduction to Weather and Climate Lab Credit: 1 (0-3-0)
Course Description: Actual weather data, visualization of meteorological phenomena, in-depth discussion of current environmental issues.
Prerequisite: ATS 350, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 543 Current Topics in Climate Change Credits: 2 (2-0-0)
Also Offered As: ESS 543.
Course Description: Climate fundamentals and current topics in climate change.
Prerequisite: BZ 300 to 499 or ECOL 300 to 499 or LIFE 300 to 499 or CHEM 300 to 499.
Registration Information: Credit not allowed for both ATS 543 and ESS 543. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ATS 555 Air Pollution Credits: 3 (3-0-0)
Course Description: Nature, ambient concentrations, sources, sinks, and physiological activities of pollutants; meteorology; legislation; social and economic factors.
Prerequisite: (CHEM 113) and (MATH 261 or MATH 340) and (PH 122 or PH 142).
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 560 Air Pollution Measurement Credits: 2 (1-3-0)
Course Description: Examination and application of techniques for air pollution measurement. Includes sampling and analysis of gases, aerosols, and precipitation.
Prerequisite: CHEM 114.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 601 Atmospheric Dynamics I Credits: 2 (2-0-0)
Course Description: Equations of motion; earth's rotation; balanced motion; vorticity and Rossby waves; shallow water models; potential vorticity.
Prerequisite: MATH 261 and MATH 530.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 602 Atmospheric Dynamics II Credits: 2 (2-0-0)
Course Description: Sound waves, gravity waves, Rossby waves; numerical weather predication; baroclinic instability; general circulation; tropical dynamics.
Prerequisite: ATS 601.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 604 Atmospheric Modeling Credits: 3 (3-0-0)
Course Description: Design of numerical models of the atmosphere; applications to current problems. Emphasis on practical understanding of relevant numerical methods.
Prerequisite: ATS 601.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 605 Atmospheric Circulations Credits: 3 (3-0-0)
Course Description: Observations and theory of the general circulation of the atmosphere, with emphasis on understanding physical mechanisms.
Prerequisite: ATS 602, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 606 Introduction to Climate Credits: 2 (2-0-0)
Course Description: Global energy balance, surface energy balance, the hydrological cycle, atmosphere general circulation, ocean general circulation, climate variability, climate sensitivity and feedbacks.
Prerequisite: MATH 261 and MATH 530.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 607 Computational Methods for Atmospheric Science Credits: 3 (3-0-0)
Course Description: Computer programming tools unique to and common in the atmospheric sciences.
Prerequisite: ATS 601, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 610 Physical Oceanography Credits: 3 (3-0-0)
Course Description: Foundations of ocean circulation theory and the general circulation of the oceans using observational data and rotating tank experiments.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 620 Thermodynamics and Cloud Physics Credits: 2 (2-0-0)
Course Description: Equilibrium thermodynamics, cloud microphysics, precipitation formation, and cloud electrification.
Prerequisite: MATH 340 and PH 142.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 621 Atmospheric Chemistry Credits: 2 (2-0-0)
Course Description: Overview of chemical kinetics and equilibria; sources and sinks of pollutants; photochemistry and smog formation; aqueous-phase chemistry; acid rain.
Prerequisite: CHEM 114 and MATH 340 and PH 142.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 622 Atmospheric Radiation Credits: 2 (2-0-0)
Course Description: Role of radiation in the energy balance of the climate system; Absorption and scattering of solar radiation; Emission and absorption of terrestrial radiation; Interactions of radiation with clouds and aerosols; Role of radiative active trace gases.
Prerequisite: ATS 620.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 623 Atmospheric Boundary Layer Credits: 2 (2-0-0)
Course Description: Equations for shallow atmospheric motions; thermal instability of a fluid layer; atmospheric turbulence; flow stability; 1-D mixed layer models.
Prerequisite: ATS 601, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 631 Introduction to Atmospheric Aerosols Credits: 2 (1-3-0)
Course Description: Physical, chemical and microphysical characteristics of atmospheric particulate matter; measurement principles and techniques.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 632 Interpreting Satellite Observations Credits: 2 (1-3-0)
Course Description: Broad theoretical and practical overview of satellite observations of atmospheric composition. Introduction to the theoretical foundations of satellite composition retrievals of both gases and aerosols, and the associated strengths and weaknesses of commonly used atmospheric products.
Prerequisite: ATS 621 and ATS 622.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both ATS 632 and ATS 681A1.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 640 Synoptic Meteorology Credits: 2 (1-2-0)
Course Description: Synoptic-scale weather systems; thermodynamic diagrams; vertical motion; fronts; cyclones and anticyclones.
Prerequisite: ATS 601, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 641 Mesoscale Meteorology Credits: 2 (1-2-0)
Course Description: Mesoscale weather systems; instabilities; orographic flows; dynamics of convective storms; organized convection.
Prerequisite: ATS 640.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 650 Measurement Systems and Theory Credits: 2 (2-0-0)
Course Description: Surface and upper air measurement systems; theory and system response, sensor design; automated data collection, analysis and display systems.
Prerequisite: PH 142 and STAT 301.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 651 Data Assimilation in Numerical Models Credits: 3 (3-0-0)
Course Description: Methods for combining theoretical understanding encoded in complex weather and climate models with real-world observations. Applications include weather prediction and other problems in the geosciences.
Prerequisite: (MATH 530) and (MATH 340 and STAT 301).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 652 Atmospheric Remote Sensing Credits: 2 (2-0-0)
Course Description: Concepts of electromagnetic and acoustic wave propagation; active and passive remote sensing techniques including radar, lidar, thermal emission systems.
Prerequisite: ATS 622.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 655 Objective Analysis in Atmospheric Sciences Credits: 3 (3-0-0)
Course Description: Objective analysis of geophysical data: general statistics; matrix methods; time series analysis. Emphasis on applications to real-world data.
Prerequisite: ATS 601 or MATH 530.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 693 Responsible Research in Atmospheric Science Credit: 1 (0-0-1)
Course Description: Scientific misconduct; ethical publishing; record keeping; data management; professional skills applicable to atmospheric science.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must be admitted to Atmospheric Science degree program.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ATS 695A Independent Study: Atmosphere/Ocean Coupling Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 695B Independent Study: Atmospheric Science Topics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699A Thesis: Atmospheric Dynamics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699B Thesis: Land-Atmosphere Interactions Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699C Thesis: Tropical Meteorology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ATS 699D Thesis: Weather Systems Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699E Thesis: Remote Sensing Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699F Thesis: Ocean-Atmosphere Interactions Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699G Thesis: General Circulation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699H Thesis: Remote Sensing of Climate Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699I Thesis: Atmospheric Chemistry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699J Thesis: Aerosol and Cloud Microphysics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699K Thesis: Dynamic Meteorology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699L Thesis: Satellite Applications Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699M Thesis: Mesoscale Meteorology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699N Thesis: Dynamics and Physics of Clouds Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699O Thesis: Mesoscale Modeling Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699P Thesis: Radiation Theory Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699Q Thesis: Radar Meteorology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699R Thesis: Aerosol and Cloud Chemistry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699S Thesis: Climate Dynamics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699T Thesis: Chemistry in the Atmosphere-Earth Systems Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ATS 699U Thesis: Tropospheric Chemistry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699V Thesis: Atmospheric Variability Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 703 Numerical Weather Prediction Credits: 2 (2-0-0)
Course Description: Quasi-geostrophic approximation; barotropic, baroclinic, primitive equation, and general circulation models; numerical methods.
Prerequisite: ATS 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 704 Large-Scale Atmospheric Dynamics Credits: 2 (2-0-0)
Course Description: Quasi-static, quasi-geostrophic equations; planetary waves; geostrophic adjustment; barotropic, baroclinic instability; frontogenesis; tropical cyclones.
Prerequisite: ATS 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 707 Atmospheric Waves and Vortices Credits: 3 (2-0-1)
Course Description: Atmospheric wave motions and embedded vortices spanning mountain waves to large-scale Rossby waves and critical layers.
Prerequisite: ATS 605.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 708 Middle Atmospheric Dynamics Credits: 3 (3-0-0)
Course Description: Dynamics of the stratosphere and mesosphere with emphasis on the lower and middle stratosphere.
Prerequisite: ATS 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 710 Geophysical Vortices Credits: 3 (3-0-0)
Course Description: Observational, experimental, and theoretical aspects of geophysical vortices, such as hurricanes, polar lows, tornadoes, and dust devils.
Prerequisite: ATS 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 711 Microclimate Credits: 2 (2-0-0)
Course Description: Momentum, heat, water, and trace gas fluxes near the earth's surface, including fluxes between the atmosphere and the land/ocean/ice surfaces.
Prerequisite: MATH 340 and ATS 623.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 712 Dynamics of Clouds Credits: 3 (3-0-0)
Course Description: General theory of cloud dynamics; parameterization of microphysics and radiation; models of fog, stratocumuli, cumulonimbi, and orographic clouds.
Prerequisite: ATS 623.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 715 Atmospheric Oxidation Processes Credits: 2 (2-0-0)
Course Description: Atmospheric hydrocarbon and nitrogen oxide reactions; aqueous phase scavenging and reactions; chemical pathways in the atmosphere.
Prerequisite: ATS 621.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 716 Air Quality Characterization Credits: 2 (1-2-0)
Course Description: Planning, executing, and reporting on a measurement campaign to characterize local air quality.
Prerequisite: (ATS 560) and (ATS 555 or ATS 621).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 721 Theoretical Topics in Radiative Transfer Credits: 3 (3-0-0)
Course Description: Physics of atmospheric radiation; theoretical techniques used to show radiation transfer equation.
Prerequisite: ATS 622.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 722 Atmospheric Radiation and Energetics Credits: 3 (2-0-1)
Course Description: Radiative transfer in the atmosphere; implications on remote sensing and energetics.
Prerequisite: ATS 622.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 724 Cloud Microphysics Credits: 2 (2-0-0)
Course Description: Theories and observations of nucleation; cloud droplet spectria broadening;
precipitation growth and breakup; ice multiplication; cloud electrification.
Prerequisite: ATS 621.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 730 Mesoscale Modeling Credits: 3 (3-0-0)
Course Description: Development of basic equations used in mesoscale models and methodology of solution
Prerequisite: ATS 602 and ATS 623.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 735 Mesoscale Dynamics Credits: 3 (3-0-0)
Course Description: Analysis of physical and dynamical processes that initiate, maintain, and modulate atmospheric mesoscale phenomena.
Prerequisite: ATS 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 737 Satellite Observation of Atmosphere and Earth Credits: 3 (3-0-0)
Course Description: Satellite measurements; basic orbits and observing systems; applications of remote probing and imaging to investigations of atmospheric processes.
Prerequisite: ATS 622 and ATS 652.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 740 Atmospheric Electricity Credits: 2 (2-0-0)
Course Description: Foundations of atmospheric electricity, including global electric circuit and the role of thunderstorms in maintaining this circuit, thunderstorm electrification processes based on non-inductive charging theory, lightning detection based on RF and optical sensing, and lightning phenomena including Transient Luminous Events.
Prerequisite: ATS 620.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Credit not allowed for both ATS 740 and ATS 780A3.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 741 Radar Meteorology Credits: 3 (3-0-0)
Course Description: Radar systems; radar equation and applications; multiple Doppler observation and processing; radar studies of mesoscale systems.
Prerequisite: ATS 652.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 742 Tropical Meteorology Credits: 2 (2-0-0)
Course Description: Overview of the tropical atmosphere, monsoons, intraseasonal variability, hurricanes, theory of tropical convection and the large-scale circulation.
Prerequisite: ATS 601 and ATS 602 and ATS 606.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 743 Interactions of the Ocean and Atmosphere Credits: 3 (3-0-0)
Course Description: Ocean-atmosphere interactions in observations, theory, and models. Time mean atmosphere-ocean circulations through climate variability and change.
Prerequisite: ATS 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 745 Atmospheric General Circulation Modeling Credits: 3 (3-0-0)
Course Description: Current problems in modeling of the general circulation of the atmosphere.
Prerequisite: ATS 602 and ATS 605.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 750 Climate Dynamics: Atmospheric Variability Credits: 3 (3-0-0)
Course Description: Analysis and interpretation of large-scale patterns of climate variability and observed climate change.
Prerequisite: ATS 605 and ATS 655.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 752 Inverse Methods in Atmospheric Science Credits: 2 (2-0-0)
Course Description: Introduction to inverse modeling, with particular application to remote sensing retrievals, flux inversions and data assimilation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Ph.D. standing in Atmospheric Science required.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 753 Global Hydrologic Cycle Credits: 3 (3-0-0)
Course Description: Hydrologic cycle, moisture transport and air-ground exchange; water budgets of meteorological phenomena; climatology of atmospheric water.
Prerequisite: (ATS 601) and (ATS 622 or ATS 652).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 755 Theoretical and Applied Climatology Credits: 3 (3-0-0)
Course Description: Current topics in climate research.
Prerequisite: ATS 606.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 760 Global Carbon Cycle Credits: 2 (2-0-0)
Course Description: Exchanges of CO2 between the atmosphere, the land surface, and oceans. Biogeochemical processes. Micrometeorological and inverse flux estimation.
Prerequisite: ATS 606.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 761 Land-Atmosphere Interactions Credits: 2 (2-0-0)
Course Description: Exchange of energy, water, momentum, and carbon between the land surface and the atmosphere.
Prerequisite: ATS 606.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 762 Biosphere-Chemistry-Climate Interactions Credits: 2 (2-0-0)
Course Description: Explore the sensitivity of the climate system to atmospheric chemical composition with emphasis on connections to biospheric processes and feedbacks.
Prerequisite: ATS 621.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 765 Climate Dynamics-Ocean Variability Credits: 3 (3-0-0)
Course Description: Climate variability on time scales of years to millennia with focus on the role of the ocean circulation. Approach through dynamical systems theory.
Prerequisite: ATS 606.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 770 Ocean Modeling Credits: 3 (3-0-0)
Course Description: Conceptual and numerical ocean models and their application to current problems in climate science and biogeochemical cycles.
Prerequisite: ATS 601.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 772 Aerosol Physics, Chemistry, Clouds & Climate Credits: 3 (3-0-0)
Course Description: The physics and chemistry of atmospheric aerosols including composition, size, and interaction with radiation and clouds, including the development of research-grade models of aerosols, clouds, and radiation.
Prerequisite: (CHEM 114 and MATH 161) and (PH 122 or PH 142).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 786 Practicum Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 796 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799A Dissertation: Atmospheric Dynamics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799B Dissertation: Land-Atmosphere Interactions Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799C Dissertation: Tropical Meteorology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799D Dissertation: Weather Systems Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799E Dissertation: Remote Sensing Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799F Dissertation: Ocean-Atmosphere Interactions Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799G Dissertation: General Circulation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799H Dissertation: Remote Sensing of Climate Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799I Dissertation: Atmospheric Chemistry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799J Dissertation: Aerosol and Cloud Microphysics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799K Dissertation: Dynamic Meteorology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799L Dissertation: Satellite Applications Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799M Dissertation: Mesoscale Meteorology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799N Dissertation: Dynamics and Physics of Clouds Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799O Dissertation: Mesoscale Modeling Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799P Dissertation: Radiation Theory Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799Q Dissertation: Radar Meteorology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799R Dissertation: Aerosol and Cloud Chemistry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799S Dissertation: Climate Dynamics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799T Dissertation: Chemistry in the Atmosphere-Earth Systems Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ATS 799U Dissertation: Tropospheric Chemistry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799V Dissertation: Atmospheric Variability Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Bioag'l Sci + Pest Mgmt-BSPM (BSPM)

Courses

BSPM 102 Insects, Science, and Society (GT-SC2) Credits: 3 (3-0-0)
Course Description: How insects develop, behave, and affect human activity. What every student should know about the most diverse life form on Earth.
Prerequisite: None.
Registration Information: Credit not allowed for both BSPM 102 and BSPM 356A.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

BSPM 201 Weed Management and Control Credits: 3 (0-0-3)
Course Description: Basic overview of weeds and weed control.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 300 Topics in Livestock Entomology Credit: 1 (1-0-0)
Also Offered As: ANEQ 300B.
Course Description: Identification, biology, and management of insect, tick, and mite pests.
Prerequisite: BZ 100 to 199 between 3 and 5 credits - at least 3 credits or LIFE 100 to 199 between 3 and 5 credits - at least 3 credits.
Registration Information: Credit not allowed for both BSPM 300 and ANEQ 300B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 302 Applied and General Entomology Credits: 2 (2-0-0)
Course Description: Biology and management of insects.
Prerequisite: None.
Registration Information: Credit not allowed for both BSPM 302 and BSPM 356A.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

BSPM 303A Entomology Laboratory: General Credits: 2 (0-4-0)
Course Description: Biology and recognition of insects.
Prerequisite: BSPM 302, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

BSPM 303B Entomology Laboratory: Horticultural Credit: 1 (0-2-0)
Course Description: Biology and recognition of insects.
Prerequisite: BSPM 302, may be taken concurrently.
Registration Information: Credit not allowed for both BSPM 303B and BSPM 356A.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 303C Entomology Laboratory: Agricultural Credit: 1 (0-2-0)
Course Description: Biology and recognition of insects.
Prerequisite: BSPM 302, may be taken concurrently.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 308 Ecology and Management of Weeds Credits: 3 (2-3-0)
Course Description: Classification, characteristics; weed biology and ecology; control by cultural, mechanical, chemical, and biological means; successional management.
Prerequisite: (BZ 120 or LIFE 103) and (CHEM 107 or CHEM 111).
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 310 Understanding Pesticides Credits: 3 (3-0-0)
Course Description: Identification, properties, use, labeling, environmental interactions, and application of major classes of pesticides.
Prerequisite: BZ 100 to 199 - at least 3 credits or CHEM 100 to 199 - at least 3 credits.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 355A Horticulture Pathology: General Pathology Credit: 1 (1-0-0)
Course Description: A 5-week course consisting of General Plant Pathology; identification of the organisms that can cause plant diseases.
Prerequisite: HORT 100 to 199 or LIFE 100 to 199.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only. Credit not allowed for both BSPM 355A and BSPM 381A2.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 355B Hort Pathology: Turf and Ornamental Disease Credit: 1 (1-0-0)
Course Description: Turf and ornamental plant diseases, their management and control.
Prerequisite: BSPM 355A.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only. Credit not allowed for both BSPM 355B and BSPM 361.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 355C Horticulture Pathology: Vegetable and Greenhouse Disease Credit: 1 (1-0-0)
Course Description: Diseases in the Greenhouse and Vegetable crops, management and control.
Prerequisite: BSPM 355A.
Registration Information: Offered as an online course only. This is a partial semester course. Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 356A Horticultural Entomology Introduction Credit: 1 (1-0-0)
Course Description: Basic biology, identification and management of insects and mites affecting horticultural crops.
Prerequisite: HORT 100 to 199 or LIFE 100 to 199.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only. Credit not allowed for both BSPM 102 and BSPM 356A. Credit not allowed for both BSPM 302 and BSPM 356A. Credit not allowed for both BSPM 303B and BSPM 356A.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 356B Horticultural Entomology: Food Crops Credit: 1 (1-0-0)
Course Description: Insect and mite pests of fruits, vegetables and other garden grown food crops.
Prerequisite: BSPM 102 or BSPM 302 or BSPM 356A.
Registration Information: This is a partial semester course. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 356C Horticultural Entomology: Landscape Plants Credit: 1 (1-0-0)
Course Description: Insect and mite pests of ornamentals (woody plants, flowers) and turfgrass and their management.
Prerequisite: BSPM 102 or BSPM 302 or BSPM 356A.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 361 Elements of Plant Pathology Credits: 3 (2-2-0)
Course Description: Diseases of economic plants.
Prerequisite: BZ 104 or BZ 120 or HORT 100 or LIFE 102.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BSPM 365 Integrated Tree Health Management Credits: 4 (3-3-0)
Course Description: Insects and diseases in forest and urban ecosystems. Effects, diagnosis, prevention, and interactions.
Prerequisite: BZ 120 or LIFE 102.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

BSPM 384 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 415 Pollinator Management in Agroecosystems Credits: 2 (2-0-0)
Also Offered As: SOCR 415.
Course Description: Fundamental concepts of pollinator biology and management, sustainable crop-pollinator interactions, regional and global issues on pollinator management and conservation, best management practices for commercially managed pollinators.
Prerequisite: HORT 100 or SOCR 100.
Registration Information: Junior standing. Credit not allowed for both SOCR 415 and BSPM 415. Required field trips.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 423 Evolution and Classification of Insects Credits: 3 (1-4-0)
Course Description: Major groups of insects, living and fossil; major evolutionary trends in structure and behavior.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BSPM 423 and BSPM 523.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 424 Principles of Systematic Zoology Credits: 3 (3-0-0)
Also Offered As: BZ 424.
Course Description: Principles and methods of classification, zoological nomenclature, taxonomic decisions regarding species and higher categories.
Prerequisite: BZ 111 and BZ 110 or LIFE 103.
Registration Information: Credit not allowed for both BSPM 424 and BZ 424.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 445 Aquatic Insects Credits: 4 (2-4-0)
Course Description: Biology and recognition of major orders and families of aquatic insects; a collection is required.
Prerequisite: BZ 111 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

BSPM 450 Molecular Plant-Microbe Interaction Credits: 3 (3-0-0)
Course Description: Principles of plant-microbe/insect interactions, physiological and molecular aspects of plant defense, genomics approaches to study plant defense.
Prerequisite: (BZ 100 to 499 - at least 3 credits) and (BZ 346 or SOCR 330).
Registration Information: Credit not allowed for both BSPM 450 and BSPM 550.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 451 Integrated Pest Management Credits: 3 (3-0-0)
Course Description: Concepts of integrated pest management and the strategies and tactics employed in the application of these concepts.
Prerequisite: BSPM 302 or BSPM 308 or BSPM 361.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 462 Parasitology and Vector Biology Credits: 5 (3-4-0)
Also Offered As: BZ 462 and MIP 462.
Course Description: Protozoa, helminths, and insects and related arthropods of medical importance; systematics, epidemiology, host damage and control.
Prerequisite: (BZ 110 or LIFE 103) and (BZ 212 or LIFE 206 or MIP 302).
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: BSPM 462, BZ 462, MIP 462.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 487 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 492 Seminar Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 496 Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 500 Foundations of Bioagricultural Sciences Credits: 2 (2-0-0)
Course Description: Introduction to graduate school covering managing time, advisor and research, plus a survey of topics encompassed by the department of BSPM.
Prerequisite: None.
Restriction: Must be a: Graduate.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 502A Topics in Plant Pathology: Plant Viruses Credit: 1 (1-0-0)
Course Description:
Prerequisite: BIO 300 to 499 - at least 3 credits or BSPM 300 to 499 - at least 3 credits or BZ 300 to 499 - at least 3 credits or LIFE 300 to 499 - at least 3 credits.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 502B Topics in Plant Pathology: Plant Bacteriology Credit: 1 (1-0-0)
Course Description:
Prerequisite: BIO 300 to 499 - at least 3 credits or BSPM 300 to 499 - at least 3 credits or BZ 300 to 499 - at least 3 credits or LIFE 300 to 499 - at least 3 credits.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 502F Topics in Plant Pathology: Plant Disease Epidemiology Credit: 1 (1-0-0)
Course Description:
Prerequisite: BSPM 361.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 507 Insect Behavior Credits: 3 (3-0-0)
Course Description: Behavior of insects and related arthropods with special attention to social behavior.
Prerequisite: None.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 508 Environmental Fate of Pesticides Credits: 3 (3-0-0)
Course Description: Processes that affect fate of pesticides and their metabolites in the environment with emphasis on soil and water.
Prerequisite: BZ 440 or CHEM 245 or SOCR 240.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 509 Herbicide Selectivity and Action Credits: 3 (3-0-0)
Course Description: Selectivity of major photosynthetic and growth inhibitor herbicides based on herbicide transport, metabolism, and mode of action.
Prerequisite: BSPM 308 or BZ 440.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 510 Insect-Plant Disease Relationships Credits: 3 (3-0-0)
Course Description: Relationships between insects and various plant pathogens as they affect survival and transmissions of pathogens.
Prerequisite: BSPM 302 or BSPM 361.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 520 Advanced Systematics Credits: 3 (3-0-0)
Also Offered As: BZ 520.
Course Description: Theory and practice of modern systematics.
Prerequisite: BSPM 424 or BZ 424 or BZ 325.
Registration Information: Credit not allowed for both BSPM 520 and BZ 520.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 521 Forest Health Issues Credits: 3 (3-0-0)
Course Description: Current topics related to forest and shade tree health from ecosystems to tree defense physiology.
Prerequisite: None.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 523 Advanced Evolution/Classification of Insects Credits: 4 (1-4-1)
Course Description: Major groups of insects, living and fossil; major evolutionary trends in structure and behavior.
Prerequisite: None.
Registration Information: Must register for lecture, laboratory, and recitation. Credit not allowed for both BSPM 523 and BSPM 423.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 525 Insect Physiology Credits: 3 (3-0-0)
Course Description: Principles of insect function.
Prerequisite: BSPM 302.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 526 Evolutionary Ecology Credits: 3 (3-0-0)
Also Offered As: BZ 526.
Course Description: Adaptation to abiotic and biotic environments; how current ecological processes interact with evolutionary history.
Prerequisite: LIFE 320 or LIFE 220 or LAND 220.
Registration Information: Credit not allowed for both BSPM 526 and BZ 526.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 528 Invasive Plants/Weeds–Ecosystems to Molecules Credits: 3 (3-0-0)
Course Description: Contributions of disciplines of weed science and invasion ecology to understanding the biology, ecology and management of "problem plants."
Prerequisite: (LIFE 320 or LAND 220 or LIFE 220) and (BZ 120) and (LIFE 102 or LIFE 103).
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

BSPM 530 Scientific Writing Credit: 1 (1-0-0)
Also Offered As: SOCR 530.
Course Description: Skills necessary to prepare complete scientific journal articles including writing, editing, and literature searching and assessment.
Prerequisite: None.
Registration Information: Credit not allowed for both BSPM 530 and SOCR 530.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 540 Understanding Genomes Credits: 3 (3-0-0)
Course Description: Harnessing genome information and related -omics level technologies for use in answering biological questions.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 550 Molecular Plant-Microbe Interactions Credits: 3 (3-0-0)
Course Description: Principles of plant-microbe interactions, physiological and molecular aspects of plant defense, genomic approaches to study plant defense.
Prerequisite: (BZ 100 to 499 - at least 3 credits) and (BZ 346 or SOCR 330).
Registration Information: Credit not allowed for both BSPM 550 and BSPM 450.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 551 Advanced Integrated Pest Management Credits: 4 (3-0-1)
Course Description: Concepts of integrated pest management and the strategies and tactics employed in the practical application of these concepts.
Prerequisite: BSPM 302 or BSPM 308 or BSPM 361.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 555 Immature Insects Credits: 3 (1-4-0)
Course Description: Characteristics of immature forms of orders and families of insects emphasizing those important to man.
Prerequisite: BSPM 303A or BSPM 303B or BSPM 303C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 556 Biological Control of Plant Pests Credits: 3 (3-0-0)
Course Description: Management of insect pests of plants and weeds using biological control agents such as insects, bacteria, viruses, and fungi.
Prerequisite: (BZ 120 or LIFE 103) and (LIFE 320 or LAND 220 or LIFE 220).
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 570 Chemical Ecology Credits: 3 (3-0-0)
Course Description: Chemical interactions among animals, plants, fungi, and microorganisms.
Prerequisite: None.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 571 Techniques in Chemical Ecology Credit: 1 (0-2-0)
Course Description: Practical experience with chemical techniques for separation, analysis, and synthesis of natural products together with biological assays for activity.
Prerequisite: None.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 575 Molecular and Genomic Evolution Credits: 3 (3-0-0)
Also Offered As: BZ 575.
Course Description: Molecular, biological mechanisms of evolutionary change: mutation; selection; gene expression/regulation; changes in whole-genome architecture.
Prerequisite: BZ 220 and BZ 350.
Registration Information: Credit not allowed for both BSPM 575 and BZ 575.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 576 Bioinformatics Credits: 3 (3-0-0)
Also Offered As: MIP 576.
Course Description: Technical computing across platforms using bioinformatics tools in molecular analysis.
Prerequisite: BC 463 or BZ 310 or BZ 350 or CM 501 or CS 155 or ERHS 332 or MIP 275 or MIP 300 or MIP 450 or STAT 307 or ERHS 307.
Registration Information: Credit not allowed for both BSPM 576 and MIP 576.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 584 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 587 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 592 Seminar Credits: Var[1-3] (0-0-0)
Course Description: Major questions and theory pertinent to understanding current and relevant science topics.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 594 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 596 Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 710 Techniques in Molecular Biology and Genetics Credits: 3 (0-4-1)
Also Offered As: CM 710.
Course Description: Genetic manipulation of bacteria, bacteriophage, and yeast including experiments in molecular cloning and gene expression.
Prerequisite: BC 463 or BZ 346 or BZ 350 or MIP 450 or SOCR 330.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for laboratory and recitation. Credit not allowed for both BSPM 710 and CM 710.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 740 Plant Molecular Genetics Credits: 3 (3-0-0)
Also Offered As: SOCR 740.
Course Description: Advances in study of organization and function of nuclear and organellar genomes, gene expression in higher plants, and plant-microbe interactions.
Prerequisite: BC 351 and SOCR 330.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both BSPM 740 and SOCR 740.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 784 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 787 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 792 Seminar Credits: Var[1-2] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 794 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Biochem + Mole Biology-BC (BC)

Courses

BC 192 Biochemistry Freshman Seminar Credits: 2 (1-0-1)
Course Description: Introduction to curriculum and career options for biochemistry majors.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 295 Introductory Independent Study Credits: Var[1-3] (0-0-0)
Course Description: Apply principles and knowledge being learned in first and second year life sciences and chemistry courses.
Prerequisite: LIFE 102 or CHEM 112, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 351 Principles of Biochemistry Credits: 4 (4-0-0)
Course Description: Structure and function of biological molecules; biocatalysis; metabolism and energy transduction.
Prerequisite: (BZ 110 or BZ 120 or LIFE 102) and (CHEM 245 or CHEM 341 or CHEM 345).
Registration Information: For majors in biological sciences, engineering, and preprofessional students in the health sciences. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 353 Pre-Health Genetics Credits: 4 (4-0-0)
Course Description: Applies and extends the biochemical concepts learned in BC 351 to macromolecules and molecular processes based on nucleic acids.
Prerequisite: BC 351.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 360 Responsible Conduct in Biochemical Research Credit: 1 (1-0-0)
Course Description: Research ethics and the responsible conduct of research.
Prerequisite: LIFE 212.
Registration Information: Sophomore standing. Biochemistry majors only. This is a partial semester course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 401 Comprehensive Biochemistry I Credits: 3 (3-0-0)
Course Description: Macromolecular structure and dynamics; membranes; enzymes; bioenergetics.
Prerequisite: (CHEM 245 or CHEM 343, may be taken concurrently or CHEM 346, may be taken concurrently) and (MATH 155 or MATH 160).
Registration Information: Sophomore standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 403 Comprehensive Biochemistry II Credits: 3 (3-0-0)
Course Description: Metabolic pathways and their regulation; cellular biochemistry.
Prerequisite: CHEM 245 or CHEM 341 or CHEM 345.
Registration Information: Sophomore standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 404 Comprehensive Biochemistry Laboratory Credits: 2 (0-6-0)
Course Description: Experimental approaches to studying macromolecules, metabolism, and gene expressions.
Prerequisite: (BC 401, may be taken concurrently) and (CHEM 246 or CHEM 344 or CHEM 346) and (LIFE 212 and LIFE 203).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BC 405 Comprehensive Biochemistry II--Honors Recitation Credit: 1 (0-0-1)
Course Description: Read and discuss current literature related to material presented in BC 403.
Prerequisite: None.
Registration Information: Must have concurrent registration in BC 403. For students participating in the Honors program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 406A Investigative Biochemistry: Protein Biochemistry Credits: 2 (0-4-0)
Course Description: Advanced inquiry-based protein chemistry and molecular biology lab.
Prerequisite: BC 404.
Registration Information: This is a partial semester course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 406B Investigative Biochemistry: Molecular Genetics Credits: 2 (1-3-0)
Course Description: Advanced biochemical and molecular biological techniques and a problem-solving approach to molecular genetics.
Prerequisite: BC 404.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 406C Investigative Biochemistry: Cellular Biochemistry Credits: 2 (1-3-0)
Course Description: Advanced biochemical and molecular biological techniques and a problem-solving approach to cellular biochemistry.
Prerequisite: BC 404.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 411 Physical Biochemistry Credits: 4 (3-0-1)
Course Description: Thermodynamics; reaction rates; quantum chemistry; spectroscopy; macromolecular folding and interactions; ligand binding; enzyme kinetics; membranes.
Prerequisite: (BC 351 with a minimum grade of B or BC 401) and (CHEM 113) and (MATH 161 or MATH 255).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 441 3D Molecular Models for Biochemistry Credit: 1 (0-1.5-.5)
Course Description: Computer instruction to construct 3D models of proteins and nucleic acids using leading software.
Prerequisite: BC 401, may be taken concurrently.
Registration Information: Must register for laboratory and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 463 Molecular Genetics Credits: 3 (3-0-0)
Course Description: Molecular basis of gene structure, replication, repair, recombination, and expression.
Prerequisite: (BC 401 with a minimum grade of C, may be taken concurrently or BC 351 with a minimum grade of C) and (LIFE 201B with a minimum grade of C or BZ 350 with a minimum grade of C).
Registration Information: Credit not allowed for both BC 463 and BC 563.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 464 Molecular Genetics Recitation Credit: 1 (0-0-1)
Course Description: Methods used to study the molecular basis of gene structure, replication, repair, recombination, and expression.
Prerequisite: (LIFE 201B) and (BC 351, may be taken concurrently or BC 401, may be taken concurrently).
Registration Information: Must have concurrent registration in BC 463.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 465 Molecular Regulation of Cell Function Credits: 3 (3-0-0)
Course Description: Molecular regulation of cell organization, membrane formation, organelle biogenesis, cell communication, shape and motility, growth, aging, and death.
Prerequisite: (LIFE 210) and (BC 403, may be taken concurrently or BC 351).
Registration Information: Credit not allowed for both BC 465 and BC 565.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 466 Molecular Regulation of Cell Function-Honors Credit: 1 (0-0-1)
Course Description: Discussions of current articles in cell biology including methods and molecular mechanisms that explain cell behavior in health and disease.
Prerequisite: None.
Registration Information: Must have concurrent registration in BC 465.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 467 Biochemistry of Disease Credits: 3 (3-0-0)
Course Description: Biochemical basis of specific human diseases.
Prerequisite: BC 401.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 475 Mentored Research Credits: 3 (0-6-1)
Course Description: Plan and conduct mentored research with weekly discussion of progress, presentation at all-university symposium, and submission of written report.
Prerequisite: BC 404.
Registration Information: Must register for laboratory and recitation. Maximum of 9 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 484 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: Assist in teaching selected courses in biochemistry and molecular biology.
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 487A Internship Credits: Var[1-18] (0-0-0)
Course Description: Work experience with an approved preceptor outside of a university laboratory environment.
Prerequisite: BC 401 and BC 403 and BC 404.
Registration Information: Written consent of instructor. Minimum GPA of 2.0.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 487B Internship: International Credits: Var[1-18] (0-0-0)
Course Description: Research in foreign host laboratory in contact with CSU mentor.
Prerequisite: BC 401 and BC 463 and BC 495 - at least 1 credit.
Registration Information: Selection by departmental committee. BC 495 (one credit in lab of CSU mentor).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 493 Senior Seminar Credit: 1 (0-0-1)
Course Description: Critical analysis of selected literature in biochemistry and molecular biology.
Prerequisite: None.
Registration Information: BC 401 or concurrent registration.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Minimum cumulative GPA of 3.0.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description: Faculty-directed exploration of areas of special interest in biochemistry and molecular biology.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 498 Research Credits: Var[1-6] (0-0-0)
Course Description: Supervised laboratory research in biochemistry and molecular biology.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 499A Thesis: Laboratory Research-Based Credits: 3 (0-0-3)
Course Description: Laboratory-based research thesis.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 499B Thesis: Literature Based Credits: 3 (0-0-3)
Course Description: Thesis - Literature-based in Gen. Biochemistry.
Prerequisite: BC 493.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 499C Thesis: Literature-based in Health and Med Sci Credits: 3 (0-0-3)
Course Description: Thesis - Literature-based in Health and Med. Sci.
Prerequisite: BC 493.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 499D Thesis: Literature-based in Pre-Pharmacy Credits: 3 (0-0-3)
Course Description: Thesis - Literature-based in Pre-Pharmacy.
Prerequisite: BC 493.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 499E Thesis: Literature-based in Neurobiochemistry Credits: 3 (0-0-3)
Course Description: Thesis - Literature-based in Neurobiochemistry.
Prerequisite: BC 493, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 511 Structural Biology I Credits: 4 (3-0-1)
Course Description: Structural principles of biological macromolecules and techniques of structural analysis.
Prerequisite: BC 401, may be taken concurrently.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 512 Principles of Macromolecular Structure Credit: 1 (1-0-0)
Course Description: Physical interactions controlling folding and solution behavior of biological macromolecules, including proteins, nucleic acids, and membranes.
Prerequisite: BC 411, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 513 Enzymology Credit: 1 (1-0-0)
Course Description: Kinetic methods, mechanism, and regulation of enzyme catalysis.
Prerequisite: BC 403.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 517 Metabolism Credits: 2 (2-0-0)
Course Description: Design and regulation of metabolic pathways.
Prerequisite: BC 351 and BC 403.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 521 Principles of Chemical Biology Credits: 3 (3-0-0)
Also Offered As: CHEM 521.
Course Description: Principles of chemical biology. Chemical methods for understanding and controlling the structure and function of biopolymers.
Prerequisite: CHEM 245 or CHEM 343 or CHEM 346.
Registration Information: Credit not allowed for both BC 521 and CHEM 521.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 563 Molecular Genetics Credits: 4 (3-0-1)
Course Description: Mechanisms of replication, transcription, processing, translation, and packaging of genetic material, emphasizing original literature and methods.
Prerequisite: BC 401 and LIFE 201B.
Registration Information: Must register for lecture and recitation. Credit not allowed for both BC 563 and BC 463.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 565 Molecular Regulation of Cell Function Credits: 4 (3-0-1)
Course Description: Molecular regulation of cell organization, membrane formation, organelle biogenesis, cell communication, shape and motility, growth, aging, and death.
Prerequisite: (LIFE 210) and (BC 351 or BC 403, may be taken concurrently).
Registration Information: Credit not allowed for both BC 565 and BC 465. Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 566 Advanced Topics in Mitotic Processes Credit: 1 (1-0-0)
Course Description: Mitotic spindle, microtubules, kinetochores, and molecular motors, specifically during cell division.
Prerequisite: BC 465 or BC 565.
Restriction: .
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 571 Quantitative Biochemistry Credit: 1 (1-0-0)
Course Description: Introduction to statistics, error analysis, and curve fitting of biochemical data with a focus on practical examples.
Prerequisite: BC 511, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 589 Current Trends in Molecular Biosciences Credits: 2 (1-2-0)
Course Description: Biochemical and molecular biological foundations of molecular genetics/genetic engineering; molecular analysis of genes.
Prerequisite: None.
Registration Information: B.S. or B.A. in biology or chemistry; secondary school teaching certification required. Offered as an online course only.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

BC 601 Responsible Conduct in Biochemistry Credit: 1 (1-0-0)
Course Description: Design of experiments; error and fraud, publishing/grant application submission, scientific misconduct, classic examples of fraud, case studies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring. (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BC 611 Structural Biology II Credits: 2 (2-0-0)
Course Description: Structure and interactions of biological macromolecules related to function.
Prerequisite: BC 511.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 663 Gene Expression Credits: 2 (2-0-0)
Course Description: Eukaryotic transcription mechanisms with emphasis on methods of study and regulatory mechanisms.
Prerequisite: BC 563.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 665A Advanced Topics in Cell Regulation: Microscopic Methods Credits: 2 (2-0-0)
Course Description: Analysis of cell behavior, function and regulation.
Prerequisite: BC 565.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 665B Advanced Topics in Cell Regulation: Modern Methods Credits: 2 (2-0-0)
Course Description: Modern methods in cell biology.
Prerequisite: BC 565.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BC 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BC 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BC 701 Grant Proposal Writing and Reviewing Credit: 1 (1-0-0)
Course Description: Didactic and hands-on experience with locating funding sources, writing effective grant proposals, and the review process in the bio-molecular sciences.
Prerequisite: (BC 403) and (BC 511, may be taken concurrently) and (BC 563, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 711A Advanced Topics in Structural Biology: Protein Structure and Function Credit: 1 (1-0-0)
Course Description:
Prerequisite: BC 511 and BC 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 711B Advanced Topics in Structural Biology: Membrane Proteins Credit: 1 (1-0-0)
Course Description:
Prerequisite: BC 511 and BC 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 711C Advanced Topics in Structural Biology: Protein-DNA Interactions Credit: 1 (1-0-0)
Course Description:
Prerequisite: BC 511 and BC 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 711D Advanced Topics in Structural Biology: Biomolecular Spectroscopy Credit: 1 (1-0-0)
Course Description:
Prerequisite: BC 511 and BC 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 711E Advanced Topics in Structural Biology: Biomolecular NMR Credit: 1 (1-0-0)
Course Description:
Prerequisite: BC 511 and BC 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 711F Advanced Topics in Structural Biology: Macromolecular X-ray Crystallography Credit: 1 (1-0-0)
Course Description:
Prerequisite: BC 511 and BC 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 763A Advanced Molecular Genetics Topics: Chromatin and Transcription Credit: 1 (1-0-0)
Course Description:
Prerequisite: BC 663, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 763B Advanced Molecular Genetics Topics: Transcriptional Control - Co-Activators and Corepressors Credit: 1 (1-0-0)
Course Description:
Prerequisite: BC 663, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 763C Advanced Molecular Genetics Topics: Concepts and Techniques of Genetic Analysis Credit: 1 (1-0-0)
Course Description:
Prerequisite: BC 663, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 784 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 793 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BC 796 Group Study Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BC 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BC 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Biomedical Engineering-BIOM (BIOM)

Courses

BIOM 100 Overview of Biomedical Engineering Credit: 1 (1-0-0)
Course Description: Overview of the field of biomedical engineering with an emphasis on the roles of mechanical, electrical, and chemical/biological engineering principles.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Credit not allowed for both BIOM 100 and BIOM 101.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 101 Introduction to Biomedical Engineering Credits: 3 (3-0-0)
Course Description: Basic principles, fundamentals in biomedical engineering including molecular, cellular and physiological principles, major areas such as biomechanics.
Prerequisite: None.
Registration Information: Credit not allowed for both BIOM 100 and BIOM 101. Credit not allowed for both BIOM 101 and BIOM 200.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 200 Fundamentals of Biomedical Engineering Credits: 2 (2-0-0)
Course Description: Application of engineering analysis to physiology and biomedical engineering topics.
Prerequisite: BIOM 100, may be taken concurrently and LIFE 102 and MATH 160.
Restriction: Must be a: Undergraduate.
Registration Information: Credit not allowed for both BIOM 101 and BIOM 200.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 300 Problem-Based Learning Biomedical Engr Lab Credits: 4 (1-4-1)
Course Description: Group problem-based learning approach to problems spanning all core areas of biomedical engineering.
Prerequisite: (BIOM 101 or BIOM 200 or BIOM 100 and CBE 205 and MECH 262) and (MATH 340 or MATH 345).
Registration Information: Junior standing. Must register for lecture, lab, and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BIOM 306 Bioprocess Engineering Credits: 4 (3-2-0)
Also Offered As: BTEC 306.
Course Description: Material, energy balances; fluid flow, heat exchange, mass transfer; application to operations in food, fermentation, other bioprocess industries.
Prerequisite: (CHEM 107 or CHEM 111) and (PH 121 or PH 141).
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BIOM 306 and BTEC 306.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 382A Study Abroad: Prosthetics in Ecuador Credits: Var[1-2] (0-0-0)
Course Description: Design and fabricate prosthetics for under-served populations in Ecuador. Course experience will occur in Quito, Ecuador in partnership with Range of Motion Project (ROMP), a non-profit healthcare organization.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 421 Transport Phenomena in Biomedical Engineering Credits: 3 (3-0-0)
Course Description: Engineering models of active and passive mechanisms of momentum. Heat and mass transport in mammalian cells, tissues, and organ systems.
Prerequisite: (BMS 300) and (CBE 332 or MECH 344).
Registration Information: Credit not allowed for both BIOM 330 and BIOM 421.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 422 Kinetics of Biomolecular and Cellular Systems Credits: 3 (3-0-0)
Course Description: In-depth analysis of the systems approach to biology and biological engineering at the molecular and the cellular scales.
Prerequisite: BIOM 421 or CBE 320.
Registration Information: Credit not allowed for both BIOM 422 and BIOM 400.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 431 Biomedical Signal and Image Processing Credits: 3 (3-0-0)
Also Offered As: ECE 431.
Course Description: Principles, features and mathematical processing of biomedical signals and images including interference and noise filtering and feature enhancement.
Prerequisite: ECE 303 with a minimum grade of C and ECE 311 with a minimum grade of C and PH 142 with a minimum grade of C.
Registration Information: Credit not allowed for both BIOM 431 and ECE 431.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 441 Biomechanics and Biomaterials Credits: 3 (3-0-0)
Course Description: Principles of biomechanics, biofluids, and biomaterials.
Prerequisite: BMS 300, may be taken concurrently and CIVE 360 and MECH 324, may be taken concurrently and MECH 331, may be taken concurrently and MECH 342.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 470 Biomedical Engineering Credits: 3 (3-0-0)
Also Offered As: MECH 470.
Course Description: Engineering application in human/animal physiology, diagnosis of disease, treatment, rehabilitation, human genome manipulation.
Prerequisite: (PH 141) and (MATH 155 or MATH 160).
Registration Information: Credit not allowed for both BIOM 470 and MECH 470.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 476A Biomedical Clinical Practicum I Credits: 2 (0-0-2)
Course Description: Biomedical lab work or exposure to the hospital/clinical environment.
Prerequisite: (BMS 300) and (BIOM 470 or MECH 470).
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BIOM 476B Biomedical Clinical Practicum II Credits: 4 (0-0-4)
Course Description: Biomedical lab work or exposure to the hospital/clinical environment.
Prerequisite: (BMS 300) and (BIOM 470 or MECH 470).
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BIOM 486A Biomedical Design Practicum: Capstone Design I Credits: 4 (0-0-10)
Course Description:
Prerequisite: (BIOM 300) and (BIOM 421 and CBE 320 and CBE 442 or ECE 342 and BIOM 431 and ECE 311 and ECE 332 or BIOM 441 and MECH 301 or MECH 301A and MECH 301B, may be taken concurrently) and (MECH 307).
Registration Information: Senior standing. Enrollment in biomedical engineering major.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 486B Biomedical Design Practicum: Capstone Design II Credits: 4 (0-0-10)
Course Description:
Prerequisite: (BIOM 486A) and (CBE 451 or ECE 312 or MECH 325 and MECH 344 and MECH 402 or PH 353).
Registration Information: Senior standing. Enrollment in biomedical engineering major.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 495 Independent Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BIOM 504 Fundamentals of Biochemical Engineering Credits: 3 (3-0-0)
Also Offered As: CBE 504.
Course Description: Application of chemical engineering principles to enzyme kinetics, fermentation and cell culture, product purification, and bioprocess design.
Prerequisite: (MIP 300) and (MATH 255 or MATH 340) and (BIOM 306, may be taken concurrently or BTEC 306, may be taken concurrently or CBE 320, may be taken concurrently).
Registration Information: Credit not allowed for both BIOM 504 and CBE 504.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

BIOM 517 Advanced Optical Imaging Credits: 3 (3-0-0)
Also Offered As: ECE 517.
Course Description: Engineering design principles of advanced optical imaging techniques and image formation theory.
Prerequisite: ECE 342 or MATH 340 or MATH 345.
Registration Information: Credit allowed for only one of the following: BIOM 517, BIOM 581B7, ECE 517 or ECE 581B7.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 518 Biophotonics Credits: 3 (3-0-0)
Also Offered As: ECE 518.
Course Description: Engineering design principles of optical instrumentation for medical diagnostics. Light propagation and imaging in biological tissues.
Prerequisite: ECE 342 or ECE 457 or MATH 340 or MATH 345.
Registration Information: Credit allowed for only one of the following: BIOM 518, BIOM 581A9, ECE 518 or ECE 581A9.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 522 Bioseparation Processes Credits: 3 (2-2-0)
Also Offered As: CBE 522.
Course Description: Analysis of processes to recover and purify fermentation products.
Prerequisite: CBE 331.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BIOM 522 and CBE 522.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 525 Cell and Tissue Engineering Credits: 3 (3-0-0)
Also Offered As: MECH 525.
Course Description: Cell and tissue engineering concepts and techniques with emphasis on cellular response, cell adhesion kinetics, and tissue engineering design.
Prerequisite: BC 351 or BMS 300 or BMS 500 or BZ 310 or NB 501.
Registration Information: Credit allowed for only one of the following: BIOM 525, CBE 525, MECH 525. Sections may be offered: Online.
Term Offered: Spring. (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 526 Biological Physics Credits: 3 (3-0-0)
Also Offered As: ECE 526.
Course Description: Mathematical and physical modeling of biological systems. Mass transport in cellular environments. Electrical/mechanical properties of biomolecules.
Prerequisite: (MATH 340 or MATH 345) and (PH 122 or PH 142).
Registration Information: Credit not allowed for both BIOM 526 and ECE 526. Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 527A Biosensing: Cells as Circuits Credit: 1 (1-0-0)
Also Offered As: ECE 527A.
Course Description: Treatment of biological cells as circuits and their electrical time-dependent function and frequency-dependent impedance. Topics include the Hodgkin–Huxley circuit model, diffusion equation, and modeling action potential propagation.
Prerequisite: (BIOM 101 or LIFE 102) and (CHEM 111) and (MATH 340 or MATH 345) and (PH 142).
Registration Information: Junior standing. This is a partial semester course. Credit allowed for only one of the following: BIOM 527A, BIOM 581B1, ECE 527A, or ECE 581B1.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 527B Biosensing: Signal and Noise in Biosensors Credit: 1 (1-0-0)
Also Offered As: ECE 527B.
Course Description: Quantitative treatment of concepts of noise, interference and signal including noise types and spectra, filtering, and limitations imposed by noise. Example applications to Biosensors.
Prerequisite: (MATH 340, may be taken concurrently or MATH 345, may be taken concurrently) and (PH 142).
Registration Information: Junior standing. This is a partial semester course. Credit allowed for only one of the following: BIOM 527B, BIOM 581B2, ECE 527B, or ECE 581B2.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 527C Biosensing: Sensor Circuit Fundamentals Credit: 1 (1-0-0)
Also Offered As: ECE 527C.
Course Description: Introduction to circuit concepts used in sensors, including review of basic circuit elements of resistors, capacitors, and MOS (Metal-Oxide-Semiconductor transistors) elements. Fundamentals of the application of MOS circuits for signal conditioning and amplification and how sensor's backend signal processing is carried out after the sensor signal transduction stage.
Prerequisite: (BIOM 101 or LIFE 102) and (MATH 340, may be taken concurrently or MATH 345, may be taken concurrently) and (PH 142).
Registration Information: Junior standing. This is a partial semester course. Credit allowed for only one of the following: BIOM 527C, BIOM 581B3, ECE 527C, or ECE 581B3.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 527D Biosensing: Electrochemical Sensors Credit: 1 (1-0-0)
Also Offered As: ECE 527D.
Course Description: Introduction to the electrochemistry, and applications of electrochemical methods, used for detection of certain classes of chemicals and molecules.
Prerequisite: (BIOM 101 or LIFE 102) and (CHEM 111) and (MATH 255 or MATH 261) and (PH 142).
Registration Information: Junior standing. This is a partial semester course. Credit allowed for only one of the following: BIOM 527D, BIOM 581B5, ECE 527D, or ECE 581B5.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 527E Biosensing: Affinity Sensors Credit: 1 (1-0-0)
Also Offered As: ECE 527E.
Course Description: Fundamentals of affinity sensor application and design, including optical and electrical approaches and technologies.
Prerequisite: (BIOM 101 or LIFE 102) and (CHEM 111) and (MATH 340, may be taken concurrently or MATH 345, may be taken concurrently) and (PH 142).
Registration Information: Junior standing. This is a partial semester course. Credit allowed for only one of the following: BIOM 527E, BIOM 581B4, ECE 527E, or ECE 581B4.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 527F Biosensing: Biophotonic Sensors Using Refractive Index Credit: 1 (1-0-0)
Also Offered As: ECE 527F.
Course Description: Operating principles of optical biosensors based on changes in refractive index, such as thin films, ring-resonators, Mach-Zehnder interferometers, and other evanescent wave sensors. Basic supporting optical concepts, including thin-film interference, optical waveguides and evanescent waves.
Prerequisite: (BIOM 527F or ECE 527F) and (MATH 340, may be taken concurrently or MATH 345, may be taken concurrently) and (PH 142).
Registration Information: Junior standing. This is a partial semester course. Credit allowed for only one of the following: BIOM 527F, BIOM 581B6, ECE 527F, or ECE 581B6.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 531 Materials Engineering Credits: 3 (3-0-0)
Also Offered As: MECH 531.
Course Description: Selection of structural engineering materials by properties, processing, and economics; materials for biomedical and biotechnology applications.
Prerequisite: MECH 331 or MECH 431.
Registration Information: Credit not allowed for both BIOM 531 and MECH 531. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 532 Material Issues in Mechanical Design Credits: 3 (3-0-0)
Also Offered As: MECH 532.
Course Description: Failure mechanisms from materials viewpoint with emphasis on use in design. Fracture, creep, fatigue and corrosion.
Prerequisite: MECH 331.
Registration Information: Credit not allowed for both BIOM 532 and MECH 532. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 533 Biomolecular Tools for Engineers Credits: 3 (2-3-0)
Also Offered As: CIVE 533.
Course Description: Theoretical and practical aspects of biomolecular laboratory tools–PCR, cloning, sequencing, single-molecule optical techniques and live-cell imaging.
Prerequisite: BMS 300 or MIP 300.
Registration Information: Must register for lecture and laboratory. Credit not allowed for BIOM 533, CIVE 533 and ECE 533.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

BIOM 537 Biomedical Signal Processing Credits: 3 (3-0-0)
Also Offered As: ECE 537.
Course Description: Measuring, manipulating, and interpreting biomedical signals.
Prerequisite: MATH 340 or ECE 311 or STAT 303.
Registration Information: Credit not allowed for both BIOM 537 and ECE 537.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 543 Membranes for Biotechnology and Biomedicine Credits: 3 (3-0-0)
Also Offered As: CBE 543.
Course Description: Polymeric membrane formation, modification, module design and applications to bioseparation and biomedical separations and tissue engineering.
Prerequisite: CHEM 343 and CBE 310.
Registration Information: Credit not allowed for both BIOM 543 and CBE 543. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 570 Bioengineering Credits: 3 (3-0-0)
Also Offered As: MECH 570.
Course Description: Physiological and medical systems analysis using engineering methods including mechanics, fluid dynamics, control electronics, and signal processing.
Prerequisite: MECH 307 and MECH 324.
Registration Information: Credit not allowed for both BIOM 570 and MECH 570. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 573 Structure and Function of Biomaterials Credits: 3 (3-0-0)
Also Offered As: MECH 573.
Course Description: Structure-function relationships of natural biomaterials; application to analysis of biomimetic materials and biomaterials used in medical devices.
Prerequisite: MECH 331.
Registration Information: Credit not allowed for both BIOM 573 and MECH 573. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 574 Bio-Inspired Surfaces Credits: 3 (3-0-0)
Also Offered As: MECH 574.
Course Description: Analysis of surface functionalities of various biological species; identification of design principles.
Prerequisite: MECH 342 and CHEM 111.
Registration Information: Sections may be offered: Online. Credit not allowed for both BIOM 574 and MECH 574.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 576 Quantitative Systems Physiology Credits: 4 (4-0-0)
Also Offered As: MECH 576.
Course Description: Quantitative, model-oriented approach to cellular and systems physiology with design examples from biomedical engineering.
Prerequisite: BMS 300 and CHEM 113 and MATH 340 and PH 142.
Registration Information: Credit not allowed for both BIOM 576 and MECH 576. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 578 Musculoskeletal Biosolid Mechanics Credits: 3 (3-0-0)
Also Offered As: MECH 578.
Course Description: Application of engineering concepts to quantify the mechanical behavior of load-bearing biological tissues and orthopaedic implant performance.
Prerequisite: CIVE 360.
Registration Information: Graduate standing. Credit not allowed for both BIOM 578 and MECH 578.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 579 Cardiovascular Biomechanics Credits: 3 (3-0-0)
Also Offered As: MECH 579.
Course Description: Bio-mechanical principles and approaches applied in cardiovascular research.
Prerequisite: MATH 340 and PH 142.
Restriction: Must be a: Graduate.
Registration Information: Graduate students only. Sections may be offered: Online. Credit allowed for only one of the following: BIOM 579, BIOM 581A8, MECH 579, or MECH 581A8.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 586A Biomedical Clinical Practicum Credits: 2 (1-3-0)
Course Description: Graduate-level activity, such as biomedical research or design of a new medical device, for exposure to the hospital/clinical environment.
Prerequisite: (BMS 300 or BMS 500) and (BIOM 570 or MECH 570).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BIOM 586B Biomedical Clinical Practicum Credits: 4 (1-6-0)
Course Description: Graduate-level activity, such as biomedical research or design of a new medical device, for exposure to the hospital/clinical environment.
Prerequisite: (BMS 300 or BMS 500) and (BIOM 570 or MECH 570).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BIOM 592 Seminar Credits: Var[1-3] (0-0-0)
Course Description: Student and research faculty presentations, guest and invited extramural speakers.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BIOM 671 Orthopedic Tissue Biomechanics Credits: 3 (3-0-0)
Also Offered As: MECH 671.
Course Description: Linear elastic, finite deformation, and viscoelastic theories applied to the mechanical behavior of orthopedic tissues (bone, tendon, cartilage).
Prerequisite: CIVE 560.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both BIOM 671 and MECH 671.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 6 credits allowed in course; may not be used to satisfy degree requirements requiring bioengineering courses.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BIOM 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BIOM 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BIOM 750 Grant Proposal Writing and Reviewing Credit: 1 (1-0-0)
Course Description: Preparation and review of applications for fellowships and grants.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 784 Supervised College Teaching Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BIOM 786 Practicum-Laboratory Rotations Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BIOM 795 Independent Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall. Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BIOM 798 Research-Laboratory Rotations Credits: Var[1-6] (0-0-0)
Course Description: Doctoral laboratory rotation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BIOM 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Biomedical Science-BMS (BMS)

Courses

BMS 192 First Year Seminar in Biomedical Sciences Credit: 1 (0-0-1)
Course Description: The university and its resources, college survival skills, careers in the biomedical sciences; current issues in health and biotechnology.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 200 Concepts in Human Anatomy and Physiology Credit: 1 (0-0-1)
Course Description: Basic concepts in the anatomy and physiology of the human body.
Prerequisite: None.
Registration Information: Must have concurrent registration in BMS 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 260 Biomedical Sciences Credits: 3 (2-0-1)
Course Description: Opportunities and challenges in biomedical sciences; business of science, ethics, model systems, cellular and systemic physiology.
Prerequisite: LIFE 102.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 296 Honors—Physiological Concepts Credit: 1 (0-0-1)
Course Description: Honors breakout session integrating physiological concepts for students in BMS 260.
Prerequisite: None.
Registration Information: Must have concurrent registration in BMS 260.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 300 Principles of Human Physiology Credits: 4 (4-0-0)
Course Description: Physiology of humans.
Prerequisite: (BZ 101 or BZ 110 or LIFE 102) and (CHEM 103 or CHEM 107 or CHEM 111).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 301 Human Gross Anatomy Credits: 5 (3-2-1)
Course Description: Structure and function of the human body. Study of prosected human cadavers; clinical applications; living anatomy.
Prerequisite: BZ 110 or LIFE 102.
Registration Information: Must register for lecture, laboratory, and recitation.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

BMS 302 Laboratory in Principles of Physiology Credits: 2 (1-3-0)
Course Description: Basic physiology lab exercises.
Prerequisite: BMS 300, may be taken concurrently or BMS 360, may be taken concurrently.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BMS 302 and BMS 320.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BMS 305 Domestic Animal Gross Anatomy Credits: 4 (3-3-0)
Course Description: Comparative gross anatomy of domestic carnivores, ruminants, and horses.
Prerequisite: BZ 110 or LIFE 102.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BMS 305 and VS 333.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BMS 310 Anatomy for the Health Professions Credits: 4 (3-3-0)
Course Description: Gross anatomy of the human body from a regional perspective, utilizing clinical applications as a basis for anatomical understanding.
Prerequisite: LIFE 000 to 499.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 320 Virtual Laboratory in Physiology Credits: 2 (0-4-0)
Course Description: Physiology lab exercises using a virtual laboratory simulation system.
Prerequisite: BMS 300, may be taken concurrently or BMS 360, may be taken concurrently.
Registration Information: Credit not allowed for both BMS 320 and BMS 302. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 325 Cellular Neurobiology Credits: 3 (3-0-0)
Course Description: Cellular and molecular bases of nervous system function and behavior.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 330 Microscopic Anatomy Credits: 4 (3-3-0)
Course Description: Microscopic anatomy of mammalian tissue.
Prerequisite: BMS 300 or BMS 360.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BMS 330 and VS 331.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 345 Functional Neuroanatomy Credits: 4 (3-2-0)
Course Description: Functional systems and circuits of the human brain and spinal cord.
Prerequisite: BMS 300 or BMS 360.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BMS 360 Fundamentals of Physiology Credits: 4 (4-0-0)
Course Description: Cell, tissue, and organ function related to integrated whole body function.
Prerequisite: (BZ 110 or LIFE 102) and (CHEM 245, may be taken concurrently or CHEM 341, may be taken concurrently).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description: Supervision by and work with graduate teaching assistants in small group learning sessions involving students enrolled in BMS 300.
Prerequisite: BMS 300 or BMS 360.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 400 Neuroanatomy Through Clinical Case Studies Credit: 1 (0-0-1)
Course Description: Neuroanatomical case studies to reinforce and apply information gained in BMS 345, Functional Neuroanatomy.
Prerequisite: BMS 345, may be taken concurrently.
Registration Information: Biomedical sciences majors only. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 401 Laboratory Research in Biomedical Sciences Credits: 4 (0-9-1)
Course Description: Hands-on experience in laboratory research methods for students working individually on a project which stems from a larger research project of a faculty member's laboratory. All students will work in the same facility equipped with appropriate equipment and supplies to conduct the student research proposal.
Prerequisite: BMS 300 or BMS 360.
Registration Information: Must register for laboratory and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 405 Nerve and Muscle-Toxins, Trauma and Disease Credits: 3 (3-0-0)
Course Description: Structure, composition, function of nerves and muscles, etiology of genetic and autoimmune neuromuscular diseases, alteration by toxins and nerve gas.
Prerequisite: BMS 325 or BMS 345.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 409 Human and Animal Reproductive Biology Credits: 3 (3-0-0)
Course Description: Basis for male and female reproductive function in humans and animals.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 420 Cardiopulmonary Physiology Credits: 3 (3-0-0)
Course Description: Normal and pathophysiology of cardiovascular and pulmonary systems.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 421 Perspectives in Cardiopulmonary Diseases Credits: 2 (1-0-1)
Course Description: Pathophysiology of cardiopulmonary diseases.
Prerequisite: BMS 420, may be taken concurrently.
Registration Information: Must register for lecture and recitation. Biomedical sciences majors only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 425 Introduction to Systems Neurobiology Credits: 3 (3-0-0)
Course Description: Functional organization of the nervous system at the circuit level in producing simple and complex behaviors, sensations and cognition.
Prerequisite: BMS 325.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 430 Endocrinology Credits: 3 (3-0-0)
Course Description: Physiology of the glands of internal secretion.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 450 Pharmacology Credits: 3 (3-0-0)
Course Description: Pharmacologic principles, absorption, distribution, metabolism, excretion, side effects, and actions of drugs.
Prerequisite: (BMS 300 or BMS 360) and (BC 351 or LIFE 210).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 460 Essentials of Pathophysiology Credits: 3 (3-0-0)
Course Description: Integration of different facets of mechanisms underlying health and disease.
Prerequisite: BMS 300 or BMS 360.
Registration Information: Biomedical sciences majors only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 461 Pathophysiology Perspectives Credits: 2 (0-0-2)
Course Description: Capstone course in pathophysiology for Biomedical Sciences majors.
Prerequisite: None.
Registration Information: Must have concurrent registration in BMS 460. Biomedical sciences majors only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 487 Internship Credits: Var[1-6] (0-0-0)
Course Description: Work/research experience with an approved preceptor outside of a university laboratory.
Prerequisite: None.
Registration Information: Written consent of department required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 496A Honors: Human Gross Anatomy Credits: Var[1-3] (0-0-0)
Course Description: Honors breakout session for students in Human Gross Anatomy.
Prerequisite: BMS 301, may be taken concurrently or BMS 302, may be taken concurrently or BMS 360, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 496B Honors: Physiology Lab Credits: Var[1-3] (0-0-0)
Course Description: Honors breakout session for students in Physiology Lab.
Prerequisite: BMS 301, may be taken concurrently or BMS 302, may be taken concurrently or BMS 360, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 496C Honors: Physiology Case Studies Credits: Var[1-3] (0-0-0)
Course Description: Honors breakout session for students in Physiology Case Studies.
Prerequisite: BMS 301, may be taken concurrently or BMS 302, may be taken concurrently or BMS 360, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 496D Honors: Animal Gross Anatomy Credits: Var[1-3] (0-0-0)
Course Description: Honors breakout session for students in Animal Gross Anatomy.
Prerequisite: BMS 305, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 498 Research Credits: Var[1-3] (0-0-0)
Course Description: Faculty-directed research in biomedical sciences.
Prerequisite: BMS 300 or BMS 360.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 500 Mammalian Physiology I Credits: 4 (4-0-0)
Course Description: Cell physiology of nerve, skeletal, cardiac and smooth muscle with an emphasis on how cellular functions integrate into systems behavior.
Prerequisite: BMS 300 or BMS 360.
Registration Information: Credit not allowed for both BMS 500 and NB 501. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 501 Mammalian Physiology II Credits: 4 (4-0-0)
Course Description: Respiratory, renal, digestive, endocrine, metabolic, and reproductive function.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 503 Developmental Neurobiology Credits: 3 (3-0-0)
Also Offered As: NB 503.
Course Description: Molecular mechanisms involved in development of nervous system including differentiation, growth, pathfinding, and synaptogenesis.
Prerequisite: (BIO 100 to 481 or BZ 100 to 481 or LIFE 100 to 481) and (BC 100 to 481 and PH 100 to 481) and (MATH 141 or MATH 155 or MATH 160 to 161 or MATH 255 or MATH 261).
Registration Information: Credit not allowed for both BMS 503 and NB 503.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 505 Neuronal Circuits, Systems and Behavior Credits: 3 (3-0-0)
Also Offered As: NB 505.
Course Description: Anatomical and physiological organization of the nervous system.
Prerequisite: BMS 325 or BMS 500 or NB 501.
Registration Information: Credit not allowed for both BMS 505 or NB 505.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 521 Comparative Reproductive Physiology Credits: 3 (3-0-0)
Course Description: A comparative overview of reproduction in vertebrates (focusing on mammals) emphasizing both conserved and species-specific aspects of physiology.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 531 Domestic Animal Dissection Credits: 3 (0-9-0)
Course Description: Dissection of domestic animals.
Prerequisite: BMS 305.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BMS 540 Assisted Reproductive Technologies Lab I Credits: 3 (1-6-0)
Course Description: Principles and fundamental skills of assisted reproduction technologies, including sterile methods for collecting and culturing oocytes, in vitro fertilization and embryo culture.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Admission to the Master of Science in Biomedical Sciences, Plan B, Reproductive Technology Specialization. Must register for lecture and laboratory. Credit not allowed for both BMS 540 and BMS 580A2.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 541 Assisted Reproductive Technologies Lab II Credits: 3 (1-6-0)
Course Description: Principles and fundamental skills needed for assisted reproductive technologies, including advanced techniques for splitting, obtaining biopsies from and transferring embryos; as well as learning the latest industry techniques for collecting, staining, manipulating and labeling embryos.
Prerequisite: BMS 540.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Admission to the Master of Science in Biomedical Sciences, Plan B, Reproductive Technology Specialization. Must register for lecture and laboratory. Credit not allowed for both BMS 541 and BMS 580A3.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 545 Neuroanatomy Credits: 5 (3-4-0)
Course Description: Nervous system structure and function presented from a systems perspective; applied and comparative aspects are emphasized.
Prerequisite: None.
Registration Information: Written consent of instructor required. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BMS 575 Human Anatomy Dissection Credits: 4 (0-8-0)
Course Description: Regional approach to human gross anatomy through laboratory dissection of human cadaver.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

BMS 610A Managing a Career in Science: Survival Skills for Coursework (M.S.) Credit: 1 (1-0-0)
Course Description: Survival skills for professionals. How to succeed in science, including writing, teaching, speaking; finding the right job.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 610B Managing a Career in Research: Survival Skills for Research (M.S. and Ph.D.) Credit: 1 (1-0-0)
Course Description: Survival skills for professionals. How to succeed in science, including improving writing, teaching, speaking; finding the right job.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 619 Advanced Human Gross Anatomy Credits: 2 (0-0-2)
Course Description: Clinical application of human anatomy through case-based study.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 631 Mechanisms of Hormone Action Credits: 2 (2-0-0)
Course Description: Synthesis, secretion, and mechanisms of action of hormones.
Prerequisite: BMS 430 or BMS 501.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BMS 632 Metabolic Endocrinology Credits: 2 (2-0-0)
Course Description: Endocrine regulation of metabolic homeostasis; effects of exercise or pregnancy.
Prerequisite: BMS 631.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BMS 633 Domestic Animal Anatomy-Case Discussions Credits: 2 (0-0-2)
Course Description: Clinical case discussions utilized in advanced understanding of domestic animal anatomy and physiology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in BMS 531.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 640 Reproductive Physiology and Endocrinology Credits: 4 (4-0-0)
Course Description: Reproductive physiology and endocrinology of vertebrate animals.
Prerequisite: BMS 501.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BMS 642 Research Techniques for Gametes and Embryos Credit: 1 (0-3-0)
Course Description: Collection, storage, evaluation, in vitro manipulation, and replacement of sperm, oocytes, embryos, and other reproductive tissues.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Biomedical Sciences graduate program required.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 643 Applied Andrology Credits: 2 (1-3-0)
Course Description: The male side of reproduction including the development of the male reproductive tract, hormonal control of the tract and spermatogenesis, fundamentals of spermatogenesis and seminal plasma and the physiology of sperm. Current methods for collecting, analyzing, cryopreserving and preparing sperm for either artificial insemination or in vitro fertilization.
Prerequisite: BMS 300 or BMS 360 or BMS 409.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BMS 643 and BMS 680A2.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 692 Seminar-Classics in Neurosciences Credit: 1 (0-0-1)
Course Description: Review of classic papers in the neurosciences.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Biomedical Sciences graduate program required.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695A Independent Study: Developmental Anatomy Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695B Independent Study: Microscopic Anatomy Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695C Independent Study: Neuroanatomy Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695D Independent Study: Radiographic Anatomy Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695E Independent Study: Surgical Anatomy Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695F Independent Study: Gross Anatomy Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 696 Group Study-Neurosciences Credits: Var[1-3] (0-0-0)
Course Description: Current topics in neuroscience; how to evaluate scientific presentations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BMS 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 792A Seminar: Biomedical Sciences Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 792B Seminar: Neurophysiology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 792C Seminar: Reproductive Physiology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 795A Independent Study: Endocrinology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 795B Independent Study: Neurophysiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 795C Independent Study: Cell Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 795D Independent Study: Cardiopulmonary Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 795E Independent Study: Reproductive Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 796A Group Study: Topics in Neuroscience Credits: Var[1-4] (0-0-0)
Also Offered As: NB 796C.
Course Description: Faculty-directed exploration of areas of special interest in neuroscience.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. May not be taken concurrently with NB 796C.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 796B Group Study: Cardiopulmonary Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 796C Group Study: Reproductive Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Biotechnology-BTEC (BTEC)

Courses

BTEC 306 Bioprocess Engineering Credits: 4 (3-2-0)
Also Offered As: BIOM 306.
Course Description: Material, energy balances; fluid flow, heat exchange, mass transfer; application to operations in food, fermentation, other bioprocess industries.
Prerequisite: (CHEM 107 or CHEM 111) and (PH 121 or PH 141).
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BTEC 306 and BIOM 306.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BTEC 499 Biotechnology Thesis Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Twelve credits from biotechnology core. Approval of program coordinator.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Botany/Zoology-BZ (BZ)

Courses

BZ 100 Introduction to Biology Credits: 3 (0-0-3)
Course Description: Basic concepts in biology, including genetics, the human body, and interactions with their environment.
Prerequisite: None.
Registration Information: Offered as a telecourse only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 101 Humans and Other Animals (GT-SC2) Credits: 3 (3-0-0)
Course Description: Characteristics of animals, their evolution and diversity; humans considered as an animal.
Prerequisite: None.
Registration Information: Credit not allowed for students who have already taken BZ 110 or LIFE 102 or LIFE 103. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

BZ 104 Basic Concepts of Plant Life (GT-SC2) Credits: 3 (3-0-0)
Course Description: Broad concepts of biology with major emphasis on plant life.
Prerequisite: None.
Registration Information: For nonscience and physical science majors. Sections may be offered: Online. Credit not allowed for students who have already taken BZ 120 or LIFE 102 or LIFE 103.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

BZ 105 Basic Concepts of Plant Life Laboratory (GT-SC1) Credit: 1 (0-2-0)
Course Description: Laboratory exercises covering fundamental biological concepts related to plants and plant-like organisms.
Prerequisite: BZ 104, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

BZ 110 Principles of Animal Biology (GT-SC2) Credits: 3 (3-0-0)
Course Description: General features (body form, physiology, life history, ecology) and evolutionary relationships of major phyla of animals.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

BZ 111 Animal Biology Laboratory (GT-SC1) Credit: 1 (0-3-0)
Course Description: Laboratory exercises demonstrating major features of animal biology and major phyla of animals.
Prerequisite: BZ 110, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

BZ 120 Principles of Plant Biology (GT-SC1) Credits: 4 (3-3-0)
Course Description: Diversity of relationships of plants and their structural and functional characteristics.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

BZ 192 First Year Seminar–Biology/Zoology Credit: 1 (1-0-0)
Course Description: Introduction to the biological science and zoology majors through development of academic skills necessary for success within the sciences, exposure to academic resources, science career pathways, research, and relevant topics like globalization and diversity in science fields.
Prerequisite: None.
Registration Information: Freshman only. This is a partial semester course. Credit not allowed for both BZ 180A1 and BZ 192.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 212 Animal Biology-Invertebrates Credits: 4 (3-3-0)
Course Description: General biology of invertebrates; their characteristics, classification, and adaptations.
Prerequisite: LIFE 103 or BZ 110 and BZ 111.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 214 Animal Biology-Vertebrates Credits: 4 (3-3-0)
Course Description: General biology of vertebrates; their characteristics, classification, and adaptations.
Prerequisite: BZ 111 and BZ 110 or LIFE 103.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 220 Introduction to Evolution Credits: 3 (3-0-0)
Course Description: Fundamental concepts in evolutionary biology.
Prerequisite: BZ 110 or BZ 120 or LIFE 103.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 223 Plant Identification Credits: 3 (2-2-0)
Course Description: Relationships and identification of flowering plants.
Prerequisite: BZ 120 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 296 Group Study-Biology Credits: Var[1-3] (0-0-0)
Course Description: Faculty-directed group investigation of areas of special interest in biology.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 300 Animal Behavior Credits: 3 (3-0-0)
Course Description: Principles of ethology, behaviors of nonhuman animals emphasizing their adaptive significance and phylogenetic relationships.
Prerequisite: BZ 111 and BZ 110 or LIFE 103.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 310 Cell Biology Credits: 4 (3-3-0)
Course Description: Structure and function of cells emphasizing molecular mechanisms. Communication, metabolism, motility, genetics, growth, and reproduction.
Prerequisite: (BZ 110 or BZ 120 or LIFE 103) and (CHEM 113).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 311 Developmental Biology Credits: 4 (3-2-0)
Course Description: Developmental aspects of growth and differentiation stressed in higher plants and animals.
Prerequisite: BZ 310.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 325 Plant Systematics Credits: 4 (3-2-0)
Course Description: Principles and contemporary methods of classification of plants, and the application of modern phylogenetic theory in comparative biology.
Prerequisite: BZ 220.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 329 Herpetology Credits: 3 (2-2-0)
Course Description: Biology of amphibians and reptiles.
Prerequisite: BZ 110 and BZ 111 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 330 Mammalogy Credits: 3 (2-2-0)
Course Description: Evolution, classification, and biology of mammals; practice in identifying and preparing specimens.
Prerequisite: BZ 111 and BZ 110 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 331 Developmental Plant Anatomy Credits: 4 (2-4-0)
Course Description: Structure of plant cells, tissues, and organs as they develop.
Prerequisite: BZ 120 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 332 Introductory Phycology Credits: 4 (3-2-0)
Course Description: Evolution, diversity, ecology and global impact of algae.
Prerequisite: BZ 120 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 333 Introductory Mycology Credits: 4 (2-4-0)
Course Description: Groups of fungi including classification, structure, morphogenesis, phylogeny, and genetics and reproduction.
Prerequisite: BZ 120 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 335 Ornithology Credits: 3 (2-3-0)
Course Description: Biology of birds, especially behavior, ecology, and identification in the laboratory and field.
Prerequisite: BZ 111 and BZ 110 or LIFE 103.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 338 Comparative Morphology of Vascular Plants Credits: 4 (2-4-0)
Course Description: Origin, evolution, structure, and reproduction of the vascular plants, including comparative study of organs occurring in each group.
Prerequisite: BZ 120 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 340 Field Mammalogy Credits: 4 (1-6-0)
Course Description: An intensive field course that introduces field wildlife techniques through the lens of studying the evolutionary relationships, ecology, and conservation of Colorado mammals. Opportunities to learn about wildlife handling and study techniques and apply them in independent research projects. A significant portion of the course is spent in the field, primarily at the Semi-arid Grasslands Research Center northeast of Fort Collins.
Prerequisite: BZ 110 or LIFE 103.
Registration Information: Must register for lecture and laboratory. Required field trips. Credit not allowed for both BZ 340 and BZ 380A3.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 346 Population and Evolutionary Genetics Credits: 3 (3-0-0)
Course Description: Evolutionary theories and history; heredity mechanisms that are basis for variation, evolution, and biological communication between generations.
Prerequisite: (BZ 220) and (MATH 155) and (STAT 301 or STAT 307 or ERHS 307).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 348 Theory of Population and Evolutionary Ecology Credits: 4 (3-3-0)
Also Offered As: MATH 348.
Course Description: Principles and methods for building, analyzing, and interpreting mathematical models of ecological and evolutionary problems in biology.
Prerequisite: MATH 155 or MATH 160.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: BZ 348, BZ 548, MATH 348.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 349 Tropical Ecology and Evolution Credits: 3 (3-0-0)
Course Description: Broad introduction to terrestrial and aquatic tropical biodiversity and the ecological and evolutionary processes that generate and maintain it.
Prerequisite: BZ 220.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 350 Molecular and General Genetics Credits: 4 (3-0-1)
Course Description: Mendelian, molecular, and population genetics emphasizing the molecular basis of genetics.
Prerequisite: (BZ 110 or BZ 120 or LIFE 102) and (STAT 201, may be taken concurrently or STAT 301, may be taken concurrently or STAT 307, may be taken concurrently or ERHS 307, may be taken concurrently).
Registration Information: Must register for lecture and recitation. Primarily for students in biological sciences.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 353 Global Change Ecology, Impacts and Mitigation Credits: 3 (3-0-0)
Also Offered As: NR 353.
Course Description: Ecological impacts of human-induced global change, and the strategies that can/are being used to adapt to and mitigate these impacts.
Prerequisite: LIFE 320 or LIFE 220 or LAND 220.
Registration Information: Credit not allowed for both BZ 353 and NR 353.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 360 Bioinformatics and Genomics Credits: 3 (3-0-0)
Course Description: Genomics, bioinformatics, and basic computer programming for biologists.
Prerequisite: BZ 110 or BZ 120 or LIFE 102.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: 3.0 overall GPA; written consent of instructor; grade of A in course with which student assists. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 401 Comparative Animal Physiology Credits: 3 (3-0-0)
Course Description: Physiological mechanisms of digestion, metabolism, osmoregulation, excretion, circulation, and respiration in vertebrate and invertebrate animals.
Prerequisite: BZ 214.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 415 Marine Biology Credits: 4 (3-0-1)
Course Description: Marine organisms, habitats, and communities.
Prerequisite: LIFE 320.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 418 Ecology of Infectious Diseases Credits: 4 (3-0-1)
Course Description: Ecological perspectives of infectious disease outbreaks in wildlife and human populations.
Prerequisite: LIFE 320.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 420 Evolutionary Medicine Credits: 3 (3-0-0)
Course Description: Integration of evolutionary biology with behavior, genetics, and ecology to understand health and disease. Exploration of insights into medical research and practice (diagnosis and therapy) and human health from an evolutionary standpoint. Fundamentals of evolution, and the importance of evolutionary biology in understanding the ultimate and proximate causes of human disease. Engage in scientific discourse.
Prerequisite: BZ 110 and BZ 111 or LIFE 102.
Registration Information: Sophomore standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 424 Principles of Systematic Zoology Credits: 3 (3-0-0)
Also Offered As: BSPM 424.
Course Description: Principles and methods of classification, zoological nomenclature, taxonomic decisions regarding species and higher categories.
Prerequisite: BZ 111 and BZ 110 or LIFE 103.
Registration Information: Credit not allowed for both BZ 424 and BSPM 424.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 425 Molecular Ecology Credits: 3 (3-0-0)
Course Description: Introduction to molecular genetic markers for questions in ecology, evolution, behavior, and conservation.
Prerequisite: (BZ 220 and BZ 350) and (STAT 301 or STAT 307).
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 430 Animal Behavior and Conservation Credits: 3 (3-0-0)
Course Description: The interface between animal behavior and conservation biology, exploring how behavioral tools can be applied to conservation problems.
Prerequisite: (BZ 110 and BZ 111 or LIFE 103) and (BZ 300).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 433 Behavioral Genetics Credits: 4 (3-0-1)
Course Description: An integrative view of genetic basis of animal behavior, with emphasis on complex behaviors and societal implications of genetics research.
Prerequisite: BZ 310.
Registration Information: Must register for lecture and recitation. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 440 Plant Physiology Credits: 3 (3-0-0)
Course Description: Functions and activities of plants.
Prerequisite: BZ 120 or LIFE 103.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 441 Plant Physiology Laboratory Credits: 2 (0-2-1)
Course Description: Laboratory applications of plant physiology principles.
Prerequisite: BZ 440, may be taken concurrently.
Registration Information: Must register for laboratory and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 449A Study Abroad: Ecology/Conservation—Ecuadorian Biodiversity Credits: 4 (0-0-4)
Course Description: Winter (January) study abroad experience in Ecuador. First-hand exposure to the unparalleled biodiversity of Ecuador. Ecuador is an ideal location to learn about tropical biodiversity, because it houses an enormous diversity of tropical ecosystems in a relatively small geographic area, all of which are very accessible. Students will visit these ecosystems—including cloud forest, páramo, and lowland Amazonian rainforest.
Prerequisite: BZ 220.
Registration Information: Junior standing. Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 450 Plant Ecology Credits: 4 (3-2-0)
Course Description: Relation of plants to their environment.
Prerequisite: LIFE 103 or BZ 120.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 455 Human Heredity and Birth Defects Credits: 3 (3-0-0)
Course Description: Human heredity and its individual and social implications; causes of congenital defects.
Prerequisite: BZ 110 and BZ 111 or LIFE 103.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 460 Genome Evolution Credits: 4 (3-0-1)
Course Description: Evolution of DNA, RNA, and proteins; use of genomic data to infer evolutionary history and processes.
Prerequisite: BZ 220 and BZ 350.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 462 Parasitology and Vector Biology Credits: 5 (3-4-0)
Also Offered As: BSPM 462 and MIP 462.
Course Description: Protozoa, helminths, and insects and related anthropods of medical importance; systematics, epidemiology, host damage and control.
Prerequisite: (BZ 110 or LIFE 103) and (BZ 212 or LIFE 206 or MIP 302).
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: BZ 462, BSPM 462, MIP 462.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 466 Biological Basis of Animal Behavior Credits: 4 (3-2-0)
Course Description: An integrative view of mechanisms of animal behavior spanning genetics, neural systems, development, functional morphology, and evolution.
Prerequisite: (BMS 325 or BZ 310 or LIFE 210) and (STAT 301 or STAT 307).
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 471 Stream Biology and Ecology Credits: 3 (3-0-0)
Course Description: Biology and ecology of running waters.
Prerequisite: LIFE 320 or LAND 220 or LIFE 220.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 472 Stream Biology and Ecology Laboratory Credit: 1 (0-3-0)
Course Description: Field sampling and laboratory analysis of habitats, biota, and ecological relationships in running waters.
Prerequisite: BZ 471, may be taken concurrently.
Registration Information: Required field trips.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 474 Limnology Credits: 3 (2-2-0)
Also Offered As: ESS 474.
Course Description: Biology, chemistry, and physics of lakes including limnological methods.
Prerequisite: LAND 220 or LIFE 220 or LIFE 320.
Registration Information: Must register for lecture and laboratory. Required field trips. Credit not allowed for both BZ 474 and ESS 474.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 476 Genetics of Model Organisms Credits: 3 (3-0-0)
Also Offered As: BZ 576.
Course Description: Advanced topics in model genetic systems including molecular and developmental genetics.
Prerequisite: BZ 350 or LIFE 201A or LIFE 201B or SOCR 330.
Registration Information: Junior standing. Credit not allowed for both BZ 476 and BZ 576.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 479 Biology and Behavior of Dogs Credits: 3 (3-0-0)
Also Offered As: VS 479.
Course Description: Interactions of physiology, neurobiology, and genetics on behavior of domestic dogs, and how evolution and domestication influence behavioral traits.
Prerequisite: BZ 110 or LIFE 103.
Registration Information: Credit not allowed for both BZ 479 and VS 479. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 482A Study Abroad: Field Marine Biology Credits: 4 (0-0-4)
Course Description: Exposure to two of the most productive and biologically diverse marine areas in North America. Field sampling and exploration of marine ecosystems from levels of primary production to the top level predators. Students will learn a wide variety of hands on sampling techniques and data analyses with the goal of comparing the marine ecology of the Baja peninsula.
Prerequisite: BZ 415 and BZ 496.
Registration Information: Junior Standing. Written consent of instructor. Students to apply through Office of International Programs.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 482B Study Abroad: Field Course in Dolphin Behavior & Physiology Credits: 2 (0-0-2)
Course Description: This field program offers an 8–day research experience to Roatan, Honduras, where students will study animal behavior, animal physiology and conservation methods at the Roatan Institute for Marine Science (RIMS). Classroom lectures and discussions provide the framework to develop an understanding of the subject matter. Fieldwork allows students to develop the skills necessary to conduct preliminary research.
Prerequisite: BZ 110 and BZ 111 or BZ 120 or LIFE 102.
Registration Information: Sophomore standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 482C Study Abroad--Baja California Sur: Practices in Marine Ecology Credits: 3 (0-0-3)
Course Description: Practical experience in techniques used to observe marine ecosystems. Apply these techniques to three distinct ecosystems found in Baja California Sur: Tidal mangroves, pelagic open ocean systems, and coral reefs.
Prerequisite: LIFE 320.
Registration Information: Sophmore Standing. Written consent of instructor. Students apply through Office of International Programs.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 487 Internship Credits: Var[1-12] (0-0-0)
Course Description: Supervised work-related research experience in laboratory or field setting with consultation and approval of a regular faculty member.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 492A Seminar: Behavior Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 492B Seminar: Ecology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 492C Seminar: Genetics Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 492D Seminar: Ornithology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 492E Seminar: Herpetology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 492F Seminar: Evolution Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 492G Seminar: Departmental Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 7 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 496 Group Study—Biology Credits: Var[1-3] (0-0-0)
Course Description: Faculty-directed group investigation of areas of special interest in biology.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 498 Laboratory or Field Research Credits: Var[1-6] (0-0-0)
Course Description: Supervised laboratory or field research in biology, botany, or zoology.
Prerequisite: None.
Registration Information: Written consent of research mentor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 505 Cognitive Ecology Credits: 3 (3-0-0)
Course Description: The evolutionary ecology of mechanisms related to information processing and decision-making in animals.
Prerequisite: BZ 300.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 510 Zoophysiological Ecology Credits: 3 (3-0-0)
Course Description: Concepts, principles, and examples of adaptive physiological strategies used by animals.
Prerequisite: (BMS 300 or BMS 360 or BZ 401) and (LIFE 320 or LAND 220 or LIFE 220).
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 515 Physiological Ecology of Marine Vertebrates Credits: 3 (3-0-0)
Course Description: Physiological adaptations of vertebrates to different marine environments.
Prerequisite: (BZ 214 and BZ 330) and (BC 351 or BC 401 or BMS 300 or BZ 401).
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 520 Advanced Systematics Credits: 3 (3-0-0)
Also Offered As: BSPM 520.
Course Description: Theory and practice of modern systematics.
Prerequisite: BZ 325 or BZ 424 or BSPM 424.
Registration Information: Credit not allowed for both BZ 520 and BSPM 520.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 525 Advanced Conservation & Evolutionary Genomics Credits: 4 (3-0-1)
Course Description: Population genetic theory and application of genomic methods to conservation.
Prerequisite: (BZ 220 and BZ 350) and (STAT 301 or STAT 307).
Registration Information: Junior standing. Must register for lecture and recitation.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 526 Evolutionary Ecology Credits: 3 (3-0-0)
Also Offered As: BSPM 526.
Course Description: Adaptation to abiotic and biotic environments; how current ecological processes interact with evolutionary history.
Prerequisite: LIFE 320 or LAND 220 or LIFE 220.
Registration Information: Credit not allowed for both BZ 526 and BSPM 526.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 530 Ecological Plant Morphology Credits: 2 (2-0-0)
Course Description: Adaptive significance and evolution of plant form and structure.
Prerequisite: (BZ 220) and (LIFE 320 or BZ 450).
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 535 Behavioral Ecology Credits: 3 (3-0-0)
Course Description: Evolutionary and theoretical perspectives in animal behavior using examples from model empirical systems; emphasis on decision rules and social behavior.
Prerequisite: BZ 220.
Registration Information: Graduate standing. Written consent of instructor.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 537 Topics in Mycology Credits: 3 (2-2-0)
Course Description: Features common to all fungi; trends in structure, function, and behavior.
Prerequisite: BZ 333.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 540 Translocation in Plants Credits: 2 (2-0-0)
Course Description: Transport of sugars, organic and inorganic ions, water, and hormones across membranes and through vascular systems of plants.
Prerequisite: BZ 331 and BZ 440.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 544 Presenting Research in Biology Credits: 2 (2-0-0)
Course Description: Procedures for preparing and presenting results of biological research in scientific journals and at professional meetings.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BZ 548 Theory of Population and Evolutionary Ecology Credits: 4 (3-3-0)
Course Description: Principles and methods for building, analyzing, and interpreting mathematical models of ecological and evolutionary problems in biology; research module.
Prerequisite: MATH 155 or MATH 160.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: BZ 548, BZ 348, MATH 348.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 555 Reproductive Biology of Higher Plants Credits: 3 (3-0-0)
Course Description: Reproductive processes influencing evolution in higher plant groups.
Prerequisite: (BZ 310 or LIFE 210) and (BZ 350 or LIFE 201A or LIFE 201B or SOCR 330).
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 561 Landscape Ecology Credits: 3 (3-0-0)
Course Description: Concepts, methods, and models for examining spatial patterns and processes of natural and managed landscapes and their effects on ecological dynamics.
Prerequisite: (LIFE 320) and (STAT 301 or STAT 307).
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 565 Next Generation Sequencing Platform/Libraries Credit: 1 (0-2-0)
Also Offered As: MIP 565.
Course Description: Theoretical and experimental aspects of next generation sequencing experiments with a focus on the Illumina platform. Students will create and sequence metagenomic and 16S rDNA libraries from soil samples and unknown bacterial cultures.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Credit allowed for only one of the following: BZ 565, CM 581A2, or MIP 565.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 568 Sustaining River Ecosystems in Changing World Credits: 3 (3-0-0)
Also Offered As: FW 568.
Course Description: Applying the concepts and principles of freshwater ecosystem structure and function to develop a multidisciplinary and integrated understanding of the approaches and methods for restoring and sustainably managing these systems in the face of increasing human demands and rapid climate change.
Prerequisite: None.
Restriction: .
Registration Information: Senior standing. Credit allowed for only one of the following: BZ 568, BZ 680A2, FW 568, and FW 680A2.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 570 Molecular Aspects of Plant Development Credits: 3 (3-0-0)
Course Description: Various aspects of plant development at the molecular level.
Prerequisite: BC 463 or BZ 350 or MIP 450 or SOCR 330.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 572 Phytoremediation Credits: 3 (3-0-0)
Course Description: Environmental cleanup using plants.
Prerequisite: BZ 120 or LIFE 103.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 575 Molecular and Genomic Evolution Credits: 3 (3-0-0)
Also Offered As: BSPM 575.
Course Description: Molecular, biological mechanisms of evolutionary change: mutation; selection; gene expression/regulation; changes in whole-genome architecture.
Prerequisite: BZ 220 and BZ 350.
Registration Information: Credit not allowed for both BZ 575 and BSPM 575.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 576 Genetics of Model Organisms Credits: 4 (3-0-1)
Also Offered As: BZ 476.
Course Description: Advanced topics in model genetic systems including molecular and developmental genetics.
Prerequisite: BZ 350 or LIFE 201A or LIFE 201B or SOCR 330.
Registration Information: Junior standing. Credit not allowed for both BZ 576 and BZ 476.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 577 Computer Analysis in Population Genetics Credits: 2 (0-4-0)
Also Offered As: MIP 577.
Course Description: Computational and statistical techniques and practical exercises in discrete and quantitative genetics.
Prerequisite: BZ 578, may be taken concurrently or MIP 578, may be taken concurrently.
Registration Information: Credit not allowed for both BZ 577 and MIP 577.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 578 Genetics of Natural Populations Credits: 4 (3-0-1)
Also Offered As: MIP 578.
Course Description: Theoretical and empirical aspects of the genetics of natural populations; current molecular techniques and statistical analysis.
Prerequisite: (BZ 350 or LIFE 201A or LIFE 201B or SOCR 330) and (STAT 201 or STAT 301 or STAT 307 or ERHS 307).
Registration Information: Must register for lecture and recitation. Credit not allowed for both BZ 578 and MIP 578.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 584 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 587A Internship: General Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 587B Internship: Herbarium Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 594 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 642 Plant Metabolism Credits: 3 (3-0-0)
Course Description: Biosyntheses and transformations of important plant metabolites.
Prerequisite: BC 351 and BZ 440.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 670 Teaching Scientific Reasoning & Argumentation Credits: 3 (3-0-0)
Course Description: Nature of science (NoS), scientific reasoning, scientific argumentation, and instructional strategies develop science argumentation and communication skills in undergraduate courses. Creation of instructional materials for a teaching portfolio.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: BS or BA in natural sciences. Credit not allowed for both BZ 670 and BZ 680A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 692A Seminar: Behavior Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 692C Seminar: Ecology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 692D Seminar: Genetics Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 692E Seminar: Ornithology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 692G Seminar: Evolution Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 692H Seminar: Departmental Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 695 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 784 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 792 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 795 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Business-General-BUS (BUS)

Courses

BUS 100 Introduction to Business Credit: 1 (1-0-0)
Course Description: Overview of functional areas of business: accounting, finance, information systems, management, marketing, and international business.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 150 Business Computing Concepts and Applications Credits: 3 (3-0-0)
Course Description: System hardware, operating environments, and software applications.
Prerequisite: None.
Registration Information: Credit not allowed for both BUS 150 and CS 110. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 201 Foundations of Sustainable Enterprise Credit: 1 (1-0-0)
Course Description: Basics of sustainability in business and implications for business decision making.
Prerequisite: None.
Registration Information: This is a partial semester course. Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 205 Legal and Ethical Issues in Business Credits: 3 (3-0-0)
Course Description: Ethical, legal and regulatory issues in the U.S. business environment.
Prerequisite: None.
Registration Information: Credit not allowed for both BUS 205 and BUS 260. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 220 Ethics in Contemporary Organizations (GT-AH3) Credits: 3 (2-0-1)
Course Description: Examination and application of the ethical principles that are fundamental to managing a successful high-integrity business or organization.
Prerequisite: CO 150 or HONR 193.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Ways of Thinking (GT-AH3).

BUS 222 Interpersonal and Professional Skills Credits: 2 (2-0-0)
Course Description: Development of effective interpersonal leadership skills built on self-awareness, understanding of others, and life experiences.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 260 Social-Ethical-Regulatory Issues in Business Credits: 3 (3-0-0)
Course Description: Legal issues, business ethics, corporate responsibility, and the business interface within the U.S. regulatory and business environment.
Prerequisite: None.
Registration Information: Credit not allowed for both BUS 260 and BUS 205.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 300 Business Writing and Communication (GT-CO3) Credits: 3 (3-0-0)
Course Description: Advanced writing for business using recursive process and appropriate means given audience and message purpose. Preparation, presentation of reports.
Prerequisite: CO 150 or HONR 193.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Advanced Writing 2, Advanced Writing (GT-CO3).

BUS 350 Travel Abroad-International Comparative Management Credits: 3 (3-0-0)
Course Description: Travel tour of European business to compare and contrast their business strategies to those of U.S. firms.
Prerequisite: None.
Registration Information: Six credits of BUS courses.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 405A Contemporary Business Topics: Entrepreneurship Credits: 3 (3-0-0)
Course Description:
Prerequisite: FIN 305 and MKT 305 or FIN 305 and MGT 305 or MKT 305 and MGT 305.
Registration Information: For nonbusiness majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 405B Contemporary Business Topics: International Business Credits: 3 (3-0-0)
Course Description:
Prerequisite: FIN 305 and MGT 305 or FIN 305 and MKT 305 or MGT 305 and MKT 305.
Registration Information: For nonbusiness majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 405C Contemporary Business Topics: Business Information Management Credits: 3 (3-0-0)
Course Description:
Prerequisite: FIN 305 and MGT 305 or FIN 305 and MKT 305 or MGT 305 and MKT 305.
Registration Information: For nonbusiness majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 405D Contemporary Business Topics: Real Estate Credits: 3 (3-0-0)
Course Description: A broad study of real estate principles including brokerage, contracts, closings, land use, finance, market analysis, and valuation.
Prerequisite: FIN 305 and MGT 305 or FIN 305 and MKT 305 or MGT 305 and MKT 305.
Registration Information: For non-business majors only. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 479 Strategic Management Credits: 3 (3-0-0)
Course Description: An integration of various business subject areas in terms of top-level policy and decision making.
Prerequisite: (MGT 301) and (FIN 300 or FIN 305) and (MKT 300 or MKT 305) and (MGT 305 or MGT 320).
Registration Information: Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 482A Study Abroad: Japan Credits: 3 (0-0-3)
Course Description: Examination of business practices, culture and history of Japan.
Prerequisite: None.
Registration Information: Junior standing. Written consent of instructor. This is a partial semester course.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

BUS 482B Study Abroad--Ecuador: Community and Cultural Engagement Credits: 3 (0-0-3)
Course Description: Provides the opportunity to participate in a hands-on service-learning project while in Ecuador that focuses on a current social, health or economic issue. Engage with local businesses as well as community members to learn how Ecuadorian culture impacts business within Ecuador and internationally. Develop self and cultural awareness through experiential activities, dialogue, and reflection.
Prerequisite: BUS 496.
Restriction: Must be a: Undergraduate.
Registration Information: Business majors and minors only. Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 482C Study Abroad--Tanzania: Business and Cultural Engagement Credits: 3 (0-0-3)
Course Description: Provides the opportunity to participate in multiple hands-on service-learning projects while in Tanzania that focus on a current social, health or economic issue. Engage with local businesses as well as community members to learn how Tanzanian culture impacts business within Tanzania and internationally. Develop self and cultural awareness through experiential activities, dialogue, and reflection.
Prerequisite: BUS 496.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of instructor. Business majors and minors only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BUS 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BUS 500 Business Systems and Processes Credits: 2 (2-0-0)
Course Description: Introduction to core concepts from Business Process Management (BPM) and Operations Management (OM).
Prerequisite: None.
Registration Information: Bachelor's degree and a 3.0 GPA or higher. This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 501 Business Communication–Multicultural Audience Credits: 3 (3-0-0)
Course Description: Best practices for communicating in a professional business environment with multicultural audiences. Incorporating business scenarios, students will use technology and written communication in a clear, concise, and professional manner. Provides practical application based on real-world business challenges that require appropriate communication strategies for optimum resolution. Students present solutions to business problems based on credible research and analysis.
Prerequisite: None.
Registration Information: Graduate INTO Business Pathway students or written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 505 Legal and Ethical Environment of Business Credits: 3 (3-0-0)
Course Description: Legal and regulatory issues impacting business operation. Ethical and social responsibility concepts applied to business setting.
Prerequisite: None.
Registration Information: Admission to a master's program in Business required.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 510 Career Assessment and Development Credit: 1 (1-0-0)
Course Description: Identify career goals based on personal skills, interests and values and understand how to compete in the global job market.
Prerequisite: None.
Registration Information: Admission to a master's program in Business required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 515 Career Management Credit: 1 (1-0-0)
Course Description: Create and execute a personal marketing strategy for career change or advancement.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Admission to a master's program in Business required. This is a partial semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 601 Quantitative Business Analysis Credits: 2 (2-0-0)
Course Description: Uses and management of information; decision tools and concepts; quality control.
Prerequisite: BUS 500, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 604 Managerial Statistics Credits: 2 (2-0-0)
Also Offered As: STAT 604.
Course Description: Introduction to statistical thinking and methods used to support managerial decision making.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to MBA program required. Credit not allowed for both BUS 604 and STAT 604.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 614 Accounting Concepts Credits: 2 (2-0-0)
Course Description: Introduction to financial statements; key concepts underlying their development and interpretation.
Prerequisite: BUS 500, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 615 Managerial Accounting Credits: 2 (2-0-0)
Course Description: Use of accounting information for purposes of management decision-making, planning, and control.
Prerequisite: BUS 614.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 616 Financial Reporting and Analysis Credits: 2 (2-0-0)
Course Description: Tools and techniques for analysis of financial reports of public companies.
Prerequisite: BUS 614.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 620 Leadership and Teams Credits: 2 (2-0-0)
Course Description: Ethical leadership and team dynamics; basic models of motivation utilized by leaders.
Prerequisite: BUS 500, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 621 Strategic Decision Making Credits: 2 (2-0-0)
Course Description: Key decision concepts, processes, and tools that help managers formulate and implement competitive strategy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 625 Organizational Communication Credits: 2 (2-0-0)
Course Description: Improving understanding and application of managerial communication skills and negotiation tools and their implications for effective management.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 626 Managing Human Capital Credits: 2 (2-0-0)
Course Description: Management of human capital for competitive advantage and superior results.
Prerequisite: BUS 500, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 630 Information Management Credits: 2 (2-0-0)
Course Description: Role and value of information in business functions; risks and rewards of enterprise information; fundamentals of information storage and retrieval.
Prerequisite: (BUS 500) and (BUS 614).
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 631 Strategic Uses of Information Technology Credits: 2 (2-0-0)
Course Description: Strategic and tactical uses of information technology in the global business environment.
Prerequisite: BUS 630, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 635 Business Economics for the World Market Credits: 2 (2-0-0)
Course Description: Application of economic principles to current business problems within context of global marketplace.
Prerequisite: (BUS 601) and (BUS 614).
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 636 Economics of Ecosystems and Biodiversity Credits: 3 (3-0-0)
Course Description: Economic theories and analytical frameworks are developed and applied to the use, protection, and management of the natural environment.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Global Social and Sustainable Enterprise program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 640 Financial Principles and Practice Credits: 2 (2-0-0)
Course Description: Financial environment; tools and techniques of corporate financial decision making.
Prerequisite: (BUS 601) and (BUS 614).
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 641 Financial Markets and Investments Credits: 2 (2-0-0)
Course Description: Operating of financial markets, techniques for security valuation, and portfolio management.
Prerequisite: BUS 640, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 645 Enterprise Electronic Business Strategies Credits: 2 (2-0-0)
Course Description: Technology for electronic commerce, regulation and strategies for competitive usage.
Prerequisite: BUS 630.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 650 Supply Chain Management Credits: 2 (2-0-0)
Course Description: Value-driven supply chain principles, design and management of supply chains, and supply chain management software and applications.
Prerequisite: BUS 500, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 655 Marketing Management Credits: 2 (2-0-0)
Course Description: Examines processes of customer value creation (e.g. product development, communications, distribution) and value capture (e.g. pricing).
Prerequisite: BUS 500, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 656 Marketing Strategy and Planning Credits: 2 (2-0-0)
Course Description: Basic marketing strategy analysis, formulation, evaluation and implementation concepts and tools.
Prerequisite: BUS 655, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 660 Ethical, Legal, and Regulatory Issues Credits: 2 (2-0-0)
Course Description: Legal, regulatory, societal and ethical issues encountered by business professionals; analytical skills for making judgments.
Prerequisite: BUS 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 662 International Business Credits: 2 (2-0-0)
Course Description: Analyzing and addressing situations that arise when business transactions cross political, economic, or cultural boundaries. Underlying factors of international business that determine appropriate practices to increase the probability of success.
Prerequisite: BUS 635.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 665 MBA Capstone Credits: 4 (4-0-0)
Course Description: To integrate business disciplines through strategic thinking and experiential learning.
Prerequisite: BUS 641 and BUS 650 and BUS 656.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 686 Practicum Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BUS 687 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BUS 690A Contemporary Issues: Business Credits: Var[1-6] (0-0-0)
Course Description: Current issues in business, featuring business and community leaders.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master's program in Business required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BUS 690B Contemporary Issues: Grad Tutorials Credits: Var[1-6] (0-0-0)
Course Description: Current issues in business, featuring business and community leaders.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master's program in Business required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BUS 690C Contemporary Issues: Info Systems Credits: Var[1-6] (0-0-0)
Course Description: Current issues in business, featuring business and community leaders.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master's program in Business required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BUS 690D Contemporary Issues: Accounting Credits: Var[1-6] (0-0-0)
Course Description: Current issues in business, featuring business and community leaders.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master's program in Business required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BUS 690E Contemporary Issues: Global Enterprise Credits: Var[1-6] (0-0-0)
Course Description: Current issues in business, featuring business and community leaders.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master's program in Business required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BUS 690F Contemporary Issues: Finance Credits: Var[1-6] (0-0-0)
Course Description: Current issues in business, featuring business and community leaders.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master's program in Business required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BUS 690G Contemporary Issues: Government Credits: Var[1-6] (0-0-0)
Course Description: Current issues in business, featuring business and community leaders.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master's program in Business required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BUS 690H Contemporary Issues: Mgmt Practices Credits: Var[1-6] (0-0-0)
Course Description: Current issues in business, featuring business and community leaders.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master's program in Business required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BUS 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BUS 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional, Undergraduate.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BUS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Cell + Molecular Biology-CM (CM)

Courses

CM 501 Advanced Cell Biology Credits: 4 (4-0-0)
Course Description: Cell structure and organelle function.
Prerequisite: BZ 310.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CM 502 Techniques in Molecular & Cellular Biology Credits: 2 (1-3-0)
Also Offered As: NB 502.
Course Description: Current methods in molecular and cellular neurobiology.
Prerequisite: (BIO 100 to 481 - at least 4 credits or BZ 100 to 481 - at least 4 credits or LIFE 100 to 481 - at least 4 credits) and (BC 100 to 481 - at least 4 credits and PH 100 to 481 - at least 4 credits).
Registration Information: Written consent of instructor. Must register for lecture and laboratory. Credit not allowed for both CM 502 and NB 502.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CM 505 Nucleic Acids for Non-Life Scientists Credit: 1 (0-2-0)
Course Description: Basic molecular biology including nucleic acid structure, function and manipulation. Hands on experience in the common techniques used to quantify, quality control and manipulate nucleic acids with an emphasis on the polymerase chain reaction.
Prerequisite: None.
Registration Information: Written consent of instructor. This is a partial semester course. Credit not allowed for both CM 505 and CM 581A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CM 506 Protein Basics for NonBiologists Credit: 1 (1-0-0)
Course Description: Basic concepts of protein biochemistry and applications to biomedical research.
Prerequisite: None.
Registration Information: Senior standing. Written consent of instructor. This is a partial semester course. Credit not allowed for both CM 506 and CM 580A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CM 510 Introduction to Cell and Molecular Biology Credit: 1 (1-0-0)
Course Description: Overview of CMB program and research opportunities; enhances writing and oral communication skills.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CM 520 Proteolytic Regulation of Cellular Processes Credits: 3 (2-0-1)
Course Description: Functions of proteolytic pathways in the regulation of eukaryotic cellular processes, such as mitosis, apoptosis, signal transduction and gene regulation.
Prerequisite: CM 501.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CM 595 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CM 601 Responsible Conduct of Research in CMB Credit: 1 (0-0-1)
Course Description: Key aspects of responsible conduct of research and ethical considerations in cell and molecular biology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in the CMB graduate program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CM 640 Creative Science Writing Credits: 3 (3-0-0)
Course Description: Consideration of creative writing techniques and their relevance to traditional science/nature writing.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CM 666 Science and Ethics Credits: 3 (3-0-0)
Also Offered As: PHIL 666.
Course Description: Ethical issues of research on humans and animals; biosafety; fraud and deception in science; genetic engineering.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both CM 666 and PHIL 666.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CM 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CM 700 Critical Analysis of Scientific Literature Credit: 1 (0-0-1)
Course Description: Presentation and discussion of current literature of cell and molecular biology. Content varies each semester to include the major focus groups.
Prerequisite: BC 565 and CM 510.
Restriction: Must be a: Graduate, Professional.
Registration Information: May be repeated for a maximum of 4 credits.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CM 701D Topics in Cell and Molecular Biology: Radiation Cytogenetics Credit: 1 (1-0-0)
Course Description:
Prerequisite: (BC 403 and MATH 255) and (CM 501).
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CM 701I Topics in Cell and Molecular Biology: Planning Research and Grant Proposals Credits: 2 (2-0-0)
Course Description:
Prerequisite: (BC 403 and MATH 255) and (CM 501).
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CM 702B Methods in Cell and Molecular Biology: Mammalian Cell Culture Techniques Credit: 1 (0-3-0)
Course Description:
Prerequisite: (BC 403) and (CM 501).
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CM 702C Methods in Cell and Molecular Biology: Immunochemical Techniques Credit: 1 (0-3-0)
Course Description:
Prerequisite: (BC 403 and MATH 255) and (CM 501).
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CM 702D Methods in Cell and Molecular Biology: Radiation Cytogenetics Credit: 1 (0-3-0)
Course Description:
Prerequisite: (BC 403) and (CM 501).
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CM 710 Techniques in Molecular Biology and Genetics Credits: 3 (0-4-1)
Also Offered As: BSPM 710.
Course Description: Genetic manipulation of bacteria, bacteriophage, and yeast including experiments in molecular cloning and gene expression.
Prerequisite: BC 463 or BZ 346 or BZ 350 or MIP 450 or SOCR 330.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for laboratory and recitation. Credit not allowed for both CM 710 and BSPM 710.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CM 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CM 792 Cell and Molecular Biology Seminar Credit: 1 (0-0-1)
Course Description: Preparation and presentation of cell and molecular biology seminars.
Prerequisite: CM 501, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CM 793 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CM 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CM 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Chemical + Biological Engr-CBE (CBE)

Courses

CBE 101 Introduction to Chemical and Biological Engr Credits: 3 (2-2-0)
Course Description: Engineering design and problem solving; technical presentation skills; basic computer programming.
Prerequisite: CBE 160, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CBE 160 MATLAB for Chemical and Biological Eng Credit: 1 (0-2-0)
Course Description: Introduction to MATLAB programming for Chemical and Biological Engineering applications.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 201 Material and Energy Balances Credits: 3 (3-0-0)
Course Description: Principles of chemistry, physics, and mathematics applied to development of material and energy balances; illustration of concepts.
Prerequisite: (CBE 101 or CBE 160, may be taken concurrently or MATH 151, may be taken concurrently) and (LIFE 102, may be taken concurrently and CHEM 111 and PH 141, may be taken concurrently).
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 205 Fundamentals of Biological Engineering Credits: 3 (3-0-0)
Course Description: Introduction to the application of the principles of engineering and biology to the analysis, design, and optimization of bioprocesses.
Prerequisite: CBE 101 and CBE 160 and LIFE 102.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 210 Thermodynamic Process Analysis Credits: 3 (3-0-0)
Course Description: Thermodynamic fundamentals and applications to ideal and non-ideal mixtures, power cycles, and chemical equilibria.
Prerequisite: CBE 201 with a minimum grade of C and MATH 261, may be taken concurrently.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Traditional.
Special Course Fee: No.

CBE 310 Molecular Concepts and Applications Credits: 3 (3-0-0)
Course Description: Application of modern molecular theory to chemical and biological engineering problems in thermodynamics, chemical kinetics, and transport phenomena.
Prerequisite: (CBE 210 with a minimum grade of C) and (MATH 340).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 320 Chemical and Biological Reactor Design Credits: 3 (3-0-0)
Course Description: Mechanisms and rates of chemical reactions; design of homogeneous and heterogeneous reactors; biological reactions and reactors.
Prerequisite: CBE 205 with a minimum grade of C and CBE 310 with a minimum grade of C and CBE 330 with a minimum grade of C and CBE 332, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 330 Process Simulation Credits: 3 (3-0-0)
Course Description: Analysis of chemical and biological engineering problems by numerical simulation.
Prerequisite: (CBE 210 with a minimum grade of C) and (MATH 340).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 331 Momentum Transfer and Mechanical Separations Credits: 3 (3-0-0)
Course Description: Fluid properties; conservation equations; compressible and incompressible flow; pumping and metering; mixing; separation of fluid-solid mixtures.
Prerequisite: (CBE 210 with a minimum grade of C) and (MATH 340).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 332 Heat and Mass Transfer Fundamentals Credits: 3 (3-0-0)
Course Description: Thermal processes; steady and unsteady conduction; convective heat transfer; radiation; heat exchanger design; mass transfer by diffusion and convection.
Prerequisite: CBE 330 with a minimum grade of C and CBE 331 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 333 Chemical and Biological Engineering Lab I Credits: 2 (0-5-0)
Course Description: Laboratory experiments involving material balances, thermodynamics, and momentum and heat transfer. Data analysis; written and oral reports.
Prerequisite: CBE 332.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

CBE 406 Introduction to Transport Phenomena Credits: 3 (3-0-0)
Course Description: Fundamental treatment of momentum and mass transport processes; dimensional analysis for parameter identification and order of magnitude estimation.
Prerequisite: CBE 332.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 430 Process Control and Instrumentation Credits: 3 (3-0-0)
Course Description: Measurement and control of process variables; transient chemical and biological processes; feedback, feedforward, and computer control concepts.
Prerequisite: CBE 320 with a minimum grade of C and CBE 442 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 439 Environmental Engineering Chemical Concepts Credits: 3 (2-3-0)
Also Offered As: CIVE 439.
Course Description: Application of chemical principles to environmental engineering problems.
Prerequisite: CHEM 113 and MATH 340.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CBE 439 and CIVE 439.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 442 Separation Processes Credits: 4 (4-0-0)
Course Description: Analysis of chemical and biological separations based on thermodynamics, diffusion, and convective mass transfer; design of separations equipment.
Prerequisite: CBE 332 with a minimum grade of C.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 443 Chemical and Biological Engineering Lab II Credits: 2 (0-5-0)
Course Description: Laboratory experiments involving advanced chemical and biological engineering concepts. Data analysis; written and oral reports.
Prerequisite: CBE 442.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CBE 451 Chemical and Biological Engineering Design I Credits: 3 (3-0-0)
Course Description: Chemical and biological process synthesis and simulation; engineering economics principles.
Prerequisite: CBE 442, may be taken concurrently and CBE 320 with a minimum grade of C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 452 Chemical and Biological Engineering Design II Credits: 3 (2-2-0)
Course Description: Projects requiring students to design a chemical and/or biological process with cost estimation and constraint analysis; written and oral reports.
Prerequisite: CBE 442 with a minimum grade of C and CBE 451 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 493 Professional Development Seminar Credit: 1 (0-0-1)
Course Description: Topics in engineering professional development, including ethics, role of engineers in society, and life-long learning.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CBE 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CBE 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CBE 501 Chemical Engineering Thermodynamics Credits: 3 (3-0-0)
Course Description: Definition, correlation, and estimation of thermodynamic properties; nonideal chemical and physical equilibria.
Prerequisite: CBE 202 and MATH 340.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 502 Advanced Reactor Design Credits: 3 (3-0-0)
Course Description: Nonideal flow and tracers, reactions and diffusion, evaluation of complex kinetics, stability of reactors. Biochemical reactor examples.
Prerequisite: CBE 320 and CBE 332.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 503 Transport Phenomena Fundamentals Credits: 3 (3-0-0)
Course Description: General topics in transport phenomena; analytical and numerical solutions of laminar flows; perturbation techniques; coupled transport.
Prerequisite: CBE 406.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 504 Fundamentals of Biochemical Engineering Credits: 3 (3-0-0)
Also Offered As: BIOM 504.
Course Description: Application of chemical engineering principles to enzyme kinetics, fermentation and cell culture, product purification, and bioprocess design.
Prerequisite: (MIP 300) and (MATH 255 or MATH 340) and (BIOM 306, may be taken concurrently or BTEC 306, may be taken concurrently or CBE 320, may be taken concurrently).
Registration Information: Credit not allowed for both CBE 504 and BIOM 504.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 505 Biochemical Engineering Laboratory Credit: 1 (0-3-0)
Course Description: Fermentation technology, bioprocess control, and protein purification.
Prerequisite: CBE 504, may be taken concurrently.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

CBE 514 Polymer Science and Engineering Credits: 3 (3-0-0)
Course Description: Fundamentals of polymer science: synthesis, characterization, processing of polymers. Physical properties of polymers; rheology of melts and solutions.
Prerequisite: (CHEM 343 or CHEM 346) and (CBE 310 or CHEM 474).
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 521 Mathematical Modeling for Chemical Engineers Credits: 3 (3-0-0)
Course Description: Application of mathematical models to analysis and design of chemical reactors and separation processes.
Prerequisite: MATH 340.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 522 Bioseparation Processes Credits: 3 (2-2-0)
Also Offered As: BIOM 522.
Course Description: Analysis of processes to recover and purify fermentation products.
Prerequisite: CBE 331.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CBE 522 and BIOM 522.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 524 Bioremediation Credit: 1 (1-0-0)
Course Description: Use of biotechnology for site remediation. Biodegradation, bioreactor design, and in situ bioremediation.
Prerequisite: CBE 540 or CIVE 540.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 540 Advanced Biological Wastewater Processing Credits: 3 (3-0-0)
Also Offered As: CIVE 540.
Course Description: Fundamentals of environmental biotechnology: environmental microbiology, microbial kinetics, basic reactor design, wastewater treatment.
Prerequisite: CBE 320 or CIVE 438.
Registration Information: Sections may be offered: Online. Credit not allowed for both CBE 540 and CIVE 540.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 543 Membranes for Biotechnology and Biomedicine Credits: 3 (3-0-0)
Also Offered As: BIOM 543.
Course Description: Polymeric membrane formation, modification, module design and applications to bioseparation and biomedical separations and tissue engineering.
Prerequisite: CHEM 343 and CBE 310.
Registration Information: Credit not allowed for both CBE 543 and BIOM 543. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 570 Biomolecular Engineering/Synthetic Biology Credits: 3 (3-0-0)
Course Description: Rational design and evolutionary methods for engineering functional protein and nucleic acid systems.
Prerequisite: (BC 351) and (CHEM 341 or CHEM 345).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 613 Advanced Transport Phenomena Credits: 3 (3-0-0)
Course Description: Fundamental studies of multicomponent mass, energy, and momentum transport, with applications in advanced materials, biomedical and biochemical systems.
Prerequisite: (MATH 530) and (ATS 601 or CIVE 502 or CBE 503).
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 621 Advanced Process Control Credits: 3 (3-0-0)
Course Description: Application of modern control theory to chemical processes. Computer control aspects emphasized.
Prerequisite: CBE 430.
Restriction: Must be a: Graduate, Professional.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 660 System and Parameter Identification Credits: 3 (3-0-0)
Course Description: Principles and methods for selecting the most appropriate equations, and properties within those equations, to mathematically simulate physical phenomena.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 687 Internship Credits: Var[1-10] (0-0-0)
Course Description: Supervised work at an approved organization with periodic faculty evaluation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

CBE 693 Seminar I Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CBE 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CBE 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CBE 707 Advanced Topics in Biochemical Engineering Credit: 1 (1-0-0)
Course Description: Advanced biochemical engineering topics.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 793 Seminar II Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CBE 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CBE 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Chemistry-CHEM (CHEM)

Courses

CHEM 103 Chemistry in Context (GT-SC2) Credits: 3 (3-0-0)
Course Description: Chemistry, chemical principles from more conceptual, less mathematical perspective; how chemical substances, chemical reactions affect our daily lives.
Prerequisite: None.
Registration Information: For students who do not plan to take additional courses in chemistry. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

CHEM 104 Chemistry in Context Laboratory (GT-SC1) Credit: 1 (0-2-0)
Course Description: Laboratory applications of principles covered in CHEM 103.
Prerequisite: CHEM 103, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

CHEM 105 Problem Solving in General Chemistry Credits: 2 (1-0-1)
Course Description: Foundational problem-solving skills in general chemistry to support students for later success in general chemistry courses.
Prerequisite: MATH 118 or MATH 141 or MATH 155 or MATH 160 or MATH 161 or MATH 229 or MATH 261.
Registration Information: Placement out of MATH 118. This is a partial semester course. Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 107 Fundamentals of Chemistry (GT-SC2) Credits: 4 (4-0-0)
Course Description: Atomic/molecular theory, gases, liquids, solids, solutions, acid/base and oxidation/reduction reactions, kinetics, selected topics. Quantitative reasoning but with less focus on mathematical calculations than CHEM 111/CHEM 113.
Prerequisite: MATH 117 or MATH 141, may be taken concurrently or MATH 155, may be taken concurrently or MATH 160, may be taken concurrently or MATH 161, may be taken concurrently or MATH 229, may be taken concurrently or MATH 261, may be taken concurrently.
Registration Information: For students in science-related programs requiring one semester of general chemistry. Sections may be offered: Online. Credit allowed for only one of the following: CHEM 107, CHEM 111, or CHEM 117.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

CHEM 108 Fundamentals of Chemistry Laboratory (GT-SC1) Credit: 1 (0-2-0)
Course Description: Laboratory applications of principles presented in CHEM 107.
Prerequisite: CHEM 107, may be taken concurrently.
Registration Information: Credit not allowed for both CHEM 108 and CHEM 112.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

CHEM 111 General Chemistry I (GT-SC2) Credits: 4 (3-0-1)
Course Description: Fundamental aspects of chemistry and chemical principles; emphasis on structure, bonding, and stoichiometry.
Prerequisite: (MATH 118 or MATH 141 or MATH 155 or MATH 160 or MATH 161 or MATH 229 or MATH 261) and (CHEM 105).
Registration Information: CHEM 105 or an appropriate score in the chemistry preparation module. Must register for lecture and recitation. Intended for science majors. Students should complete the sequence CHEM 111, CHEM 112, CHEM 113, and CHEM 114. Credit allowed for only one of the following: CHEM 111, CHEM 107, or CHEM 117.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

CHEM 112 General Chemistry Lab I (GT-SC1) Credit: 1 (0-3-0)
Course Description: Laboratory applications of principles covered in CHEM 111.
Prerequisite: CHEM 111, may be taken concurrently or CHEM 117, may be taken concurrently.
Registration Information: Credit not allowed for both CHEM 112 and CHEM 108.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

CHEM 113 General Chemistry II Credits: 3 (3-0-0)
Course Description: Acid/base equilibria, kinetics, thermodynamics, solubility, oxidation-reduction reactions, electrochemistry, selected topics.
Prerequisite: (CHEM 107 or CHEM 111 or CHEM 117) and (MATH 124 or MATH 155, may be taken concurrently or MATH 160, may be taken concurrently or MATH 161, may be taken concurrently or MATH 229, may be taken concurrently or MATH 261, may be taken concurrently or MATH 141).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 114 General Chemistry Lab II Credit: 1 (0-3-0)
Course Description: Laboratory applications of principles covered in CHEM 113.
Prerequisite: (CHEM 108 or CHEM 112) and (CHEM 113, may be taken concurrently).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 115 General Chemistry II Recitation Credit: 1 (0-0-1)
Course Description: Problem solving applied to topics in, e.g., acid/base equilibria, kinetics, thermodynamics, solubility, oxidation-reduction reactions, electrochemistry.
Prerequisite: None.
Registration Information: Must have concurrent registration in CHEM 113.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 117 General Chemistry I for Chemistry Majors Credits: 3 (3-0-0)
Course Description: Fundamental aspects of chemistry and chemical principles, with an emphasis placed on atomic and molecular structure, bonding and stoichiometry.
Prerequisite: MATH 118 or MATH 141 or MATH 155 or MATH 160 or MATH 161 or MATH 229 or MATH 261.
Registration Information: Must have concurrent registration in CHEM 192. Credit allowed for only one of the following: CHEM 107, CHEM 111, or CHEM 117.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 120 Foundations of Modern Chemistry Credits: 4 (3-0-1)
Course Description: Fundamental aspects of chemistry and chemical principles, with an emphasis placed on modern atomic and molecular structure theory, structure and reactivity.
Prerequisite: MATH 118 or MATH 141 or MATH 155 or MATH 160 or MATH 161 or MATH 229 or MATH 261.
Registration Information: Chemistry majors only. Must register for lecture and recitation. Credit not allowed for CHEM 111 and CHEM 120.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 121 Foundations of Modern Chemistry Laboratory Credit: 1 (0-3-0)
Course Description: Laboratory applications of principles covered in CHEM 120.
Prerequisite: CHEM 120, may be taken concurrently.
Registration Information: Chemistry majors only. Credit not allowed for CHEM 112 and CHEM 121.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 192 Introductory Seminar in Chemistry Credit: 1 (0-0-1)
Course Description: Small-group discussions of aspects of chemistry.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 231 Foundations of Analytical Chemistry Credits: 3 (3-0-0)
Course Description: Fundamental chemical measurement science. Measuring chemical composition, either qualitative or quantitative, is essential to interact with the world and understand chemistry. Importance of equilibrium in making measurements.
Prerequisite: CHEM 111 and CHEM 112 or CHEM 120 and CHEM 121.
Registration Information: Chemistry majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 232 Foundations of Analytical Chemistry Lab Credits: 2 (0-6-0)
Course Description: Laboratory applications of principles of analytical chemistry.
Prerequisite: CHEM 114 or CHEM 231, may be taken concurrently.
Registration Information: Chemistry majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 241 Foundations of Organic Chemistry Credits: 4 (3-0-1)
Course Description: Nomenclature, structure, bonding, reactions, mechanisms, synthesis, and the stereochemistry of organic compounds.
Prerequisite: CHEM 111 and CHEM 113 or CHEM 120.
Registration Information: Chemistry majors only. Must register for lecture and recitation. Credit allowed for only one of the following: CHEM 241, CHEM 245, CHEM 341, or CHEM 345.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 242 Foundations of Organic Chemistry Laboratory Credit: 1 (0-3-0)
Course Description: Laboratory applications of organic chemistry principles.
Prerequisite: CHEM 241, may be taken concurrently.
Registration Information: Chemistry majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 245 Fundamentals of Organic Chemistry Credits: 4 (4-0-0)
Course Description: Nomenclature, structure, bonding, reactions, mechanisms, synthesis, stereochemistry of organic compounds.
Prerequisite: CHEM 107 or CHEM 113.
Registration Information: Intended for students in science-related programs requiring one semester of organic chemistry. Credit allowed for only one of the following: CHEM 245, CHEM 341, and CHEM 345. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 246 Fundamentals of Organic Chemistry Laboratory Credit: 1 (0-2-0)
Course Description: Laboratory applications of principles presented in CHEM 245.
Prerequisite: (CHEM 108 or CHEM 112 or CHEM 114) and (CHEM 245, may be taken concurrently).
Registration Information: Credit not allowed for students who have already taken CHEM 344.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 261 Fundamentals of Inorganic Chemistry Credits: 3 (3-0-0)
Course Description: Preparation, structures, properties, and reactions of chemical elements and inorganic compounds; periodic trends, organizing principles; applications.
Prerequisite: CHEM 113, may be taken concurrently.
Registration Information: Credit not allowed for both CHEM 261 and CHEM 263.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 263 Foundations of Inorganic Chemistry Credits: 4 (3-0-1)
Course Description: Preparation, structures, properties, and reactions of chemical elements and inorganic compounds; periodic trends, organizing principles; applications.
Prerequisite: CHEM 111 and CHEM 112 or CHEM 120 and CHEM 121.
Registration Information: Must have concurrent registration in CHEM 264. Must register for lecture and recitation. Chemistry majors only. Credit not allowed for both CHEM 261 and CHEM 263.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 264 Foundations of Inorganic Chemistry Laboratory Credit: 1 (0-3-0)
Course Description: Synthetic techniques and instrumental methods in inorganic chemistry.
Prerequisite: CHEM 111 and CHEM 112 or CHEM 120 and CHEM 121.
Registration Information: Must have concurrent registration in CHEM 263. Chemistry majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 301 Advanced Scientific Writing--Chemistry (GT-CO3) Credits: 3 (1-4-0)
Course Description: Advanced scientific writing using the read-analyze-write approach and scientific poster preparation and presentation.
Prerequisite: (CO 150) and (CHEM 334 or CHEM 345).
Registration Information: CHEM 334 or CHEM 345 or a 300-level science laboratory course with written approval of instructor; CO 150. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Advanced Writing 2, Advanced Writing (GT-CO3).

CHEM 311 Introduction to Nanoscale Science Credits: 3 (3-0-0)
Course Description: Synthesis, characterization, and applications of nanoscale materials.
Prerequisite: (CHEM 113) and (CHEM 346 or CHEM 343).
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 320 Chemistry of Addictions Credits: 3 (3-0-0)
Course Description: Chemical processes of addiction; receptor binding, molecular deactivation, and feedback in the context of protein-substrate molecular interactions.
Prerequisite: CHEM 103 or CHEM 107 or CHEM 111.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 334 Quantitative Analysis Laboratory Credit: 1 (0-3-0)
Course Description: Laboratory applications of principles presented in CHEM 335.
Prerequisite: CHEM 114 and CHEM 335, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 335 Introduction to Analytical Chemistry Credits: 3 (3-0-0)
Course Description: Modern and classical applications and methods in analytical chemistry including statistical, kinetic, spectroscopic, and chromatographic analysis.
Prerequisite: CHEM 113 with a minimum grade of C and CHEM 334, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 338 Environmental Chemistry Credits: 3 (3-0-0)
Course Description: Processes that control the fate of chemicals in the environment. Focus on the chemistry of the atmosphere, hydrosphere, and soils, especially as it pertains to pollution of these environmental compartments. Topics covered in the course may include smog and air pollution, ocean acidification, acid mine drainage, pesticide chemistry, and heavy metal contamination.
Prerequisite: (CHEM 113) and (CHEM 245 or CHEM 341 or CHEM 345).
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 341 Modern Organic Chemistry I Credits: 3 (3-0-0)
Course Description: Structures, nomenclature, dynamics, spectroscopy, and reactions of organic molecules.
Prerequisite: CHEM 113.
Registration Information: Credit allowed for only one of the following: CHEM 341, CHEM 245, and CHEM 345.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 343 Modern Organic Chemistry II Credits: 3 (3-0-0)
Course Description: Continued studies of reactions and mechanisms of organic molecules and biological chemistry.
Prerequisite: CHEM 245 or CHEM 341 or CHEM 345.
Registration Information: Credit not allowed for both CHEM 343 and CHEM 346.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 344 Modern Organic Chemistry Laboratory Credits: 2 (0-6-0)
Course Description: Laboratory applications of modern organic chemistry.
Prerequisite: CHEM 114 and CHEM 343, may be taken concurrently.
Registration Information: Intended for science majors. Credit not allowed for both CHEM 344 and CHEM 246.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 345 Organic Chemistry I Credits: 4 (3-3-0)
Course Description: Structure, nomenclature, dynamics, spectroscopy, reactions of organic molecules. Laboratory applications of principles presented in lecture.
Prerequisite: CHEM 113 and CHEM 114.
Registration Information: Chemistry majors only. Must register for lecture and laboratory. Students should plan to complete the sequence CHEM 345, CHEM 346. Credit allowed for only one of the following: CHEM 245, CHEM 341, and CHEM 345.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 346 Organic Chemistry II Credits: 4 (3-3-0)
Course Description: Continue studies of reactions and mechanisms of organic molecules. Laboratory applications of principles presented in lecture.
Prerequisite: CHEM 345.
Registration Information: Chemistry majors only. Must register for lecture and laboratory. Students should plan to complete the sequence CHEM 345 and CHEM 346. Credit not allowed for both CHEM 343 and CHEM 346.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 384 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: CHEM 100 to 499 - at least 20 credits.
Registration Information: Written consent of department chair. Maximum of 12 credits for any combination of CHEM 384, CHEM 487, CHEM 495, CHEM 498. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 431 Instrumental Analysis Credits: 4 (3-3-0)
Course Description: Instrumental methods of chemical analysis.
Prerequisite: (CHEM 334) and (CBE 310, may be taken concurrently or CHEM 473, may be taken concurrently or CHEM 474, may be taken concurrently).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 433 Clinical Chemistry Credits: 3 (2-3-0)
Course Description: Principles and methodology of clinical chemistry. Laboratory experience in methodology and method development.
Prerequisite: (CHEM 334) and (BC 351 or BC 401).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 440 Advanced Organic Chemistry Laboratory Credits: 2 (0-6-0)
Course Description: Advanced techniques in organic synthesis, mechanisms of reactions, structure determination.
Prerequisite: CHEM 344 or CHEM 346.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 445 Synthetic Organic Chemistry Credits: 3 (3-0-0)
Course Description: Functional group interconversions, carbonyl chemistry, alkene synthesis, pericyclic reactions, metal-mediated reactions, synthetic planning and retrosynthesis, stereocontrolled reactions.
Prerequisite: CHEM 241 or CHEM 343 or CHEM 346.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 461 Inorganic Chemistry Credits: 3 (3-0-0)
Course Description: Concepts, models to explain structural, spectroscopic, magnetic, thermodynamic, and kinetic properties of inorganic compounds; symmetry, group theory.
Prerequisite: (CHEM 261) and (CBE 310 or CHEM 474).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 462 Inorganic Chemistry Laboratory Credits: 2 (0-6-0)
Course Description: Synthetic techniques and instrumental methods in inorganic chemistry.
Prerequisite: CHEM 461, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 473 Foundations of Physical Chemistry Credits: 4 (4-0-0)
Course Description: Quantum chemistry; molecular structure and spectroscopy; equilibrium thermodynamics; kinetics.
Prerequisite: (CHEM 113) and (MATH 161 or MATH 255 or MATH 271) and (PH 122 or PH 142).
Registration Information: Credit allowed for only one of the following CHEM 371, CHEM 473, or CHEM 474.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 474 Physical Chemistry I Credits: 3 (3-0-0)
Course Description: Quantum chemistry; applications to bonding, molecular structure, and spectroscopy.
Prerequisite: (CHEM 113) and (MATH 261 or MATH 272) and (PH 142).
Registration Information: Credit allowed for only one of the following CHEM 371, CHEM 473, or CHEM 474.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 475 Physical Chemistry Laboratory I Credit: 1 (0-3-0)
Course Description: Physiochemical experiments; emphasis on quantum mechanics/spectroscopy; interpretation/presentation of data; formal lab reports.
Prerequisite: (CBE 310, may be taken concurrently or CHEM 473, may be taken concurrently or CHEM 474, may be taken concurrently) and (CHEM 334).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 476 Physical Chemistry II Credits: 3 (3-0-0)
Course Description: Statistical thermodynamics; applications to phase and chemical equilibria; kinetics.
Prerequisite: CHEM 474.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 477 Physical Chemistry Laboratory II Credit: 1 (0-3-0)
Course Description: Physiochemical experiments; emphasis on thermodynamics/statistical mechanics/kinetics; interpretation/presentation of data; formal lab reports.
Prerequisite: CHEM 475.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 487 Internship Credits: Var[1-12] (0-0-0)
Course Description: Supervised work experience in approved off-campus chemical laboratory setting. Consultation with faculty adviser/instructor.
Prerequisite: CHEM 476.
Registration Information: Maximum of 12 credits allowed for any combination of CHEM 384, CHEM 487, CHEM 495, and CHEM 498.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 493 Seminar Credits: 2 (0-0-2)
Course Description: Critical analysis of selected literature; develop presentation of technical topic; required oral presentation.
Prerequisite: CHEM 473 or CHEM 474.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description: Satisfactory completion of course requires a written report, an oral presentation at a research group meeting, or a poster presentation.
Prerequisite: CHEM 100 to 499 - at least 9 credits.
Registration Information: Written consent of laboratory mentor and department chair. Maximum of 12 credits for any combination of CHEM 384, CHEM 487, CHEM 495, and CHEM 498.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 498 Research Credits: Var[1-3] (0-0-0)
Course Description: Supervised laboratory research in chemistry; written report consistent with ACS guidelines required.
Prerequisite: CHEM 100 to 499 - at least 20 credits.
Registration Information: Written consent of research mentor and department chair. Maximum of 12 credits for any combination of CHEM 384, CHEM 487, CHEM 495, and CHEM 498.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 499 Senior Thesis Credits: 2 (0-0-2)
Course Description: Preparation of a written thesis and an oral defense, based upon undergraduate research performed or an internship experience, under the guidance of a thesis advisor and thesis committee.
Prerequisite: CHEM 487 or CHEM 498.
Registration Information: Senior standing. Written consent of department chair.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 511 Solid State Chemistry Credits: 3 (3-0-0)
Course Description: Physical and descriptive chemistry of solids including characterization and synthetic methods.
Prerequisite: CHEM 461 and CHEM 476.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 515 Polymer Chemistry Credits: 3 (3-0-0)
Course Description: Fundamentals of polymer chemistry: synthesis, characterization, physical properties.
Prerequisite: CHEM 346 and CHEM 476.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 517 Chemistry of Electronic Materials Credits: 3 (3-0-0)
Course Description: Chemical aspects of preparation and processing of materials in electronic devices, "molecular electronics," and nanostructured materials.
Prerequisite: CHEM 571A, may be taken concurrently or CHEM 571B, may be taken concurrently.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 521 Principles of Chemical Biology Credits: 3 (3-0-0)
Also Offered As: BC 521.
Course Description: Principles of chemical biology. Chemical methods for understanding and controlling the structure and function of biopolymers.
Prerequisite: CHEM 245 or CHEM 343 or CHEM 346.
Registration Information: Credit not allowed for both CHEM 521 and BC 521.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 522 Methods of Chemical Biology Credits: 2 (2-0-0)
Course Description: Approaches to quantitative chemical biology, visualization, study and characterization of macromolecules and macromolecular-dependent processes.
Prerequisite: BC 351 with a minimum grade of B or BC 401 with a minimum grade of B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 530A Advanced Topics in Chemical Analysis: Environmental Chemical Analysis Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 431, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 530B Advanced Topics in Chemical Analysis: Absorption and Emission Spectroscopy Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 431, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 530C Advanced Topics in Chemical Analysis: Bioanalytical Chemistry Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 431, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 530D Advanced Topics in Chemical Analysis: Statistical Analysis in Analytical Chemistry Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 431, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 530E Advanced Topics in Chemical Analysis: Mass Spectrometry Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 431, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 530F Advanced Topics in Chemical Analysis: Analysis of Materials Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 431, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 532 Advanced Chemical Analysis II Credits: 3 (3-0-0)
Course Description: Advanced optics; instrumentation and methodology for analytical spectroscopy; computer applications.
Prerequisite: CHEM 431.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 533 Chemical Separations Credits: 3 (3-0-0)
Course Description: Fundamentals and applications of chemical separations.
Prerequisite: CHEM 335 and CHEM 431.
Terms Offered: Fall, Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 537 Electrochemical Methods Credits: 3 (3-0-0)
Course Description: Theory and methods of electrochemistry; applications of modern electrochemical techniques.
Prerequisite: CHEM 431.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 539A Principles of NMR and MRI: Basic NMR Principles Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 474.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 539B Principles of NMR and MRI: NMR Diffusion Measurements-2D NMR and MRI Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 474.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 539C Principles of NMR and MRI: Advanced NMR and MRI Techniques Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 474.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 541 Organic Molecular Structure Determination Credits: 2 (2-0-0)
Course Description: Determination of organic molecular structure by spectroscopic methods.
Prerequisite: CHEM 440.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 543 Structure/Mechanisms in Organic Chemistry Credits: 2 (2-0-0)
Course Description: Structure including stereochemistry and conformational isomerism; reactivity and mechanisms in organic chemistry.
Prerequisite: CHEM 343 or CHEM 346.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 545 Synthetic Organic Chemistry I Credits: 3 (3-0-0)
Course Description: Reactions and synthesis in organic chemistry.
Prerequisite: CHEM 543.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 547 Physical Organic Chemistry Credits: 3 (3-0-0)
Course Description: Mechanisms, theory, kinetics, and thermodynamics.
Prerequisite: CHEM 543.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 548 Organometallics in Synthesis Credits: 2 (2-0-0)
Course Description: Fundamental aspects of organometallic chemistry applied to organic synthesis.
Prerequisite: CHEM 545.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 549 Synthetic Organic Chemistry II Credits: 2 (2-0-0)
Course Description: Strategies for the total synthesis of natural products.
Prerequisite: CHEM 545.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 550A Materials Chemistry: Hard Materials Credit: 1 (1-0-0)
Course Description: Structure and bonding; crystallography; properties; synthesis; characterization of metals, semiconductors, and network solids.
Prerequisite: (CHEM 343 or CHEM 346) and (CHEM 461 and CHEM 476).
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 550B Materials Chemistry: Soft Materials Credit: 1 (1-0-0)
Course Description: Structure and bonding, mechanisms, properties, applications, synthesis, characterization of polymers, complex fluids, and biomaterials.
Prerequisite: (CHEM 343 or CHEM 346) and (CHEM 461 and CHEM 476).
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 550C Materials Chemistry: Nanomaterials Credit: 1 (1-0-0)
Course Description: Structure and bonding, synthesis, properties, characterization of carbon nanotubes, metal and semiconductor nanocrystals, and nanocomposites.
Prerequisite: (CHEM 343 or CHEM 346) and (CHEM 461 and CHEM 476).
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 551 Catalytic Chemistry Credits: 3 (3-0-0)
Course Description: Fundamental aspects of catalytic chemistry applied to homogeneous and heterogeneous systems utilizing molecular catalysts as well as nano and supported catalytic materials.
Prerequisite: (CHEM 343 or CHEM 346) and (CHEM 461 and CHEM 476).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 555 Chemistry of Sustainability Credits: 3 (3-0-0)
Course Description: The central role of chemistry for achieving sustainability in key areas including chemicals and materials, energy, and environment.
Prerequisite: (BC 411 or CBE 310 or CHEM 476) and (CHEM 343 or CHEM 346).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 560 Foundations of Inorganic Synthesis Credit: 1 (1-0-0)
Course Description: Preparation for advanced studies in metal-mediated chemistry; essential aspects of inorganic structure, thermodynamics and reactivity
Prerequisite: CHEM 461.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 561 Inorganic Synthesis Credits: 2 (2-0-0)
Course Description: Chemistry of compounds of representative elements and transition metals.
Prerequisite: CHEM 560, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 563A Physical Methods in Inorganic Chemistry: Group Theory Credit: 1 (1-0-0)
Course Description: Modern experimental methods in inorganic chemistry.
Prerequisite: CHEM 461.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 563B Physical Methods in Inorganic Chemistry: Vibrational Spectroscopy Credit: 1 (1-0-0)
Course Description: Modern experimental methods in inorganic chemistry.
Prerequisite: CHEM 461.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 563C Physical Methods in Inorganic Chemistry: Electronic Structure and Magnetism Credit: 1 (1-0-0)
Course Description: Modern experimental methods in inorganic chemistry.
Prerequisite: CHEM 461.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 563D Physical Methods in Inorganic Chemistry: Magnetic Spectroscopies Credit: 1 (1-0-0)
Course Description: Modern experimental methods in inorganic chemistry.
Prerequisite: CHEM 461.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 563E Physical Methods in Inorganic Chemistry: Advanced Nuclear Magnetic Resonance Spectroscopy Credit: 1 (1-0-0)
Course Description: Modern experimental methods in inorganic chemistry.
Prerequisite: CHEM 461.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 563F Physical Methods in Inorganic Chemistry: Other Structural Methods Credit: 1 (1-0-0)
Course Description: Modern experimental methods in inorganic chemistry.
Prerequisite: CHEM 461.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 565 Inorganic Mechanisms Credits: 3 (3-0-0)
Course Description: Fundamental tools, key principles, selected classic case histories of inorganic and organometallic mechanistic chemistry, emphasizing kinetic methods.
Prerequisite: CHEM 476.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 566 Bioinorganic Chemistry Credits: 3 (3-0-0)
Course Description: Biological-inorganic chemistry, including key principles, prototype systems, classic papers, and problems.
Prerequisite: CHEM 461.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 567 Crystallographic Computation Credit: 1 (1-0-0)
Course Description: Theory and practice of structural computations using single crystal X-ray diffraction data.
Prerequisite: CHEM 474 with a minimum grade of C-.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 569 Chemical Crystallography Credits: 3 (3-0-0)
Course Description: Theory and practice of determination of crystal and molecular structure by single crystal X-ray and neutron diffraction.
Prerequisite: CHEM 474.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 570 Chemical Bonding Credits: 3 (3-0-0)
Course Description: Electronic structure methods; chemical bonding models; intermolecular interactions.
Prerequisite: CBE 310 or CHEM 474.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 571A Quantum Chemistry: Foundations Credits: 2 (2-0-0)
Course Description: Simple systems; symmetry; approximate methods; time dependent methods; molecular structures.
Prerequisite: CBE 310 or CHEM 474.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 571B Quantum Chemistry: Electronic Structure Credit: 1 (1-0-0)
Course Description: Simple systems; symmetry; approximate methods; time dependent methods; molecular structures.
Prerequisite: CHEM 571A, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 573A Chemical Spectroscopy: Interactions of Light and Matter Credit: 1 (1-0-0)
Course Description: Introduction to the fundamentals of spectroscopies used in chemical analysis from the perspective of time dependent quantum mechanics. Time-dependent perturbation theory, absorption and emission of radiation, two-level systems, and electronic, vibrational and rotational transitions.
Prerequisite: CHEM 571A.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 573B Chemical Spectroscopy: Electromagnetic Fields in Practice Credit: 1 (1-0-0)
Course Description: Foundation in electromagnetic fields used in chemical spectroscopy. Dispersion and phase, the measurement of electromagnetic fields, properties of short optical pulses, and modulating electromagnetic fields.
Prerequisite: CHEM 431.
Registration Information: This is a partial semester course.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 573C Chemical Spectroscopy: Condensed Phase Spectroscopy Credits: 2 (2-0-0)
Course Description: Foundations of spectroscopic measurements conducted on condensed phase chemical systems. Use of quantum mechanics and statistical mechanics to describe Response Theory, density matrix formalism, correlation functions, line shapes and spectral fluctuations, response functions, and the use of polarization in spectroscopy.
Prerequisite: CHEM 571A and CHEM 576.
Registration Information: This is a partial semester course.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 573D Chemical Spectroscopy: Nonlinear Spectroscopy Credit: 1 (1-0-0)
Course Description: Foundations of multidimensional spectroscopic measurements conducted on chemical systems.
Prerequisite: CHEM 573A and CHEM 573C.
Registration Information: This is a partial semester course.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 573E Chemical Spectroscopy: Spectroscopic Instrumentation Credit: 1 (1-0-0)
Course Description: Instrumentation used to carry out spectroscopic measurements in chemistry research. Lasers and other light sources, optics, and detectors, spectroscopic techniques, and electronic and digital interfacing specific to spectroscopic instrumentation.
Prerequisite: CHEM 431.
Registration Information: This is a partial semester course.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 573F Chemical Spectroscopy: Computational Spectroscopy Credit: 1 (1-0-0)
Course Description: Theory and computational techniques to compute and analyze molecular spectra, including aspects of quantum mechanics and statistical mechanics. Emphasis on implementation and computation of molecular spectra.
Prerequisite: CHEM 571A and CHEM 571B and CHEM 575 and CHEM 576.
Registration Information: This is a partial semester course.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 575 Fundamentals of Chemical Thermodynamics Credit: 1 (1-0-0)
Course Description: Fundamental thermodynamic concepts and some applications to chemical problems.
Prerequisite: CBE 310 or CHEM 476 or PH 361.
Registration Information: This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 576 Statistical Mechanics Credits: 2 (2-0-0)
Course Description: Principles of statistical mechanics with applications to chemical systems.
Prerequisite: CHEM 575, may be taken concurrently.
Registration Information: This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 577 Surface Chemistry Credits: 3 (3-0-0)
Course Description: Capillarity; interfacial thermodynamics, electrical aspects of surface chemistry, absorbed layers.
Prerequisite: CBE 310 or CHEM 476.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 578A Computational Chemistry: Electronic Structure Credit: 1 (1-0-0)
Course Description: Electronic structure calculations of energetic and structural properties of molecules and chemical reactions.
Prerequisite: CHEM 571A and CHEM 571B.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 578B Computational Chemistry: Molecular Dynamics Credit: 1 (1-0-0)
Course Description: Molecular Dynamics simulations of liquids to compute static and time dependent properties. Applications include biological and materials chemistry.
Prerequisite: CHEM 576.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 579 Chemical Kinetics Credits: 3 (3-0-0)
Course Description: Elementary reactions, unimolecular reactions, reactions in solution, gas phase ion chemistry, photochemistry, and kinetic modeling.
Prerequisite: CBE 310 or CHEM 476.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 601 Responsible Conduct in Chemistry Research Credit: 1 (1-0-0)
Course Description: Appropriate conduct in research, publishing, intellectual property decisions, job hunting, and negotiating; social responsibilities of scientists.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 641 Organic Reaction Mechanisms Credits: 2 (2-0-0)
Course Description: Organic reaction mechanisms, including using arrows to show electron movement; heterolytic, radical, and pericyclic reactions.
Prerequisite: CHEM 545.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 651A Special Topics in Chemistry: Analytical Chemistry Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 651B Special Topics in Chemistry: Inorganic Chemistry Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 651C Special Topics in Chemistry: Organic Chemistry Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 651D Special Topics in Chemistry: Physical Chemistry Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 651E Special Topics in Chemistry: Materials Chemistry Credits: Var[1-4] (0-0-0)
Course Description: Discussion of current topics in materials chemistry.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 651F Special Topics in Chemistry: Chemical Biology Credits: Var[1-4] (0-0-0)
Course Description: Discussion of current topics in chemical biology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 651G Special Topics in Chemistry: Chemistry Education Credits: Var[1-4] (0-0-0)
Course Description: Discussion of current topics in chemistry education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 695 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 698 Research Credits: Var[1-9] (0-0-0)
Course Description: Graduate research in chemistry for students who do not plan to write an M.S. thesis.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing in chemistry.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 699 Thesis Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 702 Independent Research Proposal Credit: 1 (0-0-1)
Course Description: Preparation, submission, and defense of an independent research proposal; creative and original thinking about research problems in modern chemistry.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Ph.D. candidacy.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 751 Methods of Chemistry Laboratory Instruction Credit: 1 (1-0-0)
Course Description: Basic materials, methods, and skill development related to teaching undergraduate chemistry laboratory courses.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

CHEM 752 Advanced Chemical Instruction Credit: 1 (0-0-1)
Course Description: Advanced materials, methods, and presentation skills development related to teaching undergraduate chemistry courses.
Prerequisite: CHEM 751.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 773 Atomic and Molecular Spectroscopy Credits: 3 (3-0-0)
Course Description: Time-dependent methods; multiphoton and nonlinear spectroscopy; fundamentals of rotational, vibrational, electronic and magnetic resonance spectroscopy.
Prerequisite: CHEM 571A or CHEM 571B.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 784 Supervised College Teaching Credits: Var[1-2] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 793 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 795A Independent Study: Inorganic Chemistry Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 795B Independent Study: Analytical Chemistry Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 795C Independent Study: Biological Chemistry Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 795D Independent Study: Physical Chemistry Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 799 Dissertation Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Civil Engineering-CIVE (CIVE)

Courses

CIVE 102 Introduction to Civil and Environmental Engr Credits: 3 (2-2-0)
Course Description: Civil and environmental engineering professions, computer applications related to civil and environmental engineering; engineering design concepts.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Must register for lecture and laboratory. Walter Scott College of Engineering majors only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 103 Engineering Graphics and Computing Credits: 3 (2-3-0)
Course Description: Introduction to the profession and academia; principles of civil engineering design; graphical, and written communication.
Prerequisite: CIVE 102 or ENGR 101.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 202 Numerical Modeling and Optimization Credits: 3 (2-2-0)
Course Description: Fundamentals of programming and application to numerical modeling and optimization of civil and environmental engineering systems.
Prerequisite: (CIVE 103) and (MATH 159, may be taken concurrently or MATH 160, may be taken concurrently).
Registration Information: Must register for lecture and laboratory. Civil Engineering, Environmental Engineering or Engineering Science majors only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 203 Engineering Systems and Decision Analysis Credits: 3 (2-2-0)
Course Description: Civil engineering infrastructure systems, numerical and decision analysis techniques, applications of risk analysis.
Prerequisite: CIVE 202.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 260 Engineering Mechanics-Statics Credits: 3 (3-0-0)
Course Description: Forces using vector notation; static equilibrium of rigid bodies; friction, virtual work, centroids, and moments of inertia.
Prerequisite: (MATH 159 or MATH 160) and (PH 141).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 261 Engineering Mechanics-Dynamics Credits: 3 (3-0-0)
Course Description: Kinematics and kinetics of particles and rigid bodies; concepts of work-energy and impulse-momentum; computer applications; vector notation.
Prerequisite: CIVE 260.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 300 Fluid Mechanics Credits: 3 (3-0-0)
Course Description: Fluid properties; statics, kinematics, and dynamics of fluid motion including viscous and gravitational effects.
Prerequisite: (CIVE 261 and MATH 340, may be taken concurrently) and (MECH 237, may be taken concurrently or MECH 337, may be taken concurrently).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 301 Fluid Mechanics Laboratory Credit: 1 (0-3-0)
Course Description: Fluid properties; statics, kinematics, and dynamics of fluid motion including viscous and gravitational effects.
Prerequisite: CIVE 300, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 302 Evaluation of Civil Engineering Materials Credits: 3 (2-3-0)
Course Description: Behavior and properties of construction materials, instrumentation, use of statistical tools, material standards, material selection, quality control.
Prerequisite: CHEM 111 and CIVE 360.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 303 Infrastructure and Transportation Systems Credits: 3 (3-0-0)
Course Description: Principles of infrastructure systems, transportation systems, applications of spatial data and GIS, project management and engineering economy.
Prerequisite: CIVE 260.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 305 Intermediate AutoCAD Credits: 3 (2-2-0)
Course Description: Creating layouts and templates, objects, graphic patterns and symbols, inserting and managing external references, and creating isometric drawings.
Prerequisite: CIVE 103.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 322 Basic Hydrology Credits: 3 (3-0-0)
Course Description: Hydrologic cycle, soil moisture, groundwater, runoff processes, applications in water resources and environmental engineering.
Prerequisite: (CIVE 300 or CBE 331 or WR 416) and (CIVE 203 or STAT 301 or STAT 315).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 330 Ecological Engineering Credits: 3 (3-0-0)
Course Description: Principles of ecological engineering and design of sustainable ecosystems.
Prerequisite: (BZ 110 and BZ 111 or BZ 120 or LIFE 102 or SOCR 240) and (CHEM 113) and (CIVE 300 or LIFE 320).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 339 Environmental Engineering Concepts Credits: 3 (3-0-0)
Course Description: Fundamental topics of environmental engineering, including water chemistry, chemical and biological reactions for water and wastewater treatment, reactor design for water and wastewater treatment processes, sanitary and storm sewer design, hazardous waste management, noise pollution, and sanitary landfill design.
Prerequisite: (CHEM 113) and (CBE 331 or CIVE 300 or MECH 342).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 355 Introduction to Geotechnical Engineering Credits: 3 (3-0-0)
Course Description: Soil behavior, stress-strain and strength properties, application to earth pressure, slope and foundation problems.
Prerequisite: CIVE 360.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 356 Geotechnical Engineering Laboratory Credit: 1 (0-3-0)
Course Description: Laboratory to demonstrate standard methods of soils testing, methods of data collection, analysis of results.
Prerequisite: CIVE 355, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 360 Mechanics of Solids Credits: 3 (3-0-0)
Course Description: Stresses and deformations in structural members and machine elements, combined stresses, stress transformation.
Prerequisite: CIVE 260.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 367 Structural Analysis Credits: 3 (3-0-0)
Course Description: Determination of actions in and deformations of determinate and indeterminate structures.
Prerequisite: CIVE 360.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 401 Hydraulic Engineering Credits: 3 (3-0-0)
Course Description: Basic principles of fluid mechanics applied to practical problems in hydraulic engineering.
Prerequisite: CIVE 300.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 402 Senior Design Principles Credits: 3 (2-2-0)
Course Description: Design of civil engineering systems, nontechnical and economic design considerations, project organization, design project development and presentation.
Prerequisite: (CIVE 300) and (CIVE 303 or CHEM 245).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 403 Senior Project Design Credits: 3 (2-2-0)
Course Description: Design of civil engineering systems, nontechnical and economic design considerations, project organization, design project development and presentation.
Prerequisite: CIVE 402.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 413 Environmental River Mechanics Credits: 3 (3-0-0)
Course Description: Fluvial geomorphology, river hydraulics, sediment transport, and river response with special emphasis on environmental aspects.
Prerequisite: CIVE 300 or WR 416.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 423 Groundwater Engineering Credits: 3 (3-0-0)
Course Description: Development of groundwater resources; origin, movement, distribution of water below ground surface.
Prerequisite: CIVE 300 or CBE 331 or WR 416.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 424 Modern Gas and Oil Credits: 3 (3-0-0)
Also Offered As: GEOL 424.
Course Description: Introduction to opportunities and challenges of modern gas and oil development, including synergies with other energy sources.
Prerequisite: None.
Registration Information: Junior standing or above; completion of AUCC category 3A. Credit not allowed for both CIVE 424 and GEOL 424.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 425 Soil and Water Engineering Credits: 3 (2-3-0)
Course Description: Control of the soil-water-plant medium for optimum plant growth and environmental protection.
Prerequisite: CBE 331 or CIVE 300 or SOCR 240.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 437 Wastewater Treatment Facility Design Credits: 3 (3-0-0)
Course Description: Design concepts and principles for wastewater treatment systems and unit processes, principles of treatment plant operation.
Prerequisite: (CIVE 300) and (CIVE 438, may be taken concurrently).
Registration Information: Credit not allowed for both CIVE 437 and ENVE 437.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 438 Environmental Engr Concepts for Civil Engrs Credits: 3 (3-0-0)
Course Description: Core topics of environmental engineering including water quality and chemistry, wastewater removal and treatment, air pollution, noise pollution, and sanitary landfill design. Sustainability, green engineering and ethics are also discussed.
Prerequisite: (CBE 331 or CIVE 300 or MECH 342) and (CHEM 113).
Registration Information: Walter Scott Jr. College of Engineering majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 439 Environmental Engineering Chemical Concepts Credits: 3 (2-3-0)
Also Offered As: CBE 439.
Course Description: Application of chemical principles to environmental engineering problems.
Prerequisite: CHEM 113 and MATH 340.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CBE 439 and CIVE 439.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 440 Nonpoint Source Pollution Credits: 3 (3-0-0)
Course Description: Principles, processes, impacts and control of nonpoint source pollution of surface and groundwater.
Prerequisite: CIVE 300 or CIVE 322 or SOCR 240 or WR 416.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 441 Water Quality Analysis and Treatment Credits: 3 (2-3-0)
Course Description: Physical, chemical and biological methods for the characterization of waters and wastewaters.
Prerequisite: CIVE 438, may be taken concurrently or CIVE 440, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 442 Air Quality Engineering Credits: 3 (3-0-0)
Course Description: Air pollution problems and solutions, at scales ranging from local to global. Quantitative analysis of chemical and physical processes governing air pollutants in natural and built environments.
Prerequisite: (CBE 331 or CIVE 300 or MECH 342) and (CHEM 113).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 455 Applications in Geotechnical Engineering Credits: 3 (3-0-0)
Course Description: Geotechnical engineering applications of earth retaining structures, foundations, dams and embankments, geosynthetics, waste containment systems.
Prerequisite: CIVE 355.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 458 Environmental Geotechnics Credits: 3 (3-0-0)
Course Description: Application of principles from soil physics, soil chemistry, soil mechanics, hydrogeology, and geotechnical engineering to solve problems in Environmental Geotechnics related to engineered containment of contaminants and remediation of contaminated sites for the protection of human health and the environment.
Prerequisite: CIVE 355.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 466 Design and Behavior of Steel Structures Credits: 3 (3-0-0)
Course Description: Loads acting on a structure; behavior and design of steel members, connections, and systems.
Prerequisite: CIVE 367.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 467 Design of Reinforced Concrete Structures Credits: 3 (3-0-0)
Course Description: Design and behavior of reinforced concrete structural members.
Prerequisite: CIVE 367.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 502 Fluid Mechanics Credits: 3 (3-0-0)
Course Description: Fundamental physical concepts of fluid mechanics; ideal and viscous fluid flows; boundary-layer concepts.
Prerequisite: CIVE 300.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 504 Wind Engineering Credits: 3 (3-0-0)
Course Description: Influence of wind on humanity. Applications to structures, air pollution, wind energy, agricultural aerodynamics, snow movement, human comfort.
Prerequisite: CIVE 300.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 506 Wind Effects on Structures Credits: 3 (3-0-0)
Course Description: Analysis of wind effects on buildings and structures; deterministic and probabilistic methods; aerodynamic loading and response; codes and standards.
Prerequisite: CIVE 504.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 507 Transportation Engineering Credits: 3 (3-0-0)
Course Description: Principles of highway engineering, transportation engineering and bridge engineering with a focus on design.
Prerequisite: CIVE 261 and CIVE 303 and CIVE 367.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 508 Bridge Engineering Credits: 3 (3-0-0)
Course Description: Introduces the fundamentals of bridge engineering, including bridge basics, bridge loads, bridge analysis and bridge design.
Prerequisite: CIVE 367.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 510 Applied Hydraulic System Design Credits: 3 (3-0-0)
Course Description: Operational management systems, data collection, real-time control, management modeling, rehabilitation and retrofit, maintenance.
Prerequisite: CIVE 401.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 511 Coastal Engineering Credits: 3 (3-0-0)
Course Description: Coastal processes (waves, tides, storm surge, currents, coastal morphology, deltas) and their effects on infrastructure design and eco-protection.
Prerequisite: CIVE 401.
Registration Information: Bachelor's degree required. Credit not allowed for both CIVE 511 and CIVE 580A6.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 512 Irrigation Systems Design Credits: 3 (3-0-0)
Course Description: Irrigation systems principles and design procedures for operation of sprinkler, trickle, and surface irrigation systems.
Prerequisite: CIVE 322 or CIVE 425.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 513 Morphodynamic Modeling Credits: 3 (3-0-0)
Course Description: Principles and techniques for simultaneous modeling of flow, sediment transport, and channel evolution to address problems in river morphodynamics.
Prerequisite: CIVE 300.
Registration Information: Credit not allowed for both CIVE 513 and CIVE 581A9.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 514 Hydraulic Structures/Systems Credits: 3 (3-0-0)
Course Description: Analysis and design of hydraulic structures which make up components of water resource systems.
Prerequisite: CIVE 401.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 518 Sprinkler and Trickle Irrigation Systems Credits: 3 (3-0-0)
Course Description: Basic principles, design, and evaluation of pressurized irrigation systems.
Prerequisite: CIVE 300 and CIVE 425.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 519 Irrigation Water Management Credits: 3 (3-0-0)
Course Description: Soil, plant, water, and atmospheric engineering principles for the determination of crop water needs to sustain agricultural production and the environment.
Prerequisite: CIVE 322 or SOCR 370.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 520 Physical Hydrology Credits: 3 (3-0-0)
Course Description: Hydrologic, atmospheric processes in the water cycle; linear systems, hydrologic response; geomorphologic description of hydrologic processes, response.
Prerequisite: CIVE 322 or CIVE 322.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 521 Hydrometry Credits: 3 (2-3-0)
Course Description: Principles, methods, instruments, and equipment for measuring water quantity and water quality variables in nature.
Prerequisite: CIVE 322.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 522 Engineering Hydrology Credits: 3 (3-0-0)
Course Description: Hydrologic design under uncertainty; conventional and remote sensing; design flows and storms; river routing; reservoir design; watershed models.
Prerequisite: CIVE 520.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 524 Modeling Watershed Hydrology Credits: 3 (2-2-0)
Also Offered As: WR 524.
Course Description: Development and application of watershed models: structure, calibration, evaluation, sensitivity analysis, simulation.
Prerequisite: (CIVE 322 or WR 416) and (STAT 315 or STAT 301 or CIVE 202).
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CIVE 524 and WR 524.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 525 Water Engineering: International Development Credits: 3 (3-0-0)
Course Description: Planning and design of small-scale and low-cost water supply and wastewater systems for rural communities in developing countries.
Prerequisite: CIVE 401 or CIVE 438.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 531 Groundwater Hydrology Credits: 3 (3-0-0)
Course Description: Groundwater occurrence, distribution, movement, exploration and recharge, well hydraulics and design, interaction of ground and surface water.
Prerequisite: CIVE 300 or CBE 331 or MECH 342.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 532 Wells and Pumps Credits: 3 (3-0-0)
Course Description: Well field hydraulics, well drilling methods, well design, aquifer test methods, pumping systems, well maintenance, storage/distribution systems.
Prerequisite: (CIVE 423 and CHEM 111) and (CIVE 531 or GEOL 452).
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 533 Biomolecular Tools for Engineers Credits: 3 (2-3-0)
Also Offered As: BIOM 533.
Course Description: Theoretical and practical aspects of biomolecular laboratory tools--PCR, cloning, sequencing, single-molecule optical techniques and live-cell imaging.
Prerequisite: BMS 300 or MIP 300.
Registration Information: Must register for lecture and laboratory. Credit not allowed for BIOM 533, CIVE 533 and ECE 533.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 534 Applied and Environmental Molecular Biology Credits: 3 (2-2-0)
Course Description: Environmental microbiology and molecular biology tools used to investigate both natural systems and engineered processes.
Prerequisite: CIVE 540.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 537 Residuals Management Credits: 3 (3-0-0)
Course Description: Planning and design for processing and disposal of residuals including solid wastes, sludges, and hazardous wastes.
Prerequisite: CIVE 300.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 538 Aqueous Chemistry Credits: 3 (3-0-0)
Course Description: Principles of solution chemistry applied to aquatic systems.
Prerequisite: CHEM 113 and MATH 340.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 539 Water and Wastewater Analysis Credits: 3 (2-3-0)
Course Description: Chemical and biological methods of assessing water quality; significance of chemicals in aquatic systems.
Prerequisite: CHEM 113 and MATH 340.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 540 Advanced Biological Wastewater Processing Credits: 3 (3-0-0)
Also Offered As: CBE 540.
Course Description: Fundamentals of environmental biotechnology: environmental microbiology, microbial kinetics, basic reactor design, wastewater treatment.
Prerequisite: CBE 320 or CIVE 438.
Registration Information: Sections may be offered: Online. Credit not allowed for both CIVE 540 and CBE 540.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 541 Environmental Unit Operation-Treatment-Design Credits: 4 (3-3-0)
Course Description: Reactor theory, filtration, adsorption, ion exchange, gas transfer, oxidation, membranes, biological reactors, disinfection.
Prerequisite: CIVE 439 or CBE 439.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 542 Water Quality Modeling Credits: 3 (3-0-0)
Course Description: Chemical, physical, and biological processes defining surface water quality, construction and application of computer models for lakes and streams.
Prerequisite: None.
Registration Information: Must have taken two semesters of chemistry; one course in hydrology or water quality.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 543 Instrumental Environmental Analysis Credits: 3 (2-3-0)
Course Description: Environmental sampling and preservation techniques followed by the instrumental analysis of the samples.
Prerequisite: CHEM 113.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 544 Water Resources Planning and Management Credits: 3 (3-0-0)
Course Description: Management and planning of natural and constructed water systems. Integrated management and case studies of water use and environmental resources.
Prerequisite: CIVE 322.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 546 Water Resource Systems Analysis Credits: 3 (2-2-0)
Course Description: Applications of systems analysis and optimization techniques in water resources planning and management.
Prerequisite: (CIVE 322, may be taken concurrently) and (ENGR 510, may be taken concurrently or MATH 510, may be taken concurrently).
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 547 Statistics for Environmental Monitoring Credits: 3 (3-0-0)
Also Offered As: STAT 547.
Course Description: Applications of statistics in environmental pollution studies involving air, water, or soil monitoring; sampling designs; trend analysis; censored data.
Prerequisite: STAT 301.
Registration Information: Credit not allowed for both CIVE 547 and STAT 547. Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 549 Drainage and Wetland Engineering Credits: 3 (3-0-0)
Course Description: Drainage and wetlands design for agricultural and natural resource applications. Water table modification for nonpoint sources pollution control.
Prerequisite: CIVE 322 or SOCR 370 or SOCR 470.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 550 Foundation and Retaining Wall Engineering Credits: 3 (3-0-0)
Course Description: Mechanics and methodology of foundation engineering, selection and design of foundation systems, retaining wall design, and application of principles to related special problems.
Prerequisite: CIVE 355.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 555 Mining Geotechnics Credits: 3 (3-0-0)
Course Description: Challenges associated with mine tailings and mine waste management, including relevant geotechnical and geoenvironmental engineering factors. Case studies are used to illustrate important concepts.
Prerequisite: CIVE 355.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 556 Slope Stability, Seepage, and Earth Dams Credits: 3 (3-0-0)
Course Description: Slope stability, seepage analysis and control, and earth dam and embankment design in Geotechnical Engineering practice. Students will gain an understanding of the theory, design, and analysis necessary to evaluate slope stability, seepage, and earth dam problems.
Prerequisite: CIVE 355.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 558 Containment Systems for Waste Disposal Credits: 3 (3-0-0)
Course Description: Basic principles governing the design of containment systems used in waste disposal applications.
Prerequisite: CIVE 355.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 559 Special Topics in Geotechnical Engineering Credits: 3 (3-0-0)
Course Description: Advanced topics in geotechnical engineering including expansive soils, unsaturated soil mechanics, soil-structure interaction and mining geotechnics.
Prerequisite: CIVE 355.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 560 Advanced Mechanics of Materials Credits: 3 (3-0-0)
Course Description: Analysis of stress and strain failure theory; selected topics in solid mechanics, plate analysis; introduction to elastic stability.
Prerequisite: CIVE 360.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 561 Advanced Steel Behavior and Design Credits: 3 (3-0-0)
Course Description: Behavior of steel components and systems. Design of composite members, plate girders, and bolted and welded connections.
Prerequisite: CIVE 466.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 562 Fundamentals of Vibrations Credits: 3 (3-0-0)
Course Description: Free and forced vibrations of single, two, and multiple degree of freedom systems. Closed-form and numerical solutions.
Prerequisite: CIVE 261 and CIVE 360.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 563 Structural Reliability: Theory, Application Credits: 3 (3-0-0)
Course Description: Theory of structural reliability as it relates to analysis, design, construction, and maintenance of structural and mechanical systems.
Prerequisite: CIVE 203 or STAT 315.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 564 Principles of Structural Load Modeling Credits: 3 (3-0-0)
Course Description: Modern structural load modeling and analysis techniques for buildings and other structures exposed to natural and man-made hazards.
Prerequisite: (CIVE 203) and (CIVE 466 or CIVE 467).
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Credit not allowed for both CIVE 564 and CIVE 581A7.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 565 Finite Element Method Credits: 3 (3-0-0)
Course Description: Theory and application in elasticity, porous flow, heat conduction, and other engineering problems.
Prerequisite: MATH 340.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 566 Intermediate Structural Analysis Credits: 3 (3-0-0)
Course Description: Work and energy concepts, curved members and arches, matrix analysis of linear systems, numerical techniques.
Prerequisite: CIVE 367.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 567 Advanced Concrete Design Credits: 3 (3-0-0)
Course Description: Behavior of reinforced and prestressed concrete members; development of design methods; behavior and design of slabs, shearwalls, and buildings.
Prerequisite: CIVE 467.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 568 Design of Masonry and Wood Structures Credits: 3 (3-0-0)
Course Description: Behavior and design of structures and structural components constructed of masonry or engineered wood.
Prerequisite: CIVE 466 or CIVE 467.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 571 Pipeline Engineering and Hydraulics Credits: 3 (3-0-0)
Course Description: Water supply, wastewater, stormwater, oil and gas, and industrial applications. Emphasis on pressurized water pipelines.
Prerequisite: CIVE 300.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 572 Analysis of Urban Water Systems Credits: 3 (2-2-0)
Course Description: Behavior and interaction of urban water distribution and collection systems; how system state and driving variables affect system performance.
Prerequisite: CIVE 300 and CIVE 401.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 573 Urban Stormwater Management Credits: 3 (3-0-0)
Course Description: Effects of urbanization on watershed hydrology and receiving waters; control practices to mitigate effects using mathematical models.
Prerequisite: (CIVE 322) and (CIVE 401).
Registration Information: Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 574 Civil Engineering Project Management Credits: 3 (3-0-0)
Course Description: Principles of civil engineering project management including proposals, contracts, scheduling, quality assurance, budgeting, and risk management.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 575 Sustainable Water and Waste Management Credits: 3 (3-0-0)
Course Description: The science, engineering, and policy behind sustainable water and waste practices. Sustainable urban water and wastewater management.
Prerequisite: CIVE 322.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 576 Engineering Applications of GIS and GPS Credits: 3 (2-2-0)
Course Description: Integration of GPS and GIS in the planning and decision making process, application to case study.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 577 GIS in Civil and Environmental Engineering Credits: 3 (2-2-0)
Course Description: GIS technology for spatial design/analysis; applications in facilities management, urban infrastructure, water resources, environmental engineering.
Prerequisite: (CIVE 300) and (CIVE 322).
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 578 Infrastructure and Utility Management Credits: 3 (3-0-0)
Course Description: Infrastructure and utility planning, management, and security. Systems approach to life cycle management. Problems, analysis, decision support systems.
Prerequisite: None.
Registration Information: Ten credits of engineering, economics, public administration, or planning courses. Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 584 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 592A Seminar: Fluid Mechanics and Wind Engineering Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 592E Seminar: Geotechnical Engineering Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 592G Seminar: Environmental Engineering Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 592L Seminar: Space Engineering Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596A Group Study: Fluid Mechanics/Wind Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596B Group Study: Hydraulics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596C Group Study: Hydrology and Water Resources Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596D Group Study: Mechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596E Group Study: Geotechnical Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596F Group Study: Structures Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596G Group Study: Environmental Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596H Group Study: Water Resource Planning and Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596I Group Study: Groundwater Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596J Group Study: Bioresource and Agricultural Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 604 Fluid Turbulence and Modeling Credits: 3 (3-0-0)
Course Description: Engineering concepts for transport of pollutants, toxic and flammable species, sand, and snow. Fluid modeling, numerical and analytical approaches.
Prerequisite: CIVE 502 or CIVE 504.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 607 Computational Fluid Dynamics Credits: 3 (3-0-0)
Course Description: Numerical methods used in computational solutions of hydraulics, environmental and wind engineering problems.
Prerequisite: CIVE 300.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 610 Special Topics in Hydraulics Credits: 3 (3-0-0)
Course Description: Advanced topics in hydraulics, hydromechanics, environmental hydraulics, and computational hydraulics.
Prerequisite: CIVE 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 612 Open Channel Flow Credits: 4 (4-0-0)
Course Description: Steady, uniform, and non-uniform flow; backwater curves; flow through bridge piers, transitions, and culverts; spatially varied and unsteady flow.
Prerequisite: CIVE 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 613 River Restoration Design Credits: 3 (3-0-0)
Course Description: Analysis and design for assisting the recovery of hydrologic, geomorphic, and ecological processes and ecosystem services in degraded river systems.
Prerequisite: CIVE 401.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 622 Risk Analysis of Water/Environmental Systems Credits: 3 (3-0-0)
Course Description: Risk and uncertainty analysis applied to hydrology, hydraulics, groundwater, water resources, and environmental engineering systems.
Prerequisite: (CIVE 322) and (STAT 315).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 625 Quantitative Eco-Hydrology Credits: 3 (3-0-0)
Course Description: Quantitative examination of the hydrologic and ecologic mechanisms underlying climate-soil-vegetation and soil moisture dynamics.
Prerequisite: CIVE 322 or WR 416.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 626 Integrated Analysis of Coupled Water Issues Credits: 3 (3-0-0)
Course Description: Integrative systems and policy analysis applied to coupled human-water systems from interdisciplinary technical and institutional perspectives.
Prerequisite: GR 304 or WR 304.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 631 Computational Methods in Subsurface Systems Credits: 3 (3-0-0)
Course Description: Numerical flow models; finite difference and finite element methods; parameter identification, stochastic modeling and advanced analytical solutions.
Prerequisite: (MATH 340) and (CIVE 531).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 638 Groundwater Quality and Contaminant Transport Credits: 3 (3-0-0)
Course Description: Analysis of hydrochemical data. Advection with and without mixing. Retardation of reactive solutes. Design of groundwater quality investigations.
Prerequisite: CIVE 531.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 645 Computer-Aided Water Management and Control Credits: 3 (2-2-0)
Course Description: Real-time management and control of water resource systems; applications of computer control concepts to improve system performance.
Prerequisite: CIVE 546 or CIVE 577.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 655 Advanced Soil Mechanics Credits: 3 (3-0-0)
Course Description: Advanced topics in shear strength and consolidation of soils; stress paths; anisotropy; submergence; partial and radial drainage; numerical methods.
Prerequisite: CIVE 355.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 657 Oral Communication in Geo-Engineering Credit: 1 (1-0-0)
Course Description: Principles of technical oral communication in geotechnical engineering, creating presentations, delivering presentations, listening and responding to questions.
Prerequisite: CIVE 550 or CIVE 556 or CIVE 558 or CIVE 655.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 658 Remediation Systems - Subsurface Contamination Credits: 3 (3-0-0)
Course Description: Applications in geoenvironmental engineering practice involving design of in situ containment and remediation systems.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 661 Stochastic Methods in Structural Dynamics Credits: 3 (3-0-0)
Course Description: Time-dependent excitations are modeled using stochastic processes, enabling prediction of random dynamic response under time-dependent excitations.
Prerequisite: CIVE 562.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both CIVE 661 and CIVE 681A3.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 662 Foundations of Solid Mechanics Credits: 3 (3-0-0)
Course Description: Analysis of stress and strain in solids emphasizing linear elasticity and plasticity; introduction to creep, viscoelasticity, and finite deformations.
Prerequisite: CIVE 560.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 663 Structural Stability Credits: 3 (3-0-0)
Course Description: Structural stability analysis of buildings and other structures; mathematical and mechanics tools for investigating stability of equilibrium.
Prerequisite: CIVE 560 and CIVE 566.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both CIVE 663 and CIVE 680A6.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 664 Mechanics of Fatigue and Fracture Credits: 3 (3-0-0)
Course Description: Fracture mechanics including linear elastic, elastic-plastic, and dynamic fracture; on ductile and cleavage fracture in metals.
Prerequisite: CIVE 560.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 667 Advanced Structural Analysis Credits: 3 (3-0-0)
Course Description: Analysis program development, application of finite element analysis, computer-assisted analysis, introduction to nonlinear analysis.
Prerequisite: CIVE 566.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695A Independent Study: Fluid Mechanics and Wind Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695B Independent Study: Hydraulics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695C Independent Study: Hydrology and Water Resources Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695D Independent Study: Mechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695E Independent Study: Geotechnical Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695F Independent Study: Structures Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695G Independent Study: Environmental Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695H Independent Study: Water Resource Planning and Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695I Independent Study: Groundwater Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695J Independent Study: Bioresource and Agricultural Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695K Independent Study: Water and International Development Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695L Independent Study: Construction Engineering and Management Credits: Var[1-18] (0-0-0)
Course Description: A) Fluid mechanics and wind engineering. B) Hydraulics. C) Hydrology and water resources. D) Mechanics. E) Geotechnical engineering, F) Structures, G) Environmental Engineering. H) Water resource planning and management, I) Groundwater. J) Bioresource and agricultural engineering. K) Water and International Development, L) Construction Engineering & Management.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696A Group Study: Fluid Mechanics and Wind Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696B Group Study: Hydraulics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696C Group Study: Hydrology and Water Resources Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696D Group Study: Mechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696E Group Study: Geotechnical Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696F Group Study: Structures Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696G Group Study: Environmental Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696H Group Study: Water Resource Planning and Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696I Group Study: Groundwater Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696J Group Study: Bioresource and Agricultural Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699A Thesis: Fluid Mechanics and Wind Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699B Thesis: Hydraulics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699C Thesis: Hydrology and Water Resources Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699D Thesis: Mechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699E Thesis: Geotechnical Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699F Thesis: Structures Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699G Thesis: Environmental Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699H Thesis: Water Resource Planning and Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699I Thesis: Groundwater Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699J Thesis: Bioresource and Agricultural Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699K Thesis: Water and International Development Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 703 Special Topics in Fluid Mechanics Credits: 3 (3-0-0)
Course Description: Advanced topics in fluid mechanics; associated experimental and numerical techniques.
Prerequisite: CIVE 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 716 Erosion and Sedimentation Credits: 3 (3-0-0)
Course Description: Sediment properties; resistance to flow; incipient motion and bedforms; sediment transport, reservoir sedimentation.
Prerequisite: CIVE 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 717 River Mechanics Credits: 3 (3-0-0)
Course Description: Characteristics of rivers, mechanics of sediment and water discharge emphasizing alluvial systems, channel stabilization, control, response.
Prerequisite: CIVE 716.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 721 Stochastic Water and Environmental Systems Credits: 3 (3-0-0)
Course Description: Stochastic analysis of water and environmental systems. Simulation, forecasting, spatial analysis, modeling changes, stochastic differential equations.
Prerequisite: CIVE 622.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 724 River Basin Morphology Credits: 3 (3-0-0)
Course Description: Analysis of river basin properties including their connections to statistical theories and erosion processes and their hydrologic implications.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 742 Advanced Topics in Environmental Engineering Credits: 3 (2-3-0)
Course Description: Selected topics from current environmental engineering research including molecular methods, water/wastewater treatment, hazardous water remediation.
Prerequisite: CIVE 540.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 751 Soil Dynamics Credits: 3 (3-0-0)
Course Description: Soil behavior under dynamic loading; stress wave propagation; foundation response to vibratory and transient loading; elements of earthquake effects.
Prerequisite: CIVE 355.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 766 Theory of Plates and Shells Credits: 3 (3-0-0)
Course Description: Classical plate, shell and membrane theory for isotropic and layered anisotropic media. Analytic and computational solution techniques.
Prerequisite: CIVE 560.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 767 Structural Dynamics and Earthquake Engineering Credits: 3 (3-0-0)
Course Description: Analysis, behavior, and design of structural systems subjected to dynamic loads, including earthquakes, wind, and ocean waves.
Prerequisite: CIVE 562 and CIVE 667.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 799A Dissertation: Fluid Mechanics and Wind Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799B Dissertation: Hydraulics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799C Dissertation: Hydrology and Water Resources Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799D Dissertation: Mechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799E Dissertation: Geotechnical Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799F Dissertation: Structures Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799G Dissertation: Environmental Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799H Dissertation: Water Resource Planning and Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799I Dissertation: Groundwater Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799J Dissertation: Bioresource and Agricultural Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799K Dissertation: Water and International Development Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799L Dissertation: Construction Engineering and Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Clinical Sciences-VS (VS)

Courses

VS 301 Research Seminar on Human-Animal Interactions Credit: 1 (0-0-1)
Course Description: Research seminar designed to help students explore various topics and current research related to human-animal interactions. The seminar will include lectures by various faculty, online threaded discussions, and a small capstone project.
Prerequisite: None.
Registration Information: Completion of AUCC Category 2. Offered as an online course only. Credit not allowed for both VS 280A1 and VS 301.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 310 Communication Skills for Animal Professions Credits: 3 (3-0-0)
Course Description: Professional training and specifically tailored communication skills designed to meet the needs of animal professionals.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 313 Prevention and Control of Livestock Diseases Credits: 3 (3-0-0)
Also Offered As: ANEQ 313.
Course Description: Common ailments of livestock; sanitation and disease prevention and control.
Prerequisite: (ANEQ 230 or BMS 300 or ANEQ 305) and (ANEQ 310, may be taken concurrently and ANEQ 320, may be taken concurrently).
Registration Information: Junior or senior standing. Credit not allowed for both VS 313 and ANEQ 313.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VS 331 Histology Credits: 4 (3-2-0)
Course Description: Analysis of animal cells, tissues, and organs emphasizing light microscopy.
Prerequisite: BZ 100 or LIFE 102.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both VS 331 and BMS 330. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

VS 333 Domestic Animal Anatomy Credits: 4 (3-3-0)
Course Description: Comparative functional anatomy of the dog, horse, and cow.
Prerequisite: BZ 110 or LIFE 102.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both VS 333 and BMS 305. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

VS 401 Human Animal Interactions Credits: 3 (3-0-0)
Course Description: Roles animals play in society, and the impact of human and animal relationships.
Prerequisite: None.
Registration Information: Completion of AUCC Category 2. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 410 Pets Forever – Supporting the Life-Long Bond Credits: 3 (1-4-0)
Course Description: Opportunity to engage with older adults and individuals with disabilities and their companion animals. Enrichment of students' experience through the opportunity to gain community service experience.
Prerequisite: HDFS 101 or PSY 100 or SOWK 110.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

VS 479 Biology and Behavior of Dogs Credits: 3 (3-0-0)
Also Offered As: BZ 479.
Course Description: Interactions of physiology, neurobiology, and genetics on behavior of domestic dogs, and how evolution and domestication influence behavioral traits.
Prerequisite: LIFE 103 or BZ 110.
Registration Information: Credit not allowed for both VS 479 and BZ 479. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 510 Cancer Biology Credits: 3 (3-0-0)
Also Offered As: ERHS 510.
Course Description: Cancer biology will address each of the hallmarks of cancer, including sustained proliferative signaling, evasion of growth suppression, invasion and metastasis, replicative immortality, angiogenesis, resisting cell death, genome instability and mutation, tumor promoting inflammation, deregulation of cellular energetics and avoidance of immune destruction. Lectures will integrate the biology behind these hallmarks with strategies for the treatment and prevention of cancer.
Prerequisite: BC 351 or BC 403, may be taken concurrently or BZ 310 or CM 501.
Registration Information: Credit not allowed for both ERHS 510 and VS 510.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 533 Epidemiology of Infectious Diseases/Zoonoses Credits: 3 (2-0-1)
Also Offered As: MIP 533.
Course Description: Epidemiologic features of infectious and parasitic diseases that have a major impact on community medicine.
Prerequisite: MIP 300.
Registration Information: Must register for lecture and recitation. Credit not allowed for both MIP 533 and VS 533.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 562 Applied Data Analysis Credits: 3 (3-0-0)
Course Description: Data management, application and interpretation of statistical analysis, and reporting of results for students in health science fields.
Prerequisite: STAT 301 or STAT 307.
Registration Information: Credit not allowed for VS 562, EDRM 606 and PBHL 560.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 570 Issues in Animal Agriculture Credits: 2 (2-0-0)
Also Offered As: AGRI 570.
Course Description: Issues that have a major impact on the direction of changes in animal agriculture.
Prerequisite: None.
Registration Information: Credit not allowed for both VS 570 and AGRI 570.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

VS 579 Animal Behavior in Captive Populations Credits: 3 (3-0-0)
Also Offered As: NSCI 579.
Course Description: How animals learn, perceive their world and behave, and how all of those intersect to alter behavior in captive settings.
Prerequisite: BZ 300.
Registration Information: Enrollment in the M.P.N.S., Zoo, Aquarium, and Shelter Management specialization can substitute for BZ 300. Credit not allowed for both VS 579 and NSCI 579.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 602 Critical Evaluation of Scientific Literature Credits: 2 (1-0-1)
Course Description: Method of evaluating scientific literature. Students present critiques of papers they have chosen.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

VS 605 Comparative Anesthesiology Credits: 2 (2-0-0)
Course Description: Techniques in anesthesia for large and small animals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 606 Comparative Anesthesiology Laboratory Credit: 1 (0-3-0)
Course Description: Techniques in anesthesia for large and small animals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in VS 605.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 612 Plastic and Reconstructive Surgery Credits: 2 (2-0-0)
Course Description: Advances in surgical patient care, surgical instrumentation, and reconstruction.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM degree or equivalent professional medicine degree.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VS 613 Plastic and Reconstructive Surgery Laboratory Credit: 1 (0-3-0)
Course Description: Advances in surgical patient care, surgical instrumentation, and reconstruction.
Prerequisite: VM 786B.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VS 626 Infertility and Genital Disease Credits: 2 (2-0-0)
Course Description: Infectious and noninfectious causes of reproductive failure in food animals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 628 Physiology and Pathophysiology Credits: 3 (3-0-0)
Course Description: Overview of the normal physiology and pathophysiology of disease states of mammalian organ systems.
Prerequisite: BMS 500 and BMS 501.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM degree or equivalent professional medicine degree can substitute for BMS 500; BMS 501.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

VS 630 Orthopedic Surgery Credits: 3 (3-0-0)
Course Description: Techniques, devices, and prosthetic materials in rehabilitating musculoskeletal problems.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 631 Orthopedic Surgery Laboratory Credit: 1 (0-3-0)
Course Description: Procedures applied to skeletal preparations and living animals.
Prerequisite: (VM 786A or VM 786B) and (VS 630, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 642 Ophthalmology Credits: 5 (4-2-0)
Course Description: Instrumentation, ocular therapeutics, and clinical ophthalmology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VS 644 Principles of Theriogenology Credits: 2 (2-0-0)
Course Description: Provide basic and practical understanding of reproduction in domestic species. Including the anatomy and physiology of males and females, gamete development, fertilization, embryonic development, parturition and early neonatal care; focusing on domestic animals. In addition to basic normal physiology, characteristic disease states and potential treatments will be discussed, as well as methods for improving reproductive capabilities, such as artificial insemination and embryo transfer.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 645 Surgery of the Eye Credits: 3 (2-3-0)
Course Description: Techniques, indications, and complications.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 648 Food Animal Production and Food Safety Credits: 2 (2-0-0)
Also Offered As: VM 648.
Course Description: Basic orientation to food animal production units, herd health concepts, and issues of food safety from preharvest through processing and distribution.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Enrollment in Food Science/Safety Graduate Interdisciplinary Studies program required. Credit not allowed for both VS 648 and VM 648.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 650 Comparative Abdominal Surgery Credits: 3 (3-0-0)
Course Description: New techniques in surgery of abdominal viscera.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 651 Comparative Abdominal Surgery Laboratory Credit: 1 (0-3-0)
Course Description: Reparative and reconstructive abdominal surgical procedures.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM degree or equivalent professional medicine degree.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 655 Echocardiography in Veterinary Medicine Credits: 3 (2-3-0)
Course Description: Technical proficiency in obtaining echocardiographic images; fundamental understanding of diagnostic criteria for common cardiac disease in dogs and cats.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM degree or equivalent professional medicine degree required. Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

VS 660 Neurology and Neurosurgery Credits: 3 (3-0-0)
Course Description: Diagnostic and surgical techniques for the nervous system.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 661 Neurology and Neurosurgery Laboratory Credit: 1 (0-2-0)
Course Description: Laboratory practice of comparative neurology (large and small animal), neurosurgical techniques and procedures.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. DVM degree or equivalent professional medicine degree required.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 665A Advanced Topics in Veterinary Cardiology: Cardiopulmonary Pathophysiology Credits: 3 (3-0-0)
Course Description: The pathobiology, advanced diagnostics, and treatment strategies for animals and humans with spontaneous cardiovascular disease.
Prerequisite: BMS 420.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 665B Advanced Topics in Veterinary Cardiology: Heart Failure and Cardiac Biomarkers Credits: 2 (2-0-0)
Course Description: Review of the pathophysiology of heart failure. Discuss the diagnostic and therapeutic approach to heart failure. Clinical trial design will be reviewed prior to summarizing recent clinical trial results in humans and dogs.
Prerequisite: BMS 420.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM degree or equivalent professional medicine degree required, or by instructor permission.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 665C Advanced Topics in Veterinary Cardiology: Invasive Catheterization & Hemodynamics Credits: 2 (2-0-0)
Course Description: Technical aspects of cardiac catheterization, focusing on pathophysiologic data that can be obtained during invasive catheterization procedures and interventional treatment options available.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 665D Advanced Topics in Veterinary Cardiology: Cardiac Electrophysiology & Arrhythmias Credits: 2 (2-0-0)
Course Description: Advanced review of cardiac electrophysiology including ion channels, action potentials, cardiac conduction, automaticity, and cellular mechanisms of arrthythmogenesis. Interpretation of electrocardiogram and cardiac arrhythmia diagnosis in animals and humans. Basic principles of treatment of cardiac interventions including electrophysiology studies and interventions.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both VS 665D and VS 680A1.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 665E Advanced Topics in Veterinary Cardiology: Cardiovascular Imaging Credits: 2 (2-0-0)
Course Description: Highlight the pathobiology, advanced diagnostics, and treatment strategies for animals with spontaneous cardiovascular disease.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM degree or equivalent professional medicine degree required, or by instructor permission.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 665F Advanced Topics in Veterinary Cardiology: Congenital Heart Disease Credits: 2 (2-0-0)
Course Description: Overview and in-depth analysis of congenital malformations of the heart and great vessels in veterinary species, with comparison to the same diseases in humans. Complex lesions are emphasized, with a focus on pathophysiology, diagnostic findings, and therapeutic interventions.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 673 Thoracic and Cardiovascular Surgery Credits: 3 (3-0-0)
Course Description: Surgical approaches to the thorax and the central and peripheral cardiovascular system.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM degree or equivalent professional medicine degree required.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 674 Thoracic and Cardiovascular Surgery Lab Credit: 1 (0-3-0)
Course Description: Surgical procedures applied to the chest, heart, and vessels.
Prerequisite: (VM 786A or VM 786B) and (VS 673, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 701 Postgraduate Medicine I Credits: Var[1-3] (0-0-0)
Course Description: Comprehensive review, update of immunology, emergency medicine, dermatology, and endocrinology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 702 Postgraduate Medicine II Credits: Var[1-3] (0-0-0)
Course Description: Comprehensive review, update of neurology, gastroenterology, and ophthalmology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 703 Postgraduate Medicine III Credits: Var[1-3] (0-0-0)
Course Description: Comprehensive review, update of oncology, cardiology, reproduction, opthamology, and radiology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 704 Postgraduate Medicine IV Credits: Var[1-3] (0-0-0)
Course Description: Comprehensive review, update of hematology, nephrology, urology, respiratory, hepatic, and pancreatic.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 716 Advanced Studies in Reproduction Credits: 2 (2-0-0)
Course Description: Biochemical and physiological basis for problems in reproduction.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 718 Cancer Biology Clinical Practicum Credits: 2 (0-0-4)
Course Description: Exposes graduate students engaged in laboratory cancer research to cancer from a clinical perspective, through VTH clinical rotations.
Prerequisite: ERHS 510 or VS 510.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

VS 732 Veterinary Sports Medicine and Rehabilitation Credit: 1 (1-0-0)
Also Offered As: VM 732.
Course Description: An introduction to the principles and practice of sports medicine and rehabilitation in veterinary medicine.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: VM 732: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program. VS 732: DVM or equivalent professional degree or consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VS 733 Advanced Veterinary Epidemiology Credits: 4 (4-0-0)
Course Description: Advanced epidemiological and statistical techniques for the design and analysis of research projects.
Prerequisite: (ERHS 532) and (ERHS 542 or ERHS 544 or STAT 511 or STAT 512 or VS 662).
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

VS 750 Clinical and Applied Pharmacology Credits: 2 (2-0-0)
Course Description: Factors involved in drug dosing and variability of drug response. Applications in veterinary and human medicine.
Prerequisite: BMS 450.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM degree or equivalent professional medicine degree can substitute for BMS 450.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

VS 760 Methods in Orthopaedic Research Credits: 3 (2-0-1)
Course Description: Methods utilized in othopaedic research will be presented by reviewing basic principles followed by examples of use in research projects.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

VS 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 792 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795A Independent Study: Small Animal Medicine Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795B Independent Study: Large Animal Medicine Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795C Independent Study: Small Animal Surgery Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795D Independent Study: Equine Surgery Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795G Independent Study: Equine Orthopedics Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795H Independent Study: Large Animal Reproduction Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795I Independent Study: Anesthesiology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795J Independent Study: Cardiology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795K Independent Study: Neurology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795L Independent Study: Dermatology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795N Independent Study: Ophthalmology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795O Independent Study: Herd Health Management Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795P Independent Study: Equine Lameness Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795S Independent Study: Epidemiology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795T Independent Study: Human-Animal Bond Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 796 Group Study-Medicine Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Communication Studies-SPCM (SPCM)

Courses

SPCM 100 Communication and Popular Culture (GT-AH1) Credits: 3 (3-0-0)
Course Description: Survey of media studies approaches to understanding popular culture.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Arts & Expression (GT-AH1).

SPCM 130 Relational and Organizational Communication (GT-SS3) Credits: 3 (2-0-1)
Course Description: Basic communication processes and skills central to relating and organizing in interpersonal, small group, and organizational contexts.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).

SPCM 200 Public Speaking Credits: 3 (3-0-0)
Course Description: Fundamentals of public speaking emphasizing content, organization, delivery, audience response.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 201 Rhetoric in Western Thought (GT-AH3) Credits: 3 (3-0-0)
Course Description: Major concepts of Western rhetoric from Greece to modern times and their relationship to present-day approaches to communication.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Ways of Thinking (GT-AH3).

SPCM 207 Public Argumentation Credits: 3 (3-0-0)
Course Description: Key communication principles for democracy, including issue analysis, evidence, reasoning, decision-making, debate, dialogue, and deliberation.
Prerequisite: SPCM 200.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 232 Group Communication Credits: 3 (3-0-0)
Course Description: Principles and methods of group communication emphasizing face-to-face and electronically mediated problem solving and decision making.
Prerequisite: SPCM 200.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 278A Communication Skills: Convention/Meeting Planning Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278B Communication Skills: Interviewing Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278C Communication Skills: Film Festivals Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278D Communication Skills: Friendship Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278E Communication Skills: Intercultural Competence Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278G Communication Skills: Parliamentary Procedure Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278H Communication Skills: Organizational Training Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278I Communication Skills: Social Media Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 300 Advanced Public Speaking Credits: 3 (0-0-3)
Course Description: Advanced technique in public speaking; emphasis on argument construction and refutation, style, and manuscript delivery.
Prerequisite: SPCM 200.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 311 Historical Speeches on American Issues Credits: 3 (3-0-0)
Course Description: Significant speeches and speakers as they reflected and affected American issues from colonial period through early 20th century.
Prerequisite: CO 150.
Registration Information: Must have taken minimum of 30 credits.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 320 Communication and Human Trafficking Credits: 3 (3-0-0)
Course Description: Examines historical and contemporary anti human trafficking movements, assessing the communication strategies employed by anti-trafficking advocates and organizations. Assesses the role language plays in shaping societal attitudes toward victims, survivors, and perpetrators of human trafficking.
Prerequisite: SPCM 100 to 499 - at least 3 credits.
Registration Information: Sophomore standing. Must have completed 3 credits of AUCC Category 3B or at least 3 credits of SPCM 100-499.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 331 Nonverbal Communication Credits: 3 (3-0-0)
Course Description: Non-language communication; systems and functions of nonverbal communication behaviors.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 332 Interpersonal Communication Skills Credits: 3 (3-0-0)
Course Description: Analysis, exploration, and skill enhancement strategies for interpersonal communication in friendship, couple, family, and business relationships.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 333 Professional Communication Credits: 3 (3-0-0)
Course Description: Technological, interpersonal, and ethical dimensions of professional communication, emphasizing interviews, teams, and presentations at work.
Prerequisite: SPCM 200.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 334 Co-Cultural Communication Credits: 3 (3-0-0)
Course Description: Cultural concerns of communication among co-cultures of United States; diversity; self-awareness as cultural imperative for enhanced communication.
Prerequisite: None.
Terms Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 335 Gender and Communication Credits: 3 (3-0-0)
Course Description: Analysis and exploration of communication as it relates to gender and women's and men's roles and identities.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 341 Evaluating Contemporary Television Credits: 3 (3-0-0)
Course Description: Rhetorical standards applied to content, ethical, and artistic aspects of American televised discourse; emphasizing nonentertainment programming.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 342 Critical Media Studies Credits: 3 (3-0-0)
Course Description: Analysis of communication media; history; structure, regulation, policy, and impact upon society.
Prerequisite: None.
Registration Information: Sophomore standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 346 Virtual Culture and Communication Credits: 3 (2-2-0)
Course Description: Rhetorical theory applied to planning, producing, and evaluating computer-mediated messages.
Prerequisite: SPCM 100 or SPCM 342.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both SPCM 346 and SPCM 378.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 347 Visual Communication Credits: 3 (3-0-0)
Course Description: Media/visual aesthetics and literacy, the symbolic and affective dimensions of the codes, conventions, and formulas of media.
Prerequisite: SPCM 100 or SPCM 342.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 349 Freedom of Speech Credits: 3 (3-0-0)
Course Description: Historical and philosophical precedents to freedom of speech; development of free speech principles in the U.S.; ethical obligations of speakers.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 350 Evaluating Contemporary Film Credits: 3 (2-3-0)
Course Description: Theory and development of film criticism; application of critical approaches to modern fiction and nonfiction film.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 354 History and Appreciation of Film Credits: 3 (2-3-0)
Course Description: Screening and evaluation of landmark fiction and nonfiction films; assessment of cinema as an art form and a social force.
Prerequisite: None.
Registration Information: Sophomore standing. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 356 Asians in the U.S. Media Credits: 3 (2-3-0)
Course Description: Asian representations in the U.S. media from the 19th century to the present.
Prerequisite: None.
Registration Information: Sophomore standing. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 357 Film and Social Change Credits: 3 (2-3-0)
Course Description: Ways in which the medium of motion pictures has sparked significant social changes at home and abroad.
Prerequisite: None.
Registration Information: Sophomore standing. Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 358 Gender and Genre in Film Credits: 3 (2-3-0)
Course Description: Gender relations in film genres.
Prerequisite: None.
Registration Information: Sophomore standing. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 360 The Personal Lens – Making Media Credits: 3 (3-0-0)
Course Description: Harnessing smart phone technology to produce video; telling personal stories via video that engage local and global communities; exploring traditional and novel forms of storytelling, representation, documentary, media appropriation, and cultural jamming in the context of fair use; using the internet to distribute self-produced content and communicate with audiences.
Prerequisite: None.
Registration Information: Sophomore standing. Credit not allowed for both SPCM 360 and SPCM 380A2.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 370A Study Abroad: Bridging Cultures-USA-Italy Credits: 3 (3-0-0)
Course Description: Theory, concepts, principles, research methods, and practical skills in the areas of intercultural and cross-cultural communication, construction and negotiation of Italian identity (italianità), and strategies of an effective dialogue with a global mindset. The aim of the course is to transform its participants into culturally aware and skilled global citizens, with the empirical experience of cultural bridging.
Prerequisite: SPCM 200.
Registration Information: Credit allowed for only one of the following: SPCM 370A, SPCM 382, or SPCM 382A.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 378 Virtual Workplace Communication Credits: 3 (0-0-3)
Course Description: Interpersonal/organizational dimensions and communicative processes underpinning virtual/remote/distributed workers and workplaces.
Prerequisite: None.
Registration Information: Sections may be offered: Online. Credit not allowed for both SPCM 346 and SPCM 378.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 382C Study Abroad - South Korea: Cinema, Culture, and History Credits: 3 (0-0-3)
Also Offered As: HIST 382C.
Course Description: A survey of post-1945 South Korean cinema from Golden Age classics of the 1950s and 1960s to the rise of new blockbuster hits and art-house films throughout the contemporary period. Cinematic texts are examined within various historical, sociopolitical, and cultural contexts of postcolonial South Korea, with attention to the issues of Japanese colonialism, national division, civil war, U.S. neocolonialism, military dictatorships, the democratic movement, and globalization.
Prerequisite: None.
Registration Information: Sophomore standing. Required field trips. Credit not allowed for both HIST 382C and SPCM 382C.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 384 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Open only to undergraduate students who are invited to assist in teaching selected courses. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 386 Research Practicum Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: (CO 150) and (SPCM 100 or SPCM 130 or SPCM 201).
Registration Information: Sophomore standing. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 387 Communication Internship Credit: 1 (0-0-1)
Course Description:
Prerequisite: (SPCM 100 or SPCM 342) and (SPCM 200 and SPCM 201 and SPCM 207).
Registration Information: 2.0 GPA.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 401 Rhetoric in Social Movements Credits: 3 (3-0-0)
Course Description: Case studies of campaigns and social movements; genesis, leadership, and use of traditional and electronically mediated rhetoric to achieve objectives.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 407 Public Deliberation Credits: 3 (3-0-0)
Course Description: Communication in collaborative decision-making and community problem-solving, examined through the lens of deliberative democracy.
Prerequisite: SPCM 200 and SPCM 207.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 408 Applied Deliberative Techniques Credits: 3 (3-0-0)
Course Description: Skills development and direct experience in convening, facilitating, and reporting public forums tied to Center for Public Deliberation activities.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 411 Contemporary Speeches on American Issues Credits: 3 (3-0-0)
Course Description: Significant speeches and speakers as they reflect and affect issues, 1930 to present.
Prerequisite: CO 150.
Registration Information: Must have taken minimum of 30 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 412 Evaluating Contemporary Rhetoric Credits: 3 (3-0-0)
Course Description: Exploration and evaluation of contemporary persuasive communication in order to understand and assess a variety of forms of messages and symbols.
Prerequisite: CO 150.
Registration Information: Must have taken minimum of 30 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 420 Political Communication Credits: 3 (3-0-0)
Course Description: Rhetoric of political campaigns.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 429 Environmental Discourse Credits: 3 (3-0-0)
Course Description: Environmental communication in advocacy campaigns, media representations of science, encounters with nature, and public policy.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 431 Communication, Language, and Thought Credits: 3 (3-0-0)
Course Description: Influence of rhetoric, ranging from spoken language to electronically mediated communication, on human understanding and Western thought.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 433 Communication in Organizations Credits: 3 (3-0-0)
Course Description: Communication theory and strategy for empowerment of non-supervisory and supervisory personnel.
Prerequisite: None.
Registration Information: Completion of AUCC category 2, Advanced Writing; minimum of 30 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 434 Intercultural Communication Credits: 3 (3-0-0)
Course Description: Cultural influences on communication between people of different nations; communication rules/norms in specific cultures, cultural adaptation.
Prerequisite: CO 150.
Registration Information: Must have taken minimum of 30 credits.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 436 Conflict Management and Communication Credits: 3 (3-0-0)
Course Description: Theories and principles of communication in conflict management; application to conflict resolution situations.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 437 Studies in Persuasion Credits: 3 (3-0-0)
Course Description: Rhetorical and behavioral theories of persuasion applied to persuasive practice in public and interpersonal arenas of social influence.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 453 Global Media Cultures Credits: 3 (3-0-0)
Course Description: How media and globalization influence each other.
Prerequisite: CO 150.
Registration Information: Junior Standing. Credit not allowed for both SPCM 380A1 and SPCM 453.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 454 Chicanx Film and Video Credits: 3 (2-2-0)
Also Offered As: ETST 454.
Course Description: Emergence of Chicanx cinema from a place of displacement, resistance, and affirmation found in contemporary Chicanx film, video.
Prerequisite: ETST 100 to 499 - at least 3 credits or SPCM 100 to 499 - at least 3 credits.
Registration Information: Sophomore standing. Must register for lecture and laboratory. Credit not allowed for both ETST 454 and SPCM 454.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 455 Narrative Fiction Film as a Liberal Art Credits: 3 (2-3-0)
Also Offered As: LB 455.
Course Description: Narrative fiction film and its role in human history, culture, and social interaction.
Prerequisite: None.
Restriction: .
Registration Information: Junior standing. Must register for lecture and laboratory. Credit not allowed for both SPCM 455 and LB 455.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 470A Study Abroad: Cinematic Rome Credits: 3 (0-0-3)
Course Description: Evaluate and discuss ten primary films, along with excerpts from a number of others. Topics: Images of Ancient Rome; Italian Fascism and Its Memory; Italian Neorealism; Images of "Americans" in Rome, and Rome in America; Fellini's Rome; and Urban Angst, Roman Style. Analyze how Rome functions as a "character" in the movies, the artistic representations of Roman monuments and streetscapes, and the rhetorical functions of Italian cinema.
Prerequisite: None.
Registration Information: Must have concurrent registration in SPCM 370A. Completion of AUCC Category 2. Credit allowed for only one of the following: SPCM 470A, SPCM 482, or SPCM 482A.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 479 Communication Studies Capstone Credits: 3 (3-0-0)
Course Description: Synthesis of central issues in Communication Studies; examination of their relevance to students' professional, personal, and civic endeavors.
Prerequisite: SPCM 100 and SPCM 201 and SPCM 207 and SPCM 130.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Seniors in Communication Studies major only
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 482B Study Abroad: Social Support & Communication in Spain Credits: 3 (0-0-3)
Course Description: Theory and research regarding personal and community experiences of social support, its influences on interpersonal relationships and health, and its social functions within the context of study abroad and intercultural experiences in Spain.
Prerequisite: None.
Registration Information: Sophomore standing.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 486 Practicum Credits: Var[1-18] (0-0-0)
Course Description: Directed experience of communication techniques and procedures in the community with periodic faculty consultation.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 486C Practicum: Civic Engagement Credits: 3 (1-0-4)
Also Offered As: POLS 486C.
Course Description: Participatory study of civic engagement in public education. Examination of civic engagement pedagogies and their role in public life. Evaluation of and participation in Public Achievement program in partnership with local K-12 schools.
Prerequisite: None.
Registration Information: Must register for lecture and practicum. POLS 486C and SPCM 486C may not be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 508 Deliberative Theory and Practice Credits: 3 (0-0-3)
Course Description: Survey of current theory and practice connected to deliberative democracy.
Prerequisite: SPCM 408.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 511 Topics in Public Address Credits: 3 (3-0-0)
Course Description: Theoretical and methodological issues in public address research; analysis of public discourse of selected movements or periods in U.S. history.
Prerequisite: SPCM 311 or SPCM 411.
Registration Information: Graduate standing with 12 additional 300- and 400-level credits in communication studies, history, or English.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 538 Relating and Organizing for Health Credits: 3 (3-0-0)
Course Description: Organizational, interpersonal, and intercultural dimensions of communicating in health care organizations.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 540 Rhetoric, Race, and Identity Credits: 3 (3-0-0)
Course Description: Critical race theory and its relevance to rhetorical studies.
Prerequisite: SPCM 434 and SPCM 300 to 481 - at least 12 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 570 Instructional Communication Theory and Practice Credits: 3 (0-0-3)
Course Description: Communication theory and research in instructional contexts. Designed for current or prospective teachers.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 592 Seminar-Topics in Speech Communication Credits: 3 (0-0-3)
Course Description:
Prerequisite: SPCM 3**** to 499 - at least 15 credits or SPCM 3** to 499 - at least 15 credits or E 3**** to 499 - at least 15 credits or E 3** to 499 - at least 15 credits or SP 3**** to 499 - at least 15 credits or SP 3** to 499 - at least 15 credits or SPCC 3**** to 499 - at least 15 credits or SPCC 3** to 499 - at least 15 credits or E CC 3**** to 499 - at least 15 credits or E CC 3** to 499 - at least 15 credits.
Registration Information: Graduate standing can substitute for 300-400 level credits.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 601 History of Rhetorical Theory Credits: 3 (3-0-0)
Course Description: Rhetorical theories and theorists from the classical period to the present.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Fifteen 300- and 400-level credits in communication studies and/or English.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 604 Rhetoric of Everyday Life Credits: 3 (3-0-0)
Course Description: Contemporary theories of rhetoric and of everyday life.
Prerequisite: SPCM 412 and SPCM 300 to 400 - at least 12 credits.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing can substitute for 300-400 SPCM credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 611 Topics in Public Address Credits: 3 (3-0-0)
Course Description: Theoretical and methodological issues in public address research; analysis of public discourse of selected movements or periods in U.S. history.
Prerequisite: SPCM 311 or SPCM 411.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing can substitute for SPCM 311 or SPCM 411; 12 additional credits of 300-400 level in Communication Studies, History, or English.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 612 Rhetorical Criticism Credits: 3 (3-0-0)
Course Description: Traditional and contemporary methods for analyzing persuasive discourse.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Fifteen credits of 300-400 level communication studies or journalism.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 620 Rhetoric and Public Affairs Credits: 3 (0-0-3)
Course Description: Rhetoric's role in contemporary politics and civil society.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to graduate school.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 623 Feminist Theories of Discourse Credits: 3 (0-0-3)
Course Description: Exploration and evaluation of contemporary feminist theories of rhetoric and discourse.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to graduate school.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 632 Theories of Interpersonal Communication Credits: 3 (0-0-3)
Course Description: Theories of communication in development, maintenance, and deterioration of friendship, couple, family, group, and business relationships.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Admission to graduate school.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 633 Discourse, Work, and Organization Credits: 3 (0-0-3)
Course Description: How organizing processes and discursive practices create, maintain, and destroy diverse forms of work in society.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to graduate school.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 634 Communication and Cultural Diversity Credits: 3 (0-0-3)
Course Description: Ethnographic approach to communication issues and concerns in a global context.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Admission to graduate school.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 638 Communication Research Methods Credits: 3 (3-0-0)
Course Description: Historical and philosophical context of communication research; relationship between theory and method; dominant forms of communication research.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 639 Communication Theory Credits: 3 (3-0-0)
Course Description: Examination of communication philosophies and perspectives; analysis of modern theories of face-to-face communication.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Graduate standing or 15 additional 300-400 level credits in Communication Studies and/or English.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 646 Media Theory Credits: 3 (3-0-0)
Course Description: Survey of the broad range of rhetorical/qualitative theories that inform media studies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing or fifteen 300- and 400-level credits in Communication Studies and/or English or JTC.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 647 Media Industries Credits: 3 (3-0-0)
Course Description: Political economy of the media both in the U.S. and globally, including how the media system operates and with what effects.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing or fifteen 300- and 400-level credits in Communication Studies and/or English.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 648 Media Texts Credits: 3 (3-0-0)
Course Description: Practical and theoretical implications for criticism in treating media products as texts; various approaches to textual or discourse analysis.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing or fifteen 300- and 400-level credits in Communication Studies and/or English.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 649 Media Audiences Credits: 3 (3-0-0)
Course Description: Theoretical and methodological issues concerning how audiences use and interpret media.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing or fifteen 300- and 400-level credits in Communication Studies and/or English.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 650 Contemporary Issues in Media Credits: 3 (0-0-3)
Course Description: Ever-changing media culture and landscape and how it affects personal, professional, and public lives.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to graduate school.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 675 Speech Communication Pedagogy Credits: 3 (3-0-0)
Course Description: Instructional practices and theories in speech.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to communication studies master's program.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

SPCM 684 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 686 Practicum Credits: Var[1-18] (0-0-0)
Course Description: Direction of communication studies fieldwork connected to the CSU Center for Public Deliberation under professional supervision.
Prerequisite: SPCM 408 and SPCM 508, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 692 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 701 Seminar in Academic Writing Credits: 3 (3-0-0)
Course Description: Best practices of academic writing for publication in communication studies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 702 Professional Writing and Public Scholarship Credits: 3 (3-0-0)
Course Description: Writing in specialized professional contexts. Adapting scholarly information for extra-disciplinary and lay audiences.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 712 Critical/Cultural Analysis in Communication Credits: 3 (0-0-3)
Course Description: Advanced instruction in critical/cultural analysis as understood by the field of Communication Studies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

SPCM 792A Seminar: Rhetoric and Civic Engagement Credits: 3 (0-0-3)
Course Description: Advanced readings in particular themes, questions, and topics pertaining to rhetoric and/or civic engagement.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 792B Seminar: Relational/Organizational Communication Credits: 3 (0-0-3)
Course Description: Advanced readings in particular themes, questions, and topics pertaining to relational and/or organizational communication.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 792C Seminar: Media and Visual Culture Credits: 3 (0-0-3)
Course Description: Advanced readings in particular themes, questions, and topics pertaining to media and/or visual culture.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 793 Seminar: Communications Research Methods Credits: 3 (0-0-3)
Course Description: Advanced research method(s) in the field of Communication Studies.
Prerequisite: SPCM 638.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 798 Research Credits: Var[1-18] (0-0-0)
Course Description: PhD students in Communication will work on Qualifying Exam/Portfolio.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

SPCM 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Composition-CO (CO)

Courses

CO 130 Academic Writing (GT-CO1) Credits: 3 (3-0-0)
Course Description: Academic writing, critical thinking, and critical reading through study of a key academic issue.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Introductory Writing (GT-CO1).

CO 150 College Composition (GT-CO2) Credits: 3 (3-0-0)
Course Description: Understanding and writing for rhetorical situations; critical reading and response; writing source-based argument for academic and public audiences.
Prerequisite: CO 130.
Registration Information: Must have taken CO 130 or Composition Challenge Essay (score of 3, 4, or 5) or SAT Verbal/Critical reading score of minimum 570 or SAT Evidence Based Reading/Writing score of minimum 620 or ACT COMPOSITE score of minimum 26 or Directed Self-Placement Survey code of 15. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Intermediate Writing 1A, Intermediate Writing (GT-CO2).

CO 300 Writing Arguments (GT-CO3) Credits: 3 (3-0-0)
Course Description: Reading, analyzing, researching, and writing arguments.
Prerequisite: CO 150 or HONR 193.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Advanced Writing 2, Advanced Writing (GT-CO3).

CO 301A Writing in the Disciplines: Arts and Humanities (GT-CO3) Credits: 3 (3-0-0)
Course Description: Learning writing strategies for addressing general audiences in arts and humanities.
Prerequisite: CO 150 or HONR 193.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Advanced Writing 2, Advanced Writing (GT-CO3).

CO 301B Writing in the Disciplines: Sciences (GT-CO3) Credits: 3 (3-0-0)
Course Description: Learning writing strategies for addressing general audiences in sciences.
Prerequisite: CO 150 or HONR 193.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Advanced Writing 2, Advanced Writing (GT-CO3).

CO 301C Writing in the Disciplines: Social Sciences (GT-CO3) Credits: 3 (3-0-0)
Course Description: Learning writing strategies for addressing general audiences in social sciences.
Prerequisite: CO 150 or HONR 193.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Advanced Writing 2, Advanced Writing (GT-CO3).

CO 301D Writing in the Disciplines: Education (GT-CO3) Credits: 3 (3-0-0)
Course Description: Learning writing strategies for addressing general audiences in education.
Prerequisite: CO 150 or HONR 193.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Advanced Writing 2, Advanced Writing (GT-CO3).

CO 302 Writing in Digital Environments (GT-CO3) Credits: 3 (3-0-0)
Course Description: Writing strategies, patterns and approaches for online materials.
Prerequisite: CO 150 or HONR 193.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Advanced Writing 2, Advanced Writing (GT-CO3).

CO 401 Writing and Style Credits: 3 (3-0-0)
Course Description: Advanced expository and persuasive writing emphasizing modes, strategies, and styles for a variety of audiences and purposes.
Prerequisite: CO 300 or CO 301A to 301D or CO 302.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CO 402 Principles of Digital Rhetoric and Design Credits: 3 (3-0-0)
Course Description: Advanced study of rhetorical contexts shaping online texts. Includes instruction in coding and digital design.
Prerequisite: None.
Registration Information: Must have completed AUCC category 2.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Computer Info Systems-CIS (CIS)

Courses

CIS 120 Business Programming Fundamentals Credits: 3 (3-0-0)
Course Description: File and operating systems for business application development. Business program development using a high-level programming language.
Prerequisite: None.
Registration Information: Credit not allowed for both CIS 120 and CIS 210.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 200 Business Information Systems Credits: 3 (3-0-0)
Course Description: Use of information technology (IT) to enable knowledge workers, support business processes, and grow the business.
Prerequisite: None.
Registration Information: Passing score on Excel competency exam. Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 210 Information Technology in Business Credits: 3 (3-0-0)
Course Description: Introduction to information systems: the IS profession; hardware, software, and programming; web and database applications; data analysis tools.
Prerequisite: CIS 200, may be taken concurrently.
Registration Information: Credit not allowed for both CIS 210 and CIS 120.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 240 Application Design and Development Credits: 3 (3-0-0)
Course Description: Software engineering methods including design, implementation, and testing using structured and event-driven techniques, logic, and data structures.
Prerequisite: CIS 210.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIS 301 End User Computing Credits: 3 (3-0-0)
Course Description: End user applications in a Graphical User Interface environment including spreadsheet, word processing, and presentation graphics; Internet concepts.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIS 320 Project Management for Information Systems Credits: 3 (3-0-0)
Course Description: Project management concepts including work breakdown structure, estimating, scheduling, tools, and reports.
Prerequisite: CIS 200.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 340 Advanced Application Design and Development Credits: 3 (3-0-0)
Course Description: Design and construction of business applications using object-orientation and advanced data structures.
Prerequisite: CIS 240.
Registration Information: Credit not allowed for both CIS 340 and CIS 220.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 350 Operating Systems and Networks Credits: 3 (3-0-0)
Course Description: Multiuser and network operating systems; basic networking concepts including security, transmission, performance, and topologies.
Prerequisite: CIS 210.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 355 Business Database Systems Credits: 3 (3-0-0)
Course Description: Physical and logical design, implementation, and administration of databases.
Prerequisite: CIS 200.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 360 Systems Analysis and Design Credits: 3 (3-0-0)
Course Description: Traditional and cutting-edge systems analysis and design techniques, with emphasis on object-oriented approaches.
Prerequisite: CIS 240.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 370 Business Analytics Credits: 3 (3-0-0)
Course Description: Concepts, processes, techniques, and tools to extract, cleanse, organize, transform, store, analyze, and visualize data to support business decision making.
Prerequisite: CIS 200 and STAT 204.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 410 Web Application Development Credits: 3 (3-0-0)
Course Description: Web development techniques and strategies including Active Server Pages using VBScript, JavaScript, ColdFusion; security, web design.
Prerequisite: CIS 355 and CIS 240.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 411 Enterprise Resource Planning Systems Credits: 3 (3-0-0)
Course Description: Introduction to enterprise resource planning (ERP) systems concepts, business processes impacted by ERP, systems and software integration.
Prerequisite: (ACT 220) and (FIN 300 or FIN 305) and (MGT 305 or MGT 320) and (MKT 300 or MKT 305).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 413 Advanced Networking and Security Credits: 3 (3-0-0)
Course Description: Modern communication standards, protocol systems; network security, security policies, attack and protection mechanisms, legal and ethical issues.
Prerequisite: CIS 240 and CIS 350.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIS 455 Advanced Database Management Credits: 3 (3-0-0)
Course Description: Advanced data management topics including performance tuning, concurrency control, security, object-oriented databases, and data warehousing.
Prerequisite: CIS 355.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 487 Internship Credits: 3 (0-9-0)
Course Description: Supervised and planned work experience paralleling concentration in industry.
Prerequisite: CIS 355 and CIS 360.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 492 Seminar Credits: 3 (3-0-0)
Course Description: Current topics in computer-based information systems.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 496B Group Study: Small Business Information Systems Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 496C Group Study: Communications and Distributed Systems Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 496D Group Study: Information Systems Performance Measurement Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 496E Group Study: Current Issues in Business Computing Systems Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 498 Research Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 505 Database Concepts Credit: 1 (1-0-0)
Course Description: An introduction to business database systems for non-CIS majors. Covers introductory database concepts, terminology, structures, relationships, and querying with SQL.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 570 Business Intelligence Credits: 3 (3-0-0)
Course Description: Harnessing vast data stores to solve problems, enhance decision-making, discover new business opportunities, and to derive additional benefits.
Prerequisite: None.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 575 Applied Data Mining and Analytics in Business Credits: 3 (3-0-0)
Course Description: Data mining is a process of selecting, exploring and modeling large amounts of data to identify patterns and relationships among key variables.
Prerequisite: STAT 204.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 576 Business Data Visualization Credits: 3 (3-0-0)
Course Description: Methods to solve data visualization problems; critique and evaluate current systems; develop skills in the construction of data visualization.
Prerequisite: CIS 575 or CIS 605.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 600 Information Technology and Project Management Credits: 3 (3-0-0)
Course Description: Strategic role in and management of information technology and software development projects.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 601 Enterprise Computing and Systems Integration Credits: 3 (3-0-0)
Also Offered As: MGT 601.
Course Description: Integrated extended enterprise planning and execution systems concepts including ERP, CRM, SCM, MRP II, business processes, front/back office systems.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Credit not allowed for both CIS 601 and MGT 601. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 605 Business Visual Application Development Credits: 3 (3-0-0)
Course Description: Design, construction, and testing of business application systems including leading-edge visual, E-commerce languages, and tools.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 606 Application Software Infrastructure Credits: 3 (3-0-0)
Course Description: Design, construction, and testing of business application software infrastructure including hardware, operating software, and communications network.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 610 Software Development Methodology Credits: 3 (3-0-0)
Course Description: Methods for all phases of software development focusing upon the establishment of economical software that is reliable and cross platform.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 611 Object-Oriented Systems Credits: 3 (3-0-0)
Course Description: Object-oriented and web-based software; object model describing classes; relationships to other objects, attributes, and operations.
Prerequisite: CIS 610.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 620 IT Communications Infrastructure Credits: 3 (3-0-0)
Course Description: Technical aspects of information communications, business considerations; wireless technology, architecture, and applications.
Prerequisite: CIS 606.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 623 Cybersecurity Credits: 3 (3-0-0)
Course Description: Detailed examination of modern security topics, blending coverage of many of the domains of the CISSP with those of the CEH: Access Control, Network Security, Risk Management, Software Development Security, Cryptography, Architecture, Operations, Business Continuity, Legal/Ethical issues, as well as attack, defense and counter-measure mechanisms.
Prerequisite: CIS 620.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 655 Business Database Systems Credits: 3 (3-0-0)
Course Description: Database analysis, design, administration; data modeling; data sublanguages, query facilities; distributed database systems.
Prerequisite: CIS 605.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 665 E-Business Application Technologies Credits: 3 (3-0-0)
Course Description: Developing E-business (B2B and B2C) through construction and deployment.
Prerequisite: CIS 605 and CIS 606 and CIS 610.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 670 Advanced IT Project Management Credits: 3 (3-0-0)
Course Description: Advanced tools, techniques and skills for advanced risk management, change movement, and performance/control measures in cross-functional projects.
Prerequisite: CIS 600.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 675 Agile Management and Product Development Credits: 3 (3-0-0)
Course Description: Business model process optimization; managing rapid product development; incorporating constituent feedback throughout the product life cycle.
Prerequisite: CIS 600.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 676 Information Technology Management Credits: 3 (3-0-0)
Course Description: Strategic information technology management of business, technical, system and information services.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to graduate program in business. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Computer Science-CS (CS)

Courses

CS 110 Personal Computing Credits: 4 (3-3-0)
Course Description: Hardware/software concepts, Internet services, OS commands, electronic presentations, spreadsheets, databases, programming concepts.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CS 110 and BUS 150. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 150 Culture and Coding (GT-AH3) Credits: 3 (2-2-0)
Course Description: Survey of computer science, formal logic, and computational thinking. Explores the historical, gender, and cultural perspectives on the role of technology in society. Includes learning a basic programming language. Students will be expected to write small programs, and construct written arguments on ways in which technology influences our modern culture. Previous computer science experience not necessary.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Ways of Thinking (GT-AH3).

CS 152 Introduction to Programming (CS0)-Python Credits: 2 (1-0-1)
Course Description: Introductory Python programming for students with no prior programming experience. Topics include variables, types, operators, expressions, conditionals, loops, functions, lists, dictionaries, strings, file input/output, and modules.
Prerequisite: MATH 118.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 155 Introduction to Unix Credit: 1 (1-0-0)
Course Description: Unix shell commands, utilities (editors, sorting, file management), shell scripting.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CS 156 Introduction to C Programming I Credit: 1 (1-0-0)
Course Description: Basic elements of language structure, data types, expressions, program control flow and modularity.
Prerequisite: (CS 155, may be taken concurrently) and (MATH 118).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CS 157 Introduction to C Programming II Credit: 1 (1-0-0)
Course Description: More basic design types, function usage and strings. Arrays, user-defined types and structures, enumerated types, recursion, dynamic storage allocation.
Prerequisite: (CS 156, may be taken concurrently) and (MATH 118).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CS 158 Mathematical Algorithms in C Credit: 1 (0-2-0)
Also Offered As: MATH 158.
Course Description: Compilers, expressions, variable types, control statements, pointers, logical statements, plotting, secant method, trapezoidal rule, recursion.
Prerequisite: MATH 151 and CS 156 and MATH 160.
Registration Information: Credit not allowed for both CS 158 and MATH 158.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 163 CS1---No Prior Programming Experience Credits: 4 (3-2-0)
Course Description: Computer programming for students without previous programming experience. Topics include variables, assignment, expressions, operators, booleans, conditionals, characters and strings, control loops, arrays, objects and classes, file input/output, interfaces, recursion, lists, and sorting.
Prerequisite: CS 150 with a minimum grade of C or CS 152 with a minimum grade of C or MATH 124 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online. Credit allowed for only one of the following courses: CS 160, CS 163, or CS 164.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CS 164 CS1--Prior Programming Experience Credits: 4 (3-2-0)
Course Description: Computer programming for students with limited programming experience. Problem decomposition for good design; expressions, operators, booleans, conditionals, characters and strings, control loops, arrays, objects and classes, file input/output, interfaces, recursion, lists, and sorting.
Prerequisite: CS 150 with a minimum grade of C or CS 152 with a minimum grade of C or MATH 124 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online. Credit allowed for only one of the following courses: CS 160, CS 163, or CS 164.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 165 CS2--Data Structures Credits: 4 (3-2-0)
Course Description: Object oriented concepts, assertions, inheritance, polymorphism, algorithms and data structures using an object oriented language.
Prerequisite: CS 163 with a minimum grade of C or CS 164 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online. Credit not allowed for both CS 165 and CS 200.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 192 First-Year Seminar-Computer Science Credit: 1 (0-0-1)
Course Description: Computer science as a field of study and a major program at CSU. Addresses career exploration, research experience opportunities, post-graduation planning, and building a skill base of successful academic strategies.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Freshman and sophomore Computer Science and Applied Computing Technology majors only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 200 Algorithms and Data Structures Credits: 4 (3-2-0)
Course Description: Data structures; abstract data types; algorithm correctness; complexity analysis; sorting, searching, hashing.
Prerequisite: (CS 161 with a minimum grade of C) and (MATH 141 with a minimum grade of C or MATH 155 with a minimum grade of C or MATH 160 with a minimum grade of C).
Registration Information: Credit not allowed for both CS 165 and CS 200.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 220 Discrete Structures and their Applications Credits: 4 (3-0-1)
Course Description: Integer representations and properties, propositions, predicates, sets, functions, program proofs, induction, counting, complexity; Python implementations of these concepts.
Prerequisite: (CS 163 with a minimum grade of C or CS 164 with a minimum grade of C) and (MATH 155 with a minimum grade of C or MATH 159 with a minimum grade of C or MATH 160 with a minimum grade of C).
Registration Information: Sophomore standing. Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 253 Software Development with C++ Credits: 4 (3-0-1)
Course Description: Developing and modifying large software. Relating programming language to its machine implementation. C++ programming for experienced programmers.
Prerequisite: CS 165 with a minimum grade of C.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 270 Computer Organization Credits: 4 (3-2-0)
Course Description: Data representation, arithmetic, assembly and C language, digital logic and systems, Boolean algebra, circuits, CPU and memory models, state machines.
Prerequisite: CS 163 with a minimum grade of C or CS 164 with a minimum grade of C.
Registration Information: Sophomore standing. Computer Science and Applied Computing Technology majors only. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 295 Independent Study Credits: Var[1-4] (0-0-0)
Course Description: Investigation of special topics under direction of computer science faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 314 Software Engineering Credits: 3 (3-0-0)
Course Description: Principles, concepts, and techniques associated with team-based development of large, complex software systems. Topics include teamwork, configuration management, project management, requirements engineering, and systematic testing techniques. Use software tools in the context of a Scrum-based Agile development project.
Prerequisite: CS 253 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 320 Algorithms--Theory and Practice Credits: 3 (3-0-0)
Course Description: Analysis, design, implementation and applications of algorithms.
Prerequisite: (CS 220 with a minimum grade of C and CS 165 with a minimum grade of C) and (DSCI 369 with a minimum grade of C or MATH 229 with a minimum grade of C or MATH 369 with a minimum grade of C).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 356 Systems Security Credits: 3 (3-0-0)
Course Description: Computer and system security, authentication, access control, malicious software, and software security.
Prerequisite: CS 253 with a minimum grade of C or CS 370 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 370 Operating Systems Credits: 3 (3-0-0)
Course Description: Introduction to operating systems including memory organization, I/O control, multitasking, process control, coordination, and resource management.
Prerequisite: (CS 165 with a minimum grade of C) and (CS 270 with a minimum grade of C or ECE 251 with a minimum grade of C).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 410 Introduction to Computer Graphics Credits: 4 (3-2-0)
Course Description: Graphics hardware and software; drawing simple objects; coordinate transformations in 2D and 3D; modeling and viewing complex 2D and 3D objects.
Prerequisite: (CS 253 with a minimum grade of C) and (DSCI 369 with a minimum grade of C or MATH 229 with a minimum grade of C or MATH 369 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 414 Object-Oriented Design Credits: 4 (3-3-0)
Course Description: Object-oriented methods for large-scale software systems. Software design for reuse using patterns. WWW applications in languages, e.g., Java.
Prerequisite: CS 314 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 420 Introduction to Analysis of Algorithms Credits: 4 (3-0-1)
Course Description: Efficiency analysis, correctness proofs, design strategies, illustrations from domains such as graph theory, scheduling and optimization, geometry.
Prerequisite: CS 320 with a minimum grade of C.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 425 Introduction to Bioinformatics Algorithms Credits: 4 (3-2-0)
Course Description: Algorithms for analysis of large scale biological data.
Prerequisite: (CS 320 with a minimum grade of C) and (ECE 303 with a minimum grade of C or STAT 301 with a minimum grade of C or STAT 303 with a minimum grade of C or STAT 307 with a minimum grade of C or STAT 315 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 430 Database Systems Credits: 4 (3-2-0)
Course Description: Database analysis, design, administration, implementation, hierarchical, network relational models; data sublanguages; query facilities.
Prerequisite: CS 314 with a minimum grade of C or CS 370 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 435 Introduction to Big Data Credits: 4 (3-2-0)
Course Description: Fundamental issues in Big Data: data organization, storage, retrieval, analytics, and knowledge discovery at scale.
Prerequisite: CS 320 with a minimum grade of C or CS 370 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 440 Introduction to Artificial Intelligence Credits: 4 (3-2-0)
Course Description: Concepts, representations, and algorithms for applications of problem solving search, logical reasoning and machine learning.
Prerequisite: (CS 320 with a minimum grade of C) and (ECE 303 with a minimum grade of C or STAT 301 with a minimum grade of C or STAT 303 with a minimum grade of C or STAT 307 with a minimum grade of C or STAT 315 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 445 Introduction to Machine Learning Credits: 4 (3-2-0)
Course Description: Fundamental concepts and methods of computational data analysis, including pattern classification, prediction, visualization, and recent topics in deep learning.
Prerequisite: (CS 320 with a minimum grade of C) and (ECE 303 with a minimum grade of C or STAT 301 with a minimum grade of C or STAT 303 with a minimum grade of C or STAT 307 with a minimum grade of C or STAT 315 with a minimum grade of C).
Registration Information: Sophomore standing. Must register for lecture and laboratory. Sections may be offered: Online. Credit allowed for only one of the following: CS 445, CS 480A3, or DSCI 445.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 453 Introduction to Compiler Construction Credits: 4 (3-0-1)
Course Description: Functional components of a compiler: modules, interfaces, lexical and syntax analysis, error recovery, resource allocation, code generation.
Prerequisite: CS 314 with a minimum grade of C.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 454 Principles of Programming Languages Credits: 4 (3-3-0)
Course Description: Language design concepts; functional programming; interpreter support for environments, procedures, recursion, types, objects; language paradigms.
Prerequisite: CS 253 with a minimum grade of C and CS 320 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 455 Introduction to Distributed Systems Credits: 4 (3-2-0)
Course Description: Distributed systems including model of distributed computations; concurrency; thread pools and scalable servers; distributed mutual exclusion; cloud computing; distributed graph algorithms; data representation formats; atomic transactions; large-scale storage systems; distributed shared memory; and overlays.
Prerequisite: CS 370 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. CS majors and minors only. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 457 Computer Networks and the Internet Credits: 4 (3-3-0)
Course Description: Principles of communications, local area networks, communication protocols, TCP/IP, and the Internet.
Prerequisite: (CS 370 with a minimum grade of C and CS 253 with a minimum grade of C) and (STAT 301 with a minimum grade of C or STAT 303 with a minimum grade of C or ECE 303 with a minimum grade of C or STAT 307 with a minimum grade of C or ERHS 307 with a minimum grade of C or STAT 311 with a minimum grade of C or STAT 315 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 464 Principles of Human-Computer Interaction Credits: 4 (3-2-0)
Course Description: History and trends in human-computer interaction; user-centered design techniques; prototyping; experimental methods for the evaluation of technology.
Prerequisite: CS 253 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 470 Computer Architecture Credits: 4 (3-2-0)
Course Description: Instruction set; hardwired, microprogramming; memory; arithmetic; I/O and buses; performance evaluation; pipelining, RISC.
Prerequisite: CS 370.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 475 Parallel Programming Credits: 4 (3-3-0)
Course Description: Parallel programming techniques for shared-memory and message-passing systems; process synchronization, communication; example languages.
Prerequisite: CS 320 with a minimum grade of C or CS 370 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 486 Practicum Credits: Var[1-4] (0-0-0)
Course Description: Supervised work experience in approved computer science setting with periodic consultation of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for any combination of CS 486, CS 495.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for any combination of CS 486, CS 495.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 498 Research Credits: Var[1-4] (0-0-0)
Course Description: Supervised research in computer science.
Prerequisite: None.
Registration Information: Computer science majors only. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 510 Image Computation Credits: 4 (3-3-0)
Course Description: Image generation theory and implementation, image manipulation/interpretation. Ray tracing, geometric and photometric manipulation, image matching.
Prerequisite: CS 410.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 514 Software Product and Process Evaluation Credits: 4 (3-3-0)
Course Description: Software development process modeling and evaluation; software metrics, testing, verification, validation; experimental methods in software engineering.
Prerequisite: CS 414.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 515 Software Maintenance & Evolution Credits: 4 (3-2-0)
Course Description: Software maintenance fundamentals, software evolution principles, software properties and paradigms, software decay and aging, software change management, software quality, software refactoring, mining software repositories, defect prediction and effort estimation, and software documentation.
Prerequisite: CS 414.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Must register for lecture and laboratory. Sections may be offered: Online. Credit not allowed for both CS 515 and CS 581A3.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 517 Software Specification and Design Credits: 4 (3-3-0)
Course Description: Rigorous techniques for modeling, specifying, and analyzing software requirements and designs; reusable software development.
Prerequisite: CS 414.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 518 Distributed Software System Development Credits: 4 (3-2-0)
Course Description: Principles of developing distributed systems; middleware technologies and techniques for building complex distributed component-based systems.
Prerequisite: CS 414.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 520 Analysis of Algorithms Credits: 4 (3-3-0)
Course Description: Asymptotic complexity, algorithm complexity, and problem complexity; the Master Method; parallel algorithms; algorithm design.
Prerequisite: CS 420.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 522 Foundations of Cyber-Physical Systems Credits: 4 (3-2-0)
Course Description: Principles of design, specification, modeling, and analysis of cyber-physical systems and software. Topics include model-based design, formal methods for specification and verification, and control theory.
Prerequisite: CS 320 or CS 420.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Must register for lecture and laboratory. Credit not allowed for both CS 522 and CS 581A4.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 530 Fault-Tolerant Computing Credits: 4 (3-3-0)
Course Description: Achieving high reliability and fault tolerance. Fault modeling, testing, reliability evaluation, redundancy, fault tolerance. (NT-O)
Prerequisite: CS 370.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 533 Database Management Systems Credits: 4 (3-2-0)
Course Description: Theory and implementation of concurrency control, recovery, and query processing as it applies to centralized and distributed systems.
Prerequisite: CS 430.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 535 Big Data Credits: 4 (3-3-0)
Course Description: Topics in storage, retrieval, analysis, and knowledge discovery using Big Data. Lectures include real-world case studies.
Prerequisite: CS 455.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 540 Artificial Intelligence Credits: 4 (3-3-0)
Course Description: Knowledge representation and reasoning, search, planning, evolutionary computation, data mining, information retrieval, intelligent Web, agent systems.
Prerequisite: CS 440.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 545 Machine Learning Credits: 4 (3-3-0)
Course Description: Computational methods that allow computers to learn; neural networks, decision trees, genetic algorithms, bagging and boosting.
Prerequisite: CS 440.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 548 Bioinformatics Algorithms Credits: 4 (3-2-0)
Also Offered As: STAT 548.
Course Description: Computational methods for analysis of DNA/protein sequences and other biological data.
Prerequisite: STAT 301 or STAT 307 or STAT 315.
Registration Information: Students should already have knowledge of a contemporary programming language. Must register for lecture and laboratory. Credit not allowed for both CS 548 and STAT 548.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 553 Algorithmic Language Compilers Credits: 4 (3-3-0)
Course Description: Compiler construction; lexical scanner generators, parser generators, dataflow analysis, optimization.
Prerequisite: CS 453.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 555 Distributed Systems Credits: 4 (3-2-0)
Course Description: Principles, paradigms, protocols and algorithms underlying modern distributed systems.
Prerequisite: CS 455.
Registration Information: Must register for lecture and laboratory. Computer Science graduate students only. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 556 Computer Security Credits: 4 (3-2-0)
Course Description: Topics in computer security: concepts, threats, risks, access control models, trusted systems, cryptography, authentication.
Prerequisite: CS 356 or CS 455.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 557 Advanced Networking Credits: 4 (3-3-0)
Course Description: Core internet protocols, including transport, routing, and security protocols. Protocol design principles. Network measurements and assessment.
Prerequisite: CS 457.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 560 Foundations of Fine-Grain Parallelism Credits: 4 (3-2-0)
Also Offered As: ECE 560.
Course Description: Programming novel architectures; performance tuning; automatic parallelization; program transformation; polyhedral model; equational programming.
Prerequisite: CS 475.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CS 560 and ECE 560. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 561 Hardware/Software Design of Embedded Systems Credits: 4 (3-3-0)
Also Offered As: ECE 561.
Course Description: Embedded systems design including system level modeling, design space exploration, hardware-software partitioning, high level synthesis.
Prerequisite: CS 270 or CS 470 or ECE 251 or ECE 452.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CS 561 and ECE 561. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 567 3D User Interfaces Credits: 4 (3-2-0)
Course Description: Introduction to the theory of interaction design for 3D user interfaces (3DUI). Interaction (selection, manipulation, travel, and wayfinding), virtual environments, and application to 3DUI. Relevance of 3DUI principles to traditional displays, virtual reality, augmented reality, and mixed reality.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 570 Advanced Computer Architecture Credits: 4 (3-3-0)
Course Description: Pipelined CPU design. Superscalar architectures and instruction-level parallelism. Cache and memory hierarchy design. Storage systems.
Prerequisite: CS 470.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 575 Parallel Processing Credits: 4 (3-3-0)
Course Description: Parallel and distributed computing models, algorithms, mapping and performance evaluations, parallel computing tools and applications.
Prerequisite: CS 475.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 612 Topics in Computer Graphics Credits: 4 (3-2-0)
Course Description: Computer graphics research topics.
Prerequisite: CS 510.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 614A Advanced Topics in Software Engineering: Specification and Design Credits: 4 (3-3-0)
Course Description:
Prerequisite: CS 514 or CS 517 or CS 518.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 614B Advanced Topics in Software Engineering: Testing and Verification Credits: 4 (3-3-0)
Course Description:
Prerequisite: CS 514 or CS 517 or CS 518.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 614C Advanced Topics in Software Engineering: Software Environments and Tools Credits: 4 (3-3-0)
Course Description:
Prerequisite: CS 514 or CS 517 or CS 518.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 614D Advanced Topics in Software Engineering: Software Measurement, Analysis, & Evaluation Credits: 4 (3-3-0)
Course Description:
Prerequisite: CS 514 or CS 517 or CS 518.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 614E Advanced Topics in Software Engineering: Application Domains Credits: 4 (3-3-0)
Course Description:
Prerequisite: CS 514 or CS 517 or CS 518.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 620 Advanced Topics in Algorithms Credits: 4 (3-2-0)
Course Description: Designing and analyzing algorithms and data structures; illustrations from a variety of problem domains.
Prerequisite: CS 520.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CS 635 Advanced Fault-Tolerant Computing Credits: 4 (3-3-0)
Course Description: Advanced topics and recent developments in high reliability and fault-tolerant systems.
Prerequisite: CS 530.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 640 Advanced Artificial Intelligence I Credits: 2 (2-0-0)
Course Description: Research topics in artificial intelligence: genetic algorithms, neural networks, connectionist models; machine learning; planning, automated reasoning.
Prerequisite: CS 540.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 641 Advanced Artificial Intelligence II Credits: 2 (2-0-0)
Course Description: Advanced research topics in artificial intelligence.
Prerequisite: CS 640.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 645 Advanced Machine Learning: Neural Networks Credits: 4 (3-2-0)
Course Description: Study of machine learning research literature and implementations of algorithms for neural networks and reinforcement learning.
Prerequisite: CS 545 with a minimum grade of C.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 646 Machine Learning in Bioinformatics Credits: 4 (3-2-0)
Course Description: Recent research on the applications of machine learning in bioinformatics.
Prerequisite: CS 545 or STAT 560.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 653 Topics in Programming Language Implementation Credits: 4 (3-3-0)
Course Description: Data dependence analysis; code generation.
Prerequisite: CS 553.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 655 Advanced Topics in Distributed Systems Credits: 4 (3-2-0)
Course Description: Issues related to robustness, replication, consistency, scalability, isolation and privacy in large-scale distributed systems.
Prerequisite: CS 555.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 656A Advanced Topics in Computer Security: Formal Models of Computer Security Credits: 4 (3-2-0)
Course Description: Advanced research topics in computer security.
Prerequisite: CS 556.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 656B Advanced Topics in Computer Security: Models for Privacy and Application Security Credits: 4 (3-2-0)
Course Description: Advanced research topics in computer security.
Prerequisite: CS 556.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 656C Advanced Topics in Computer Security: Network Security Credits: 4 (3-2-0)
Course Description: Advanced research topics in computer security.
Prerequisite: CS 556.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 657 Advanced Topics in Computer Networking Credits: 4 (3-2-0)
Course Description: Advanced research topics in computer networks.
Prerequisite: CS 557.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 658 Internet Engineering Credits: 4 (3-3-0)
Also Offered As: ECE 658.
Course Description: Link technologies, multiple access, hardware and software for internetworks routing, switching flow control, multicast, performance, and applications.
Prerequisite: CS 457 or ECE 456.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online. Credit not allowed for both ECE 658 and CS 658.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CS 670B Topics in Architecture/Systems: Performance Evaluation and Modeling Credits: Var[1-4] (0-0-0)
Also Offered As: ECE 670B.
Course Description:
Prerequisite: CS 570 or ECE 554.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both CS 670B and ECE 670B.
Grade Mode: Traditional.
Special Course Fee: No.

CS 670C Topics in Architecture/Systems: Distributed Systems Credits: Var[1-4] (0-0-0)
Also Offered As: ECE 670C.
Course Description:
Prerequisite: CS 570 or ECE 554.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both CS 670C and ECE 670C.
Grade Mode: Traditional.
Special Course Fee: No.

CS 670D Topics in Architecture/Systems: Architecture of Advanced Systems Credits: Var[1-4] (0-0-0)
Also Offered As: ECE 670D.
Course Description:
Prerequisite: CS 570 or ECE 554.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both CS 670D and ECE 670D.
Grade Mode: Traditional.
Special Course Fee: No.

CS 675 Advanced Parallel Computing Credits: 4 (3-3-0)
Course Description: Parallel computing, computational models, parallel languages and algorithms, distributed simulation, Internet and mobile computing, parallel search.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 692 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 787 Internship Credit: 1 (0-3-0)
Course Description: Summer internship experience in computer science.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 793 Research Seminar in Computer Science Credits: 4 (0-0-4)
Course Description: Research methods in specific areas of computer science.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing in computer science.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Computing Technology-CT (CT)

Courses

CT 310 Web Development Credits: 4 (3-3-0)
Course Description: Web development languages used to create fully functional dynamic web sites; server and client scripting, database access and security issues.
Prerequisite: CS 220 and CS 165.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CT 320 Network and System Administration Credits: 4 (3-3-0)
Course Description: Installation of network and operating system services, management and support; upgrades, security, backups.
Prerequisite: CS 156 or CS 270.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

Construction Management-CON (CON)

Courses

CON 101 Introduction to Construction Management Credits: 3 (3-0-0)
Course Description: Introduction to the construction industry; including methods, practices, trends, careers, and constituencies involved in the design and construction process.
Prerequisite: None.
Registration Information: Pre-Construction Management Majors and Construction Management Majors and Minors Only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 131 Graphic Communications for Construction Credits: 2 (0-4-0)
Course Description: Reading technical drawings, 2D/3D visualization, manual drafting techniques, introduction to design software applications.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 151 Construction Materials and Methods Credits: 3 (3-0-0)
Course Description: Materials and methods utilized in the construction of the built environment.
Prerequisite: None.
Registration Information: Agricultural Education, Interior Architecture and Design, Pre-Interior Architecture and Design majors, and Construction Management majors and minors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 192 Construction Management Seminar Credit: 1 (0-0-1)
Course Description: Introduction to the construction management major, career paths, industry sectors, campus resources, and tools for academic success. Information and skills necessary to succeed in the construction management major.
Prerequisite: CON 101.
Registration Information: Construction management majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 251 Materials Testing and Processing Credits: 2 (1-2-0)
Course Description: Testing of construction materials for standards and quality. Conduct material tests, document and interpret results.
Prerequisite: CON 151 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Construction Management Majors Only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CON 253 Surveying and Construction Layout Credits: 2 (0-2-1)
Course Description: Surveying fundamentals related to construction: project layout, measurement procedures, vertical controls, line and grade, and surveying instrument operation.
Prerequisite: (CON 131 with a minimum grade of C) and (MATH 125 or MATH 160).
Registration Information: Construction management, environmental horticulture, and landscape architecture majors only. Must register for laboratory and recitation. Credit not allowed for both CON 253 and CON 261.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 261 Construction Surveying Credits: 3 (2-3-0)
Course Description: Surveying fundamentals related to construction: building layout, measurement procedures, vertical controls, line and grade, and surveying instrument operation.
Prerequisite: (CON 131 with a minimum grade of C or INTD 166) and (MATH 125 or MATH 160).
Registration Information: Must register for lecture and laboratory. Construction management, environmental horticulture, and landscape architecture majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CON 265 Plan Reading and Quantity Survey Credits: 3 (2-2-0)
Course Description: Practice in construction document reading, interpretation and analysis for quantity surveying and material quantity organizing using industry-recognized methods including, but not limited to, a project manual-based work breakdown structure.
Prerequisite: CON 131 with a minimum grade of C and CON 151 with a minimum grade of C.
Registration Information: Construction management majors and minors only. Must register for lecture and laboratory. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 267 Construction Management Pre-Internship Credit: 1 (0-0-1)
Course Description: Skills and concepts related to successful internships within the construction management industry.
Prerequisite: CON 265 with a minimum grade of C.
Registration Information: Construction Management Majors Only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 270 Introduction to Road Construction Credits: 3 (3-0-0)
Course Description: Steps necessary to construct a paved roadway from conception, land acquisition and finance through paving operations and trafficking.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CON 317 Safety Management Credits: 2 (2-0-0)
Course Description: Construction safety management, accident prevention, and hazard control. Federal, state, and local regulation compliance.
Prerequisite: None.
Registration Information: Construction Management majors and minors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 351 Construction Field Management Credits: 2 (1-2-0)
Course Description: Applications of materials and methods in construction; administrative and organizational planning for construction field practice.
Prerequisite: CON 251, may be taken concurrently and CON 317, may be taken concurrently.
Registration Information: Must register for lecture and laboratory. Construction management majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CON 352 Metal Fabrication for Construction Credits: 2 (1-2-0)
Course Description: Shaping, cutting, and joining of structural and non-structural metal. Emphasis on jobsite safety, economics, and efficiency.
Prerequisite: CON 251.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 353 Field Management for Construction Credits: 3 (1-2-1)
Course Description: Applications of materials and methods in construction; administrative and organizational planning for construction field practice.
Prerequisite: (CON 251, may be taken concurrently) and (CON 253 or CON 261) and (CON 317, may be taken concurrently).
Registration Information: Construction management majors only. Must register for lecture, lab, and recitation. Credit not allowed for both CON 351 and CON 353.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 358 Structural Systems for Construction I Credits: 3 (3-0-0)
Course Description: Behavior of structural components and systems, overview of structural engineering analysis and the design process for construction.
Prerequisite: CON 151 with a minimum grade of C and MATH 125.
Registration Information: Construction management majors only. Credit not allowed for CON 358 and CON 359.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 359 Structures I Credits: 4 (4-0-0)
Course Description: Behavior of structural components and systems, overview of structural engineering analysis and the design process.
Prerequisite: CON 151 with a minimum grade of C and MATH 125.
Registration Information: Construction management majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 360 Electrical Systems in Construction Credits: 3 (2-2-0)
Course Description: Electrical terminology, theory, components, systems, and applications within the construction industry.
Prerequisite: CON 265 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Construction Management Majors Only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 365 Construction Estimating Credits: 3 (2-2-0)
Course Description: Industry-recognized methods for work item analysis, quantity surveying, resource estimating, and bid development using a work breakdown structure.
Prerequisite: CON 265 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Construction Management majors and minors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 366 Construction Equipment and Methods Credits: 3 (2-2-0)
Course Description: Equipment and methods used in heavy-highway, heavy-civil and utility construction. Equipment and crew productivity. Equipment ownership and operating costs. Estimating, planning and directing heavy construction operations.
Prerequisite: CON 265 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Construction Management majors and minors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 367 Construction Contracts/Project Administration Credits: 3 (3-0-0)
Course Description: Construction contracts and clauses, stakeholder responsibilities, disputes, resolution methods and risk. Utilization of construction administration documents, systems and procedures to meet project requirements.
Prerequisite: CON 351, may be taken concurrently.
Registration Information: Construction management majors and minors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 370 Asphalt Pavement Materials and Construction Credits: 3 (2-2-0)
Course Description: Constituents of asphalt pavements; manufacture of asphalt cement, emulsions, and cutbacks; material properties and behavior.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 371 Mechanical and Plumbing Systems Credits: 3 (3-0-0)
Course Description: Heating, ventilation, air conditioning, plumbing, and fire suppression in the built environment.
Prerequisite: CON 360, may be taken concurrently or INTD 276, may be taken concurrently.
Registration Information: Interior Design and Construction Management Majors Only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 382A Study Abroad: European Perspectives Credits: 3 (0-0-3)
Course Description: A study of the physical resources and the human behaviors, which inform design and construction. Exploration of infrastructure and its relationship to resources, materials, and the culture in which it exists. Review of international perspectives of the built environment of Europe, past and present trends, and what the future holds. Survey of construction over time and trends in the preservation of existing infrastructure.
Prerequisite: None.
Registration Information: Sophomore standing. This is a partial semester course. Required field trips. You must apply through the Office of International Programs.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CON 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 450 Travel Abroad-Sustainable Building Credits: 3 (3-0-0)
Also Offered As: INTD 450.
Course Description: Major components of sustainable design and construction, energy, healthy buildings, natural resources and other environmental issues.
Prerequisite: None.
Registration Information: Credit not allowed for both CON 450 and INTD 450.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CON 458 Structural Systems for Construction II Credits: 3 (3-0-0)
Course Description: Review and analysis of shop drawings and details for structural systems. Overview of cast-in-place and prestressed concrete systems. Design of structural wood systems, connections, and formwork for cast-in-place concrete.
Prerequisite: CON 358 with a minimum grade of C or CON 359 with a minimum grade of C.
Registration Information: Construction management majors only. Credit not allowed for both CON 458 and CON 459.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 459 Structures II Credits: 4 (4-0-0)
Course Description: Design of formwork, falsework, and shoring.
Prerequisite: CON 359.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 461 Construction Scheduling and Cost Control Credits: 3 (2-2-0)
Course Description: Strategies and techniques for efficient scheduling of project activities and control of project costs; emphasis on Critical Path Method.
Prerequisite: CON 365.
Registration Information: Construction management majors and minors only. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 462 Financial Management for Construction Credits: 3 (3-0-0)
Course Description: Financial statements, financial ratios, time value of money, cash flow analysis and financial reporting for construction companies.
Prerequisite: ACT 205 or ACT 210.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 464 Construction Leadership Credits: 3 (1-0-2)
Course Description: Leading projects and people in a construction business and application of skills in a construction-based community service learning project.
Prerequisite: CON 365 and CON 367, may be taken concurrently.
Registration Information: Must register for lecture and recitation. Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 465 Construction Management Professional Practice Credits: 3 (1-0-2)
Course Description: Professional practice using an understanding of the contractual and working relationships among all participants in the design/construction process.
Prerequisite: (CON 461, may be taken concurrently) and (CON 487A or CON 487E or CON 487B).
Registration Information: Construction management majors only. Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 469 Soil Mechanics for Construction Credits: 3 (2-0-1)
Course Description: Analysis of the physical characteristics and properties of soil for construction project decision making. Interpretation of soils reports, conducting of testing procedures and evaluation of soils for use as a construction material. Assessment of the impact of soil characteristics on construction activities and project risk.
Prerequisite: CON 366 with a minimum grade of C.
Registration Information: Must register for lecture and recitation. Construction management majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 471 Project Management for Mechanical Systems Credits: 3 (3-0-0)
Course Description: Fundamental principles of mechanical systems. Presentation and practice of management principles relevant to mechanical projects.
Prerequisite: CON 371 and CON 365, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CON 476 Sustainable Practice-Design and Construction Credits: 3 (3-0-0)
Course Description: Major components of sustainable design/construction: energy, healthy buildings, cultural, natural resources, use, other environment/economic issues.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CON 477 Residential Aging-in-Place and Green Building Credits: 3 (3-0-0)
Course Description: Aging-in-place and green building aspects of the residential construction market.
Prerequisite: CON 265.
Restriction: .
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 487A Internship: Construction Management I Credits: 6 (0-0-18)
Course Description:
Prerequisite: CON 267 and CON 367.
Registration Information: OSHA 10-hour construction safety card.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CON 487B Internship: Construction Management II Credits: 3 (0-0-9)
Course Description:
Prerequisite: CON 267 and CON 367.
Registration Information: OSHA 10-hour construction safety card; 500 hours documented work experience.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CON 492A Seminar: Emerging Construction Technologies Credit: 1 (0-0-1)
Course Description: Emerging technologies in construction management practice. Applications of current and cutting-edge software, hardware, processes, tools and equipment in the industry.
Prerequisite: CON 351 and CON 365.
Registration Information: Construction Management majors only. Maximum of 3 credits allowed per subtopic. This is a partial semester course. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 492B Seminar: Construction Issues and Trends Credit: 1 (0-0-1)
Course Description: Issues and trends impacting construction project management and field operations. The impact of current trends on project management practice, risk mitigation and project controls.
Prerequisite: CON 351 and CON 365.
Registration Information: Construction Management majors only. Maximum of 3 credits allowed per subtopic. This is a partial semester course. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 492C Seminar: Heavy Civil Project Management Credit: 1 (0-0-1)
Course Description: Applications of project management practice for heavy civil construction projects. Exploration of heavy civil construction project management principles and concepts through industry-specific case studies, processes and tutorials.
Prerequisite: CON 351 and CON 365.
Registration Information: Construction Management majors only. Maximum of 3 credits allowed per subtopic. This is a partial semester course. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 492D Seminar: Commercial Project Management Credit: 1 (0-0-1)
Course Description: Applications of project management practice for commercial construction projects. Exploration of commercial construction project management principles and concepts through industry-specific case studies, processes and tutorials.
Prerequisite: CON 351 and CON 365.
Registration Information: Construction Management majors only. Maximum of 3 credits allowed per course. This is a partial semester course. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 492E Seminar: Residential Project Management Credit: 1 (0-0-1)
Course Description: Applications of project management practice for residential construction projects. Exploration of residential construction project management principles and concepts through industry-specific case studies, processes and tutorials.
Prerequisite: CON 351 and CON 365.
Registration Information: Construction Management majors only. Maximum of 3 credits allowed per subtopic. This is a partial semester course. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 495 Independent Study-Construction Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 496 Group Study-Construction Management Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 9 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 502 Research in Construction Management I Credits: 3 (2-0-1)
Course Description: Research, discuss, and present current issues and trends in the construction industry related to business, management, engineering, and technology.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Credit not allowed for both CON 502 and CON 562.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CON 503 Research in Construction Management II Credits: 3 (3-0-0)
Course Description: Models and methods of disciplined inquiry used in diverse application-based organizations. Preparation to use disciplined inquiry methods to solve applied problems in construction management or related fields. Topics include problem/topic selection, writing research questions and objectives, literature reviews, selection of research methods, data collection and analysis, and conclusions and implications.
Prerequisite: CON 502.
Registration Information: Credit not allowed for both CON 503 and CON 500.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 511 Project Procurement and Preconstruction Credits: 3 (2-0-1)
Course Description: Advanced project procurement procedures with a focus on early design phase planning applications and preconstruction management techniques.
Prerequisite: CON 461, may be taken concurrently.
Registration Information: Must register for lecture and recitation. Credit not allowed for both CON 511 and CON 566.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CON 512 Post-Award Construction Management Credits: 3 (2-0-1)
Course Description: Advanced topics related to post-award construction management issues with a focus on multiple project controls and project risk management.
Prerequisite: CON 461.
Registration Information: Must register for lecture and recitation. Credit not allowed for both CON 512 and CON 560.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 521 Sustainable Building & Infrastructure Systems Credits: 3 (2-0-1)
Course Description: Issues and state-of-the-art resources needed to construct, remodel/retrofit, operate and maintain the built environment (buildings and infrastructure). Specifically, resources will include major materials, components and technologies, as well as energy and water resources are needed in the different life-cycle phases of the building or infrastructure project.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Credit not allowed for both CON 521 and CON 576.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 561 Applied Productivity Improvement Credits: 3 (3-0-0)
Course Description: Existing and emerging tools for productivity enhancement in project and production environment.
Prerequisite: None.
Registration Information: Admission to the construction management master's program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 565 Legal Aspects of Construction Process Credits: 3 (3-0-0)
Course Description: Common points of dispute; methods of avoiding disputes among owner, architect, engineer, and contractor.
Prerequisite: None.
Registration Information: Admission to the construction management master's program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 568 Construction Industry Institute Practices Credits: 3 (3-0-0)
Course Description: Senior executives from the Construction Industry Institute (CII) present best practices developed by CII over the last 25 years.
Prerequisite: CON 367.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CON 569 Regulatory Impact on Construction Credits: 3 (3-0-0)
Course Description: Role government plays in the design and construction of the built environment.
Prerequisite: None.
Registration Information: Admission to the construction management master's program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 571 Facility Planning and Management Credits: 3 (3-0-0)
Course Description: Planning, organizing and managing large educational and/or commercial facilities.
Prerequisite: None.
Registration Information: Admission to the construction management master's program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 590 Workshop Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 592 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 687 Internship Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 699 Thesis Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Continuous Registration-CR (CR)

Courses

CR CONRG Continuous Registration Credits: 0 (0-0-0)
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Special Course Fee: Yes.

Dance-D (D)

Courses

D 110 Understanding Dance (GT-AH1) Credits: 3 (3-0-0)
Course Description: Broad examination of dance involving limited student participation in basic dance movements.
Prerequisite: None.
Registration Information: For non-dance majors. Previous dance experience not necessary.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Arts & Expression (GT-AH1).

D 120A Dance Techniques I: Modern Credits: 2 (0-4-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 120B Dance Techniques I: Ballet Credits: 2 (0-4-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 120C Dance Techniques I: Jazz Credits: 2 (0-4-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 121A Dance Techniques II: Modern Credits: 2 (0-4-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 121B Dance Techniques II: Ballet Credits: 3 (0-6-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 121C Dance Techniques II: Jazz Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 120C.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 126 Dance Improvisation Credits: 2 (1-2-0)
Course Description: Organic movement and inventive dance movement through improvisational skills, body physicality, space/direction/level imagery and partnering.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 160 Musical Tap Forms Credits: 2 (0-4-0)
Course Description: Basic tap dance forms with emphasis on terminology, study of rhythm, and tap styles; historical development of tap in American culture.
Prerequisite: None.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

D 186 Production Practicum Credits: Var[1-3] (0-0-0)
Course Description: Experiential production learning including management of properties, light, soundboard, video/projection, curtain/rail, and wardrobe operations.
Prerequisite: None.
Registration Information: This is a partial semester course. This course may be repeated twice for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 192 Dance First Year Seminar Credit: 1 (0-0-1)
Course Description: Foundational knowledge and practical tools for navigating life as a dance practitioner in college and beyond.
Prerequisite: None.
Registration Information: Enrollment in dance major.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

D 220A Dance Techniques III: Modern Credits: 2 (0-4-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 220B Dance Techniques III: Ballet Credits: 3 (0-6-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 220C Dance Techniques III: Jazz Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 121C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

D 221A Dance Techniques IV: Modern Credits: 2 (0-4-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 221B Dance Techniques IV: Ballet Credits: 3 (0-6-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 221C Dance Techniques IV: Jazz Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 220C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 226 Dance Choreography I Credits: 2 (1-2-0)
Course Description: Elements of dance composition including space, levels, rhythm, dynamics, qualities of movement, form, style.
Prerequisite: D 121A and D 121B and D 126.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 286 Performance Practicum Credits: Var[1-3] (0-0-0)
Course Description: Learning, rehearsal, and performance of dance repertoire staged or choreographed by faculty and/or guest artists.
Prerequisite: None.
Registration Information: Written consent of instructor. This course may be repeated for a maximum number of 4 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 292 Seminar - The Dancing Body Credits: 2 (0-0-2)
Course Description: Through a combination of theory and practice, explore inside the dancing body to discover structures and functions of the bones, joints, muscles, and more. Specifically geared towards dance practitioners; basic principles of anatomy, kinesiology, and somatics.
Prerequisite: D 192 with a minimum grade of C.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

D 320A Dance Techniques V: Modern Credits: 3 (0-6-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 320B Dance Techniques V: Ballet Credits: 5 (0-10-0)
Course Description:
Prerequisite: D 221B.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 320C Dance Techniques V: Jazz Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 221C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

D 321A Dance Techniques VI: Modern Credits: 3 (0-6-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 321B Dance Techniques VI: Ballet Credits: 5 (0-10-0)
Course Description:
Prerequisite: D 320B.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 321C Dance Techniques VI: Jazz Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 320C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 324 Teaching Creative Movement for Children Credits: 2 (1-2-0)
Course Description: Theoretical and practical experience in teaching creative movement.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 326 Dance Choreography II Credits: 3 (1-4-0)
Course Description: Advanced choreographic elements: group work, music influence, and nontraditional performance venues.
Prerequisite: D 226.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 330 Dance Repertory Ensemble Credits: 2 (0-4-0)
Course Description: Study and performance of original and historic dance repertoire of the classical and contemporary variety. Immersive rehearsal periods emulate experiences of dance artists working in professional settings.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 340 Dance Repertory Outreach Credits: 2 (0-4-0)
Course Description: Preparation of arts integration units, residencies, and lecture demonstrations based on original and/or historic dance repertoire investigated during the previous semester in D330, to be performed at local elementary, middle, high schools, and/or other community venues.
Prerequisite: D 330.
Registration Information: Written consent of instructor. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 392 Dance Seminar Credit: 1 (0-0-1)
Course Description: Knowledge and skills to prepare for post-graduate applications, interviews, auditions, and professional orientation for careers in dance.
Prerequisite: None.
Registration Information: Junior standing. Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 420A Dance Techniques VII: Modern Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 321A.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

D 420B Dance Techniques VII: Ballet Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 321B.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 420C Dance Techniques VII: Jazz Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 321C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

D 421A Dance Techniques VIII: Modern Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 420A.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 421B Dance Techniques VIII: Ballet Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 420B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 421C Dance Techniques VIII: Jazz Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 420C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 424 Ballet Technique Pedagogy Credits: 3 (3-0-0)
Course Description: Theory and practice of ballet technique teaching methods.
Prerequisite: D 324.
Registration Information: Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 426 Dance Choreography III Credits: 2 (1-2-0)
Course Description: Studies in 20th-century dance composition forms.
Prerequisite: D 321A or D 321B or D 321C.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 427 Dance History I Credits: 3 (3-0-0)
Course Description: History of classical ballet to modern times from its origins in folk dance of Middle Ages and social dance of Renaissance.
Prerequisite: None.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

D 428 Dance History II Credits: 3 (3-0-0)
Course Description: History and examination of modern and contemporary dance from United States foundation and diverse global influences.
Prerequisite: None.
Registration Information: Dance major; junior or senior standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

D 432 Dance Therapy Credits: 3 (2-2-0)
Course Description: Use of dance forms in therapy for mentally and physically handicapped.
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

D 434 Modern Technique Pedagogy Credits: 3 (2-3-0)
Course Description: Theory and practice of modern dance technique teaching methods.
Prerequisite: None.
Registration Information: Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 471 Dance Concert Credits: 3 (0-6-0)
Course Description: Demonstration of individual performance and choreographic proficiency in a public performance. Supporting paper and video demonstration required.
Prerequisite: D 326.
Registration Information: Written consent of faculty.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: D 324 or D 424 or D 434.
Registration Information: Written consent of instructor. Student must have taken the course they would be assisting. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 486 Practicum Credits: Var[1-3] (0-0-0)
Course Description: Practicum in dance topics.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

D 487 Dance Internship Credits: Var[1-3] (0-0-0)
Course Description: Supervised work experience in professional dance companies, schools, performing arts centers, and related affiliations.
Prerequisite: D 226 and D 324 and D 427 or D 428.
Registration Information: Sophomore standing. Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

D 491 Workshop Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

D 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

D 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

D 527 Contemporary Dance Credits: 2 (0-4-0)
Course Description: Techniques of dance movement and choreography.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Design + Merchandising-DM (DM)

Courses

DM 120 Textiles Credits: 3 (2-2-0)
Course Description: Fibers, fabrics, and finishes basic to selection, use, and care.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 192 Design and Merchandising First Year Seminar Credit: 1 (0-0-1)
Course Description: Introduction to the Apparel and Merchandising and Interior Design majors, career options, campus resources, tools for academics, and industry topics.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

DM 272 Consumers in the Marketplace Credits: 3 (3-0-0)
Course Description: Analysis and evaluation of consumers in the marketplace as applied to merchandising.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 360 Retailing Credits: 3 (3-0-0)
Also Offered As: MKT 360.
Course Description: Retail markets, institutions, operations, and problems.
Prerequisite: MKT 300 or MKT 305.
Registration Information: Credit not allowed for both DM 360 and MKT 360. Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 400 U.S. Travel-New York City Credits: 3 (1-2-1)
Course Description: Interview/analyze designers, manufacturers, buying offices, retail stores, magazine firms, interior design and architecture firms, etc.
Prerequisite: None.
Registration Information: Must have taken 6 credits in the following courses: DM, AM, INTD. Must register for lecture, laboratory, and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

DM 470A International Design and Merchandising: Apparel Credits: 2 (1-0-1)
Course Description: Historical, cultural, and business aspects of international design and merchandising in selected countries.
Prerequisite: AM 101 and AM 130 and DM 120 and DM 482A, may be taken concurrently.
Registration Information: Must have concurrent registration in DM 482A. Must register for lecture and recitation.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 470B International Design and Merchandising: Interior Design Credits: 2 (1-0-1)
Course Description: Historical, cultural, and business aspects of international design and merchandising in selected countries.
Prerequisite: ART 100 and INTD 129 and INTD 166 and DM 482B, may be taken concurrently.
Registration Information: Must have concurrent registration in DM 482B. Must register for lecture and recitation.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 474 Fashion Show Production and Event Planning Credits: 3 (1-0-2)
Course Description: Planning and implementing full production fashion show of student-designed collections, including promotions and fund-raising activities.
Prerequisite: AM 101 or INTD 129.
Registration Information: Written consent of instructor. Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

DM 482 Travel Abroad Credit: 1 (0-0-1)
Course Description: Historical, cultural, aesthetic, and business aspects of design and merchandising in the selected country(ies).
Prerequisite: AM 101 and AM 130 and DM 120 and DM 470A, may be taken concurrently.
Registration Information: Must have concurrent registration in DM 470A.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 482A Study Abroad: Design/Merchandising–Scotland/England Credit: 1 (0-0-1)
Course Description: Historical, cultural, aesthetic, and business aspects of international design and merchandising in the selected country(ies).
Prerequisite: DM 470A or DM 470B.
Grade Mode: Traditional.
Special Course Fee: No.

DM 487A Internship: Merchandising Credits: Var[12-16] (0-0-0)
Course Description:
Prerequisite: (AM 371) and (DM 360 or MKT 360) and (DM 492).
Registration Information: GPA 2.50.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 487B Internship: Apparel Design and Production Credits: Var[12-16] (0-0-0)
Course Description:
Prerequisite: AM 244 and DM 492.
Registration Information: GPA 2.50.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 487C Internship: Product Development Credits: Var[12-16] (0-0-0)
Course Description:
Prerequisite: AM 375 and DM 492.
Registration Information: GPA 2.500.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 487F Internship: General Credits: Var[3-16] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor; GPA2.500.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 490A Workshop: Merchandising Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 490B Workshop: Apparel Design and Production Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 490C Workshop: Interior Design Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 492 Preinternship Seminar Credits: 2 (1-0-1)
Course Description: Professional standards and corporate structure of apparel and merchandising companies in apparel design, product development, and/or merchandising.
Prerequisite: None.
Registration Information: Minimum 2.5 GPA; minimum of 60 credits completed. Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 10 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of three credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 501 Research and Theory-Design and Merchandising Credits: 3 (0-0-3)
Course Description: Theory and various approaches and philosophies of research in design and merchandising. Critical evaluation and synthesis of scholarly literature.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 510 Consumer Behavior Credits: 3 (3-0-0)
Course Description: Evaluation of psychological, sociological, and cultural theories of consumer behavior through examination of factors that influence decision making.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

DM 540 Promotional Strategies in Merchandising Credits: 3 (3-0-0)
Course Description: Integrated marketing communications while fostering cultural and global awareness, social responsibility and ethical decision-making.
Prerequisite: None.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

DM 542 Advanced Computer-Aided Textile Design Credits: 3 (1-4-0)
Course Description: Use of computer-aided design system to produce fabric designs for apparel or interior professional end use.
Prerequisite: AM 342.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

DM 551 Research Methods Credits: 3 (3-0-0)
Course Description: Design and methods of research applicable to design and merchandising.
Prerequisite: DM 501.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 563 Care and Exhibit of Museum Collections Credits: 3 (1-2-1)
Course Description: Hands-on experience in management, care, exhibition, and interpretation of museum collections.
Prerequisite: ART 100 to 499 - at least 3 credits or HIST 100 to 499 - at least 3 credits or AM 100 to 499 - at least 3 credits or DM 100 to 499.
Registration Information: Must register for lecture, laboratory and recitation. Required field trips.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

DM 570 Creativity in Design Credits: 3 (0-0-3)
Course Description: Multiple perspectives in creativity integrating theory and research impacting design.
Prerequisite: DM 501.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

DM 575 Human Factors in Design Credits: 3 (3-0-0)
Course Description: Theories and contemporary issues related to human factors in consumer product design.
Prerequisite: DM 501, may be taken concurrently.
Registration Information: Senior standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

DM 590A Workshop: Merchandising Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 590B Workshop: Apparel Design and Production Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 590C Workshop: Interior Design Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 592 Seminar Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 596 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 684 Supervised College Teaching Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 687 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 698 Research Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Design Thinking-IDEA (IDEA)

IDEA 210 Introduction to Design Thinking (GT-AH1) Credits: 3 (3-0-0)
Course Description: Design thinking is a creative, flexible process that fosters innovation. Content and projects promote building creative competence and an appreciation for thinking across disciplines to develop a new mindset and skillset that guides innovation. Learning tools to develop compelling ideas for meaningful societal and marketplace impact will be explored.
Prerequisite: None.
Registration Information: Credit not allowed for both IDEA 210 and IDEA 280A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Arts & Humanities 3B, Arts & Expression (GT-AH1).

IDEA 310A Design Thinking Toolbox: Paper Products Credit: 1 (0-2-0)
Course Description: Employing design theories and methods to projects using paper-based media that promote "iterative tinkering" through exploration of various design processes.
Prerequisite: IDEA 210, may be taken concurrently.
Registration Information: This is a partial semester course.
Grade Mode: Traditional.
Special Course Fee: Yes.

IDEA 310B Design Thinking Toolbox: 3D Modeling Credits: 2 (0-4-0)
Course Description: Employing design theories and methods to 3D modeling projects that promote "iterative tinkering" through exploration of various design processes using computer software.
Prerequisite: IDEA 210, may be taken concurrently.
Registration Information: This is a partial semester course.
Grade Mode: Traditional.
Special Course Fee: Yes.

IDEA 310C Design Thinking Toolbox: Advanced 3D Modeling Credits: 2 (0-4-0)
Course Description: Employing design theories and methods to advanced 3D modeling projects that promote "iterative tinkering" experiences through exploration of design processes.
Prerequisite: IDEA 310B.
Registration Information: This is a partial semester course.
Grade Mode: Traditional.
Special Course Fee: Yes.

IDEA 310D Design Thinking Toolbox: Digital Imaging Credit: 1 (0-2-0)
Course Description: Design theories and methods employing digital imaging projects that promote "iterative tinkering" experiences through exploration of various design processes.
Prerequisite: IDEA 210, may be taken concurrently.
Registration Information: This is a partial semester course.
Grade Mode: Traditional.
Special Course Fee: Yes.

IDEA 310E Design Thinking Toolbox: Wood Credits: 2 (0-4-0)
Course Description: Employ design theories and methods to wood projects that promote "iterative tinkering" through exploration of various design processes in a maker space setting.
Prerequisite: IDEA 210, may be taken concurrently.
Registration Information: This is a partial semester course.
Grade Mode: Traditional.
Special Course Fee: Yes.

IDEA 310F Design Thinking Toolbox: Textiles Credit: 1 (0-2-0)
Course Description: Employ design theories and methods to textile projects that promote "iterative tinkering" through exploration of various design processes in a maker space setting.
Prerequisite: IDEA 210, may be taken concurrently.
Registration Information: This is a partial semester course.
Grade Mode: Traditional.
Special Course Fee: Yes.

IDEA 310G Design Thinking Toolbox: Infographics Credit: 1 (0-2-0)
Course Description: Employ design theories and methods to infographic projects that promote "iterative tinkering" through exploration of various design processes.
Prerequisite: IDEA 210, may be taken concurrently.
Registration Information: This is a partial semester course.
Grade Mode: Traditional.
Special Course Fee: Yes.

IDEA 424 Ventures in Social Entrepreneurship Credits: 3 (3-0-0)
Also Offered As: MGT 424.
Course Description: Focus on value creation, and delivery of a solution to a team community project. Application of human-centered design, and the venture design processes provide solutions to real world problems facing some of society's most vulnerable populations.
Prerequisite: MGT 360.
Restriction: Must be a: Undergraduate.
Registration Information: Credit not allowed for both IDEA 424 and MGT 424.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

IDEA 450 Design Thinking Collaborative Credits: 4 (1-6-0)
Course Description: Culminating interdisciplinary experience that offers an opportunity to partner with industry or community partners to propose solutions to vexing real-world problems. Content and activities include a semester-long project to create a problem brief, develop and test prototypes, and deliver professional presentations to diverse audiences.
Prerequisite: IDEA 310A to 310G - at least 3 credits.
Registration Information: Junior standing. Completion of AUCC Category 2. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

IDEA 482C Study Abroad--Todos Santos: Ventures in Social Entrepreneurship Credit: 1 (0-0-1)
Also Offered As: MGT 482C.
Course Description: Interdisciplinary, service-learning course that incorporates human-centered design with the business design process in order to provide solutions to real world problems facing some of society's most vulnerable populations. Offers an experiential trip to meet the community partners working in Todos Santos, Mexico.
Prerequisite: MGT 360.
Restriction: Must be a: Undergraduate.
Registration Information: Must have concurrent registration with IDEA 424 or MGT 424. Credit not allowed for both IDEA 482C and MGT 482C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

Data Science-DS (DSCI)

DSCI 100 First Year Seminar in Data Science Credit: 1 (0-0-1)
Course Description: Introduction to problems and techniques in data science.
Prerequisite: None.
Registration Information: Freshman or sophomore Data Science majors only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

DSCI 235 Data Wrangling Credits: 2 (1-0-1)
Course Description: Introduce tools and techniques for handling, cleaning, extracting, and organizing data.
Prerequisite: CS 152 with a minimum grade of C and CS 165 with a minimum grade of C or CS 220, may be taken concurrently.
Registration Information: Must register for lecture and recitation. This is a partial semester course.
Grade Mode: Traditional.
Special Course Fee: No.

DSCI 320 Optimization Methods in Data Science Credits: 3 (3-0-0)
Course Description: Linear and non-linear programming, convex sets and functions, convex and non-convex optimization problems, duality, Newton's methods, barrier methods, linear equality and inequality constraints. Emphasis on computation methods and programming.
Prerequisite: (CS 163 or CS 164) and (MATH 151 and MATH 261) and (DSCI 369 or MATH 369).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

DSCI 335 Inferential Reasoning in Data Analysis Credits: 3 (3-0-0)
Course Description: Sources of data collection errors and uncertainties, type of studies, interaction versus confounding, fair use of data, confidentiality and disclosure.
Prerequisite: CO 300 or CO 301B or CO 302 or JTC 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

DSCI 336 Data Graphics and Visualization Credit: 1 (1-0-0)
Course Description: Data graphics and visualization techniques for data science.
Prerequisite: STAT 342.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

DSCI 369 Linear Algebra for Data Science Credits: 4 (4-0-0)
Course Description: Techniques in linear algebra related to data science. Matrices, bases, subspaces, linear independence, dimension, change of basis, projections, linear systems of equations, least squares, matrix factorizations. Singular value decomposition, angles between subspaces.
Prerequisite: MATH 124 and MATH 126.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

DSCI 445 Statistical Machine Learning Credits: 3 (3-0-0)
Course Description: Algorithms and statistical methods for regression, classification, and clustering; hands-on experience in analyzing data and running machine learning experiments.
Prerequisite: DSCI 320 and DSCI 369 and STAT 341.
Registration Information: Credit allowed for only one of the following: CS 445, CS 480A3, or DSCI 445.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

DSCI 473 Introduction to Geometric Data Analysis Credits: 2 (2-0-0)
Course Description: Geometric techniques for analyzing high-dimensional and complex data. Techniques for data reduction and analysis.
Prerequisite: DSCI 369.
Registration Information: This is a partial semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

DSCI 475 Topological Data Analysis Credits: 2 (2-0-0)
Course Description: Topological techniques for analyzing high-dimensional or complex data. Topics include clustering, dendrograms, a visual introduction to topology, data modeling and visualization, and selected topics from nonlinear dimensionality reduction, graph-based models of data, Reeb graphs, multi-scale approaches to data, and persistent homology.
Prerequisite: DSCI 473.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

DSCI 478 Capstone Group Project in Data Science Credits: 4 (0-0-8)
Course Description: Group-project-based capstone, in which small groups of students from each Data Science degree concentration work collectively on a problem in data science.
Prerequisite: DSCI 445.
Restriction: Must be a: Undergraduate.
Registration Information: Senior standing only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

DSCI 510 Linux as a Computational Platform Credit: 1 (1-0-0)
Course Description: Use of the Linux operating system for computational work using command-line tools; basic Linux commands, running and managing jobs, installing software.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Credit allowed for only one of the following: CS 580A4, DSCI 510, or NSCI 580A4.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

DSCI 511 Genomics Data Analysis in Python Credits: 2 (1-0-1)
Course Description: Analyzing complex data sets using Python.
Prerequisite: DSCI 510, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Must register for lecture and recitation. This is a partial semester course. Credit not allowed for both DSCI 511 and NSCI 580A5.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

DSCI 512 RNA-Sequencing Data Analysis Credit: 1 (0-2-0)
Course Description: Hands-on experience with tools for analysis of next generation sequencing data.
Prerequisite: DSCI 510, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Credit not allowed for both DSCI 512 and NSCI 580A3.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

Ecology-ECOL (ECOL)

Courses

ECOL 505 Foundations of Ecology Credits: 3 (2-0-1)
Course Description: Overview of the science of ecology; what questions are asked, how they are answered.
Prerequisite: LAND 220 or LIFE 320 or NR 220 or LIFE 220.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECOL 571 Advanced Topics in Ecology Credits: Var[1-3] (0-0-0)
Course Description: Current research topics presented and analyzed by visiting scientists.
Prerequisite: None.
Registration Information: One course in ecological principles.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECOL 592 Interdisciplinary Seminar in Ecology Credits: Var[1-3] (0-0-0)
Course Description: Concepts and principles of basic and applied ecology in an interdisciplinary context.
Prerequisite: None.
Registration Information: One 300- or 400-level course in ecology.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECOL 600 Community Ecology Credits: 3 (2-0-1)
Course Description: Current theories and tests of the dynamics and regulation of plant and animal communities.
Prerequisite: (STAT 100 to 499 - at least 1 course) and (MATH 141 or MATH 155 to 161 - at least 1 course or MATH 255 to 261 - at least 1 course) and (LAND 220 or LIFE 320 or NR 220 or LIFE 220).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECOL 610 Ecosystem Ecology Credits: 3 (3-0-0)
Course Description: Concepts, methods, issues in ecosystem science: energy and matter cycling; systems perspectives, simulation modeling, sustainability, global change.
Prerequisite: LIFE 320 or ECOL 000 to 9999 - at least 1 course.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECOL 620 Applications in Landscape Ecology Credits: 4 (2-2-1)
Course Description: Spatial patterning of landscape elements and dynamics of ecological systems; spatial heterogeneity. Influence on biotic and abiotic processes.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, laboratory, and recitation. Previous coursework in geographic information systems, ecology, statistics, and mathematics.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECOL 693 Research Seminar Credit: 1 (0-0-1)
Course Description: Critique of research programs, plans, and ecological theory.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ECOL 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECOL 698 Research Credits: Var[1-18] (0-0-0)
Course Description: Non-thesis research in ecology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECOL 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECOL 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Economics-ECON (ECON)

Courses

ECON 101 Economics of Social Issues (GT-SS1) Credits: 3 (3-0-0)
Course Description: Economic analysis of poverty, crime, education, and other social issues. Basics of micro, macro, and political economy.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

ECON 202 Principles of Microeconomics (GT-SS1) Credits: 3 (2-0-1)
Course Description: Introduction to decision-making by households, firms, and government, and resulting allocation of resources through markets.
Prerequisite: MATH 117 or MATH 118 or MATH 141 or MATH 155 or MATH 160.
Registration Information: Must register for lecture and recitation. Credit not allowed for both ECON 202 and AREC 202. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

ECON 204 Principles of Macroeconomics (GT-SS1) Credits: 3 (2-0-1)
Course Description: Determinants of national output, employment, and price level; inflation and unemployment; fiscal and monetary policy.
Prerequisite: (MATH 117 or MATH 118 or MATH 141 or MATH 155 or MATH 160) and (ECON 202 or AREC 202).
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

ECON 211 Gender in the Economy (GT-SS1) Credits: 3 (3-0-0)
Course Description: Role gender plays in economies; the way gender affects economic outcomes for individuals and societies.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Economic or Political Systems (GT-SS1).

ECON 212 Racial Inequality and Discrimination (GT-SS1) Credits: 3 (3-0-0)
Course Description: Economic inequality between Afro-Americans-and Euro-Americans. Debates about causes, consequences, and remedies.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

ECON 235 Working With Data Credits: 3 (3-0-0)
Also Offered As: LB 235.
Course Description: Data management and spreadsheet skills; what data is and how it is used (and misused) in social and economic research; applied questions such as how data is collected, types of data, where to find data, how to summarize and tabulate data, and data visualization and presentation.
Prerequisite: None.
Registration Information: Sections may be offered: Online. Credit allowed for only one of the following ECON 235, ECON 280A1, or LB 235.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 240 Issues in Environmental Economics (GT-SS1) Credits: 3 (3-0-0)
Also Offered As: AREC 240.
Course Description: Discussion and economic analysis of current environmental issues with special emphasis on the impact of economic growth.
Prerequisite: None.
Registration Information: Credit not allowed for both ECON 240 and AREC 240. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

ECON 304 Intermediate Macroeconomics Credits: 3 (3-0-0)
Course Description: Theory of national income, its measurement and determinants; analysis of inflation, growth, debt, and public policy.
Prerequisite: (ECON 204) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 306 Intermediate Microeconomics Credits: 3 (3-0-0)
Course Description: Analysis of competitive and noncompetitive markets in terms of efficiency of resource utilization.
Prerequisite: (AREC 202 or ECON 202) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 310 Poverty and the Welfare State Credits: 3 (3-0-0)
Course Description: Description and analysis of US poverty; the "underclass"; feminization of poverty; working poor; the welfare state.
Prerequisite: AREC 202 or ECON 101 or ECON 202.
Terms Offered: Spring, Summer (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 315 Money and Banking Credits: 3 (3-0-0)
Course Description: Monetary theory and policy; description of financial institutions and markets.
Prerequisite: ECON 204.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 317 Population Economics Credits: 3 (3-0-0)
Course Description: Economics analysis of population issues.
Prerequisite: AREC 202 or ECON 202.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 320 Economics of Public Finance Credits: 3 (3-0-0)
Course Description: Impact of taxes, government expenditures on allocation of resources, distribution of income; evaluation of government expenditure program, tax policies.
Prerequisite: ECON 204.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 325 Health Economics Credits: 3 (3-0-0)
Course Description: Economic analysis of health care markets, health insurance markets, and public policy regarding health care.
Prerequisite: ECON 202 or AREC 202.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 327 Law and Economics Credits: 3 (3-0-0)
Course Description: Economic analysis of the common law.
Prerequisite: ECON 202 or AREC 202.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 332 International Political Economy Credits: 3 (3-0-0)
Also Offered As: POLS 332.
Course Description: Theories on relations between international politics and economics. Policy implications of different theories and case studies.
Prerequisite: (ECON 202 or AREC 202) and (POLS 232).
Registration Information: Credit not allowed for both ECON 332 and POLS 332.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 335 Introduction to Econometrics Credits: 3 (3-0-0)
Also Offered As: AREC 335.
Course Description: Estimating statistical regression models of economic relationships; treatment of special problems that may arise in analysis of economic data.
Prerequisite: (ECON 204) and (STAT 201 or STAT 204 or STAT 301 or STAT 307 or STAT 311 or STAT 315) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Credit not allowed for both ECON 335 and AREC 335. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 340 Introduction-Economics of Natural Resources Credits: 3 (3-0-0)
Also Offered As: AREC 340.
Course Description: Concepts, theories, institutions; analytical methods for economic evaluation of alternative resource use patterns and land use plans.
Prerequisite: ECON 202 or AREC 202.
Registration Information: Sections may be offered: Online. Credit not allowed for both AREC 340 and ECON 340.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 346 Economics of Outdoor Recreation Credits: 3 (3-0-0)
Also Offered As: AREC 346.
Course Description: Benefit cost framework in public planning for outdoor recreation, pricing problems, projecting demand, and regional economic development.
Prerequisite: ECON 202 or AREC 202.
Registration Information: Credit not allowed for both ECON 346 and AREC 346.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 370 Comparative Economic Systems Credits: 3 (3-0-0)
Course Description: Place of the economy in different societies; nature and evolution of capitalism; crisis of command economies and capitalist restoration.
Prerequisite: ECON 101 or ECON 202 or AREC 202.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 372 History of Economic Institutions and Thought Credits: 3 (3-0-0)
Course Description: Origins and development of capitalist institutions including contemporary issues of alienation, loss of community, and changing values.
Prerequisite: ECON 101 or ECON 202 or AREC 202.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 376 Marxist Economic Thought Credits: 3 (3-0-0)
Course Description: Marxist critique of capitalism and orthodox economics in both its original 19th century and contemporary settings.
Prerequisite: ECON 101 or ECON 202 or AREC 202.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 379 Economic History of the United States Credits: 3 (3-0-0)
Also Offered As: HIST 379.
Course Description: Economic analysis of growth and welfare from beginning of industrialization to present.
Prerequisite: ECON 101 or ECON 202 or AREC 202.
Registration Information: ECON 101 or ECON 202 or AREC 202 or any 2 courses in American history. Credit not allowed for both ECON 379 and HIST 379.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 404 Macroeconomic Policy Credits: 3 (3-0-0)
Course Description: Alternative macroeconomic policies, policy coordination; application to current macroeconomic problems, policies, proposals.
Prerequisite: ECON 304.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 410 Labor Economics Credits: 3 (3-0-0)
Course Description: Capital/labor relationship; supply, demand of labor; wage determination; role of unions; unemployment and instability; structure of modern working class.
Prerequisite: ECON 306.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 435 Intermediate Econometrics Credits: 3 (3-0-0)
Course Description: Econometric theory, model identification, testing, and estimation.
Prerequisite: (ECON 204) and (AREC 335 or ECON 335 or STAT 341).
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 440 Economics of International Trade and Policy Credits: 3 (3-0-0)
Course Description: Theory of international trade; payments, commercial policies, and economic integration.
Prerequisite: ECON 306.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 442 Economics of International Finance and Policy Credits: 3 (3-0-0)
Course Description: Balance of payments, adjustment mechanisms, and international monetary systems.
Prerequisite: ECON 304.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 444 Economics of Energy Resources Credits: 3 (3-0-0)
Also Offered As: AREC 444.
Course Description: Supply, consumption trends, and projected demand for alternative energy resources in domestic and world perspective; economics of public energy policies.
Prerequisite: ECON 306.
Registration Information: Junior standing. Written consent of instructor. Credit allowed for only one of the following: AREC 444, ECON 344, or ECON 444.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 460 Economic Development Credits: 3 (3-0-0)
Course Description: Economic problems of underdeveloped nations.
Prerequisite: ECON 304.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 463 Regional Economics Credits: 3 (3-0-0)
Course Description: Introduction to economic importance of location for firms, consumers, and policy makers. Basic tools, applications, and student research.
Prerequisite: ECON 306.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 474 Recent Economic Thought Credits: 3 (3-0-0)
Course Description: Nontraditional schools of economic thought, such as institutionalism and neo-Marxism, that critique neoclassical economic theory.
Prerequisite: ECON 304 and ECON 306.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Assistance in teaching introductory economics courses.
Prerequisite: ECON 304 and ECON 306.
Registration Information: Written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 487 Internship Credits: Var[1-3] (0-0-0)
Course Description: Supervised work experience integrating disciplinary learning and career exploration.
Prerequisite: ECON 202 with a minimum grade of C and ECON 204 with a minimum grade of C.
Registration Information: Written consent of instructor. Economics majors and minors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ECON 492 Seminar Credits: 3 (0-0-3)
Course Description: Summarizes, discusses, and applies issues and policies chosen by the instructor. Emphasis on student participation, discussion, and research.
Prerequisite: (AREC 335, may be taken concurrently or ECON 335, may be taken concurrently) and (ECON 304, may be taken concurrently and ECON 306, may be taken concurrently).
Restriction: .
Registration Information: Senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a special topic in economics under direction of faculty.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 501 Quantitative Methods for Economists Credits: 3 (3-0-0)
Course Description: Quantitative methods essential for graduate study in economics; functional forms, optimization, matrix methods, topological modeling.
Prerequisite: MATH 141 or MATH 155 or MATH 160.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 504 Applied Macroeconomics Credits: 3 (3-0-0)
Course Description: Application of macroeconomic models to economic growth, economic fluctuations, and policy analysis.
Prerequisite: ECON 304 and ECON 306.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 505 History of Economic Thought Credits: 3 (3-0-0)
Course Description: History of economic thought as a foundation for studying economic theory.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 506 Applied Microeconomic Theory Credits: 3 (3-0-0)
Also Offered As: AREC 506.
Course Description: Introduction to mathematical models in modern microeconomics, including choices and demand, production and supply, and market structures and failures.
Prerequisite: ECON 306.
Registration Information: Credit not allowed for both ECON 506 and AREC 506.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 510 Labor Market Analysis Credits: 3 (3-0-0)
Course Description: Determination of wages and employment. Focus on theoretical and applied controversies.
Prerequisite: ECON 304 and ECON 306.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 515 Financial Institutions-Structure/Regulation Credits: 3 (3-0-0)
Course Description: Regulation of financial institutions in the U.S.; international banking and international financial institutions, and financial modernization.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 520 Public Economics I Credits: 3 (3-0-0)
Course Description: Analysis and evaluation of tax policy in terms of efficiency and equity.
Prerequisite: ECON 506 or AREC 506 or ECON 606 or AREC 606.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 530 Methodology of Economic Research Credits: 3 (3-0-0)
Also Offered As: AREC 570.
Course Description: Philosophical foundations of science and research. Concepts and skills for planning, performing, reporting, and evaluating economic research.
Prerequisite: ECON 304 and ECON 306.
Registration Information: Credit not allowed for both ECON 530 and AREC 570.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 535 Applied Econometrics Credits: 3 (3-0-0)
Also Offered As: AREC 535.
Course Description: Econometric techniques applied to testing and quantification of theoretical economic relationships drawn from both microeconomics, macroeconomics.
Prerequisite: (ECON 335 or AREC 335) and (ECON 304 or ECON 306).
Registration Information: Credit not allowed for both ECON 535 and AREC 535.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 540 Environmental and Natural Resource Economics Credits: 3 (3-0-0)
Also Offered As: AREC 540.
Course Description: Theory, methods, and policy in environmental and natural resource economics.
Prerequisite: AREC 506 or ECON 506.
Registration Information: Credit not allowed for both ECON 540 and AREC 540.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 541 Environmental Economics Credits: 3 (3-0-0)
Also Offered As: AREC 541.
Course Description: Economics of environmental policy; partial equilibrium and general equilibrium model; pollution; natural environments; population and economic growth.
Prerequisite: ECON 306.
Registration Information: Credit not allowed for both ECON 541 and AREC 541.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 563 Regional Economics-Theory, Methods, and Issues Credits: 3 (3-0-0)
Also Offered As: AREC 563.
Course Description: Tools and methods of regional economics, including supply, demand, and externality analysis. Applications to current urban and regional policy issues.
Prerequisite: ECON 306 and ECON 501, may be taken concurrently.
Registration Information: Credit not allowed for both ECON 563 and AREC 563.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 570 Evolution of Economic Thought Credits: 3 (3-0-0)
Course Description: From Plato and Aristotle to the modern period.
Prerequisite: ECON 304 and ECON 306.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 604 Macroeconomic Analysis I Credits: 3 (3-0-0)
Course Description: Theoretical and empirical analysis of short-run and long-run macroeconomic performance across countries using dynamic models.
Prerequisite: ECON 304 and ECON 501.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 606 Microeconomic Analysis I Credits: 3 (3-0-0)
Also Offered As: AREC 606.
Course Description: Advanced price/allocation theory: consumer/producer decisions; uncertainty; market structure; partial/general equilibrium; efficiency/welfare.
Prerequisite: ECON 306 and ECON 501.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECON 606 and AREC 606.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 635 Econometric Theory I Credits: 3 (3-0-0)
Also Offered As: AREC 635.
Course Description: Theory of mathematical statistics and classical linear regression model in context of economic application.
Prerequisite: (AREC 535 or ECON 535) and (ECON 501, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECON 635 and AREC 635.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 640 International Trade Theory Credits: 3 (3-0-0)
Course Description: Theory of international trade including comparative advantage, factor growth, market distortions, and commercial policy.
Prerequisite: ECON 306 or ECON 506.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 663 Urban and Regional Modeling Credits: 3 (3-0-0)
Course Description: Methodological approaches in regional economics: general equilibrium, input-output, computable general equilibrium models; social accounting matrices.
Prerequisite: ECON 506.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 698 Research--Technical Paper Credits: 3 (0-0-3)
Course Description:
Prerequisite: (ECON 504 and ECON 506 and ECON 705) and (AREC 735 or ECON 735).
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 704 Macroeconomic Analysis II Credits: 3 (3-0-0)
Course Description: Theoretical and empirical frameworks for analyzing macroeconomic policies and their impact on economic growth, employment, and income distribution.
Prerequisite: ECON 604.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 705 Heterodox Approaches to Economics Credits: 3 (3-0-0)
Course Description: Contemporary heterodox approaches to economic research.
Prerequisite: ECON 505.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 706 Microeconomic Analysis II Credits: 3 (3-0-0)
Also Offered As: AREC 706.
Course Description: Advanced topics in microtheory: game theory; market imperfections; adverse selection; principal-agent problems; social choice theory; incentives, etc.
Prerequisite: ECON 606.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECON 706 and AREC 706.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 715 Monetary Economics Credits: 3 (3-0-0)
Course Description: Principle issues of monetary theory: money supply and demand, interest rates, and current problems of monetary policy.
Prerequisite: ECON 504.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 720 Public Economics II Credits: 3 (3-0-0)
Course Description: Analysis of welfare foundations of public expenditure, including cost-benefit analysis.
Prerequisite: ECON 506.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 735 Econometric Theory II Credits: 2 (2-0-0)
Also Offered As: AREC 735.
Course Description: Econometrics models and estimators in econometrics, from fully parametric to semiparametric and nonparametric approaches.
Prerequisite: AREC 635 or ECON 635.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 735 and ECON 735. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 736A Advanced Econometric Methods: Discrete Choice Models Credit: 1 (1-0-0)
Also Offered As: AREC 736A.
Course Description: Econometrics analysis of: Discrete Choice Models.
Prerequisite: AREC 735, may be taken concurrently or ECON 735, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECON 736A-C and AREC 736A-C. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 736B Advanced Econometric Methods: Panel Data Models Credit: 1 (1-0-0)
Also Offered As: AREC 736B.
Course Description: Econometrics analysis of: Panel Data Models.
Prerequisite: AREC 735, may be taken concurrently or ECON 735, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECON 736A-C and AREC 736A-C. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 736C Advanced Econometric Methods: Time Series Models Credit: 1 (1-0-0)
Also Offered As: AREC 736C.
Course Description: Econometrics analysis of: Time Series Models.
Prerequisite: AREC 735, may be taken concurrently or ECON 735, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECON 736A-C and AREC 736A-C. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 740 Advanced Natural Resource Economics Credits: 3 (3-0-0)
Also Offered As: AREC 740.
Course Description: Advanced theory, methods, and literature in natural resource economics, including dynamic programming and optimal control.
Prerequisite: AREC 706 or ECON 706.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 740 and ECON 740.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 741 Advanced Environmental Economics Credits: 3 (3-0-0)
Also Offered As: AREC 741.
Course Description: Advanced theory, methods, and literature in environmental economics.
Prerequisite: AREC 706 or ECON 706.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECON 741 and AREC 741.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 742 International Production and Monetary Theory Credits: 3 (3-0-0)
Course Description: Factor movements, theory of international production (multinationalism), balance of payments, and international monetary system.
Prerequisite: ECON 304 or ECON 504.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 760 Theories of Economic Development Credits: 3 (3-0-0)
Course Description: Analysis of fundamentals of economic development (processes, problems, and strategies) with special reference to developing nations.
Prerequisite: ECON 460.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 770 Economic Thought and Systems Credits: 3 (3-0-0)
Course Description: Aspects of modern economic thought and comparative economics selected according to backgrounds and interests of the class.
Prerequisite: ECON 570.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 771 Political Economy of Race and Gender Credits: 3 (3-0-0)
Course Description: Economic approaches to inequality based on race/ethnicity, gender, and class.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 772 Marxian Political Economy Credits: 3 (3-0-0)
Course Description: Marxian method, relevance of Marxian approach, and relation to other economic approaches.
Prerequisite: ECON 505.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 792A Seminar: Theory Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 792C Seminar: Social and Political Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 792D Seminar: Quantitative Analysis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 792E Seminar: Development Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 793 Seminar--Doctoral Research Credits: 3 (0-0-3)
Course Description:
Prerequisite: (ECON 704 and ECON 705 and ECON 706) and (AREC 735 or ECON 735).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Ecosystem Sci & Sustain-ESS (ESS)

Courses

ESS 120 Intro to Ecosystem and Watershed Sciences Credit: 1 (1-0-0)
Course Description: Exploration of the fields of Ecosystem Science and Sustainability and Watershed Science, including career pathways.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: This is a partial semester course. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ESS 129 Information Management for Sustainability Credit: 1 (1-0-0)
Course Description: Learn to access, retrieve, store, and manipulate information for natural resources and sustainability applications. Basic mapping, statistics, and graphing.
Prerequisite: None.
Registration Information: This is a partial semester course. Credit not allowed for both ESS 129 and ESS 180A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 130 Intro to Systems Theory for Sustainability Credit: 1 (1-0-0)
Course Description: Introduction to the concept of a "system," fundamental tenets of systems theory, and application of systems theory to the sustainability of social-ecological systems.
Prerequisite: ESS 129, may be taken concurrently.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 150 Imagining Sustainability Credits: 3 (3-0-0)
Also Offered As: ANTH 150.
Course Description: Science alone cannot imagine the revolutionary changes necessary to sustain future life on our planet. Explore key concepts and practices of sustainability as represented in contemporary fiction, film, and the news media. Interdisciplinary approach will be anthropological and historical, charting the development of sustainability thinking through different epochs of capitalism.
Prerequisite: None.
Registration Information: Credit allowed for only one of the following: ANTH 150, ANTH 181A1, ESS 150, or ESS 181A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 210 Physical Geography Credits: 3 (3-0-0)
Also Offered As: GR 210.
Course Description: Energy, mass budget, and human impacts on atmosphere, hydrosphere, and continental land surfaces.
Prerequisite: None.
Registration Information: Credit not allowed for both ESS 210 and GR 210.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 211 Foundations in Ecosystem Science Credits: 3 (3-0-0)
Course Description: Linkage between society and ecosystems services as foundation for sustainability of the coupled human-environmental system.
Prerequisite: GR 210 or ESS 210.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 220 Research Skills for Ecosystem Science I Credit: 1 (0-0-1)
Course Description: Fundamental skills for participating in ecosystem science research through hands-on learning modules.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 221 Research Methods for Ecosystem Science II Credit: 1 (0-0-1)
Course Description: Advanced topics in the practice of the scientific method and participation in research.
Prerequisite: ESS 220.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 298 Research Credits: Var[1-3] (0-0-0)
Course Description: Directed ecosystem science research.
Prerequisite: ESS 221, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 311 Ecosystem Ecology Credits: 3 (3-0-0)
Course Description: Principles of ecosystems ecology, emphasis on their application to coupled natural and human systems.
Prerequisite: (PH 121 or PH 141) and (LIFE 320).
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 312 Sustainability Science Credits: 3 (3-0-0)
Course Description: Synthesize multifaceted information across a wide range of disciplines, with the goal to develop potential solutions to complex human-societal-environmental challenges at multiple scales. Implement methods for understanding current issues, develop alternative scenarios to current practices and policies, and stage interventions to achieve more sustainable behaviors and practices.
Prerequisite: LIFE 320.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 320 Internship and Career Preparation Credit: 1 (0-0-1)
Course Description: Career-related skills and professional development in ecosystem science and sustainability (ESS) for majors.
Prerequisite: LIFE 320.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 330 Quantitative Reasoning for Ecosystem Science Credits: 3 (2-2-0)
Course Description: Understanding diverse approaches for using data and models to understand complex ecological systems.
Prerequisite: (ESS 211 or LIFE 320) and (MATH 155 or MATH 160) and (STAT 301 or STAT 307 or STAT 315).
Registration Information: Junior or senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 382A Study Abroad: Socio-Ecological Landscapes of Mongolia Credits: 6 (0-0-6)
Course Description: Travel to Mongolia for a field-based, place-based experience with Mongolian students and herders. Engage in research projects partnering with Mongolian counterparts for field data collection using ecological, social science, and geospatial tools. Examine the intersection of culture and environment through observational exercises and experiential learning. Experience nomadic culture through field trips and participatory community activity.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of instructor.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 400 Global Perspectives on Sustainabilty Credits: 3 (3-0-0)
Course Description: Explores the intersections between ecosystem science, communities and sustainability in the context of the global challenges of climate change focusing on the new global framework (The Paris Agreement), Sustainable Development Goals (SDGs), and ecological indicators.
Prerequisite: ESS 311.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 411 Earth Systems Ecology Credits: 3 (3-0-0)
Course Description: Earth as a system, stressing ecological interactions among energy, water, and biogeochemistry.
Prerequisite: ESS 311 and ESS 312.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 412 Sustainable Cities Credits: 3 (3-0-0)
Course Description: Explore the ecology of cities, evaluate the most innovative science developed for the city, and discuss with renowned researchers leading these efforts. Analyze sustainability plans from a variety of cities around the globe, and interact with the practitioners developing and implementing sustainable goals. Delve into sustainability theory, specifically "the sustainable city myth."
Prerequisite: ANTH 100 or ANTH 200 or GES 101 or GR 100 or GR 210 or LIFE 220 or LIFE 320 or NR 120A or NR 130 or SOC 220.
Registration Information: Junior standing. Credit not allowed for both ESS 412 and ESS 480A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 432 Microbial Ecology Credits: 3 (2-0-1)
Also Offered As: MIP 432.
Course Description: Principles of microorganism interactions with their living and non-living environments; implications for the environment, plants, and animals.
Prerequisite: MIP 300.
Registration Information: Must register for lecture and recitation. Credit not allowed for both ESS 432 and MIP 432.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ESS 433 Microbial Ecology Laboratory Credit: 1 (0-3-0)
Also Offered As: MIP 433.
Course Description: Experimental microbial ecology; the design, conduct and interpretation of experiments that illustrate basic principles of microbial ecology.
Prerequisite: MIP 300.
Registration Information: Must be taken concurrently with ESS 432 or MIP 432. Credit not allowed for both ESS 433 and MIP 433.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ESS 440 Practicing Sustainability Credits: 4 (2-0-2)
Course Description: Capstone integration of ecosystem science and sustainability, focused on case studies.
Prerequisite: ESS 311 and ESS 312.
Registration Information: Senior standing in WCNR. Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ESS 471 Special Topics in Ecosystem Sustainability Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: ESS 311.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 474 Limnology Credits: 3 (2-2-0)
Also Offered As: BZ 474.
Course Description: Biology, chemistry, and physics of lakes including limnological methods.
Prerequisite: LAND 220 or LIFE 220 or LIFE 320.
Registration Information: Must register for lecture and laboratory. Required field trips. Credit not allowed for both BZ 474 and ESS 474.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ESS 482A Study Abroad: Communities and Conservation in South Africa Credits: 6 (0-0-6)
Also Offered As: ANTH 482A.
Course Description: Travel to the wildest areas of savanna South Africa to work and learn from rural and urbanizing communities. Insights into the innovative forms of community-based natural resource management emerging in South Africa. Understand the new landscapes of conservation associated with post-apartheid South Africa. Explore the problems faced by the millions of people living in poverty at the edge of protected areas.
Prerequisite: None.
Registration Information: Written consent of instructor. Pre-South Africa: during the spring semester prior to the actual study abroad experience, students will meet in March and April for workshops and guest lectures on the CSU campus. In South Africa: travel approximately June 10 – July 2. Post-South Africa: students and instructors will schedule 20 hours of consulting time while students work on group projects over 6 weeks. Credit not allowed for both ANTH 482A and ESS 482A.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 486 Ecosystem Practicum Credits: 2 (0-0-4)
Course Description: One-week field practicum to examine ecosystem science and sustainability issues in Colorado landscapes.
Prerequisite: ESS 311.
Registration Information: Senior standing. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 487 Internship Credits: Var[1-6] (0-0-0)
Course Description: Supervised work experience in professional settings related to Ecosystem Science and Sustainability.
Prerequisite: ESS 320.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ESS 495 Independent Study in Ecosystem Science Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ESS 501 Principles of Ecosystem Sustainability Credits: 3 (3-0-0)
Course Description: Principles of ecosystem sustainability and threats to sustainability. Students will investigate and develop case studies.
Prerequisite: BZ 300 to 499 or ECOL 300 to 499 or CHEM 300 to 499.
Registration Information: Admission to graduate school. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 524 Foundations for Carbon/Greenhouse Gas Mgmt Credits: 3 (3-0-0)
Course Description: Foundations for understanding greenhouse gas emissions management and accounting.
Prerequisite: BZ 300 to 499 or ECOL 300 to 499 or CHEM 300 to 499.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 542 Greenhouse Gas Policies Credits: 2 (0-0-2)
Course Description: Rules, regulations and standards for greenhouse gas management and accounting.
Prerequisite: ESS 524.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 543 Current Topics in Climate Change Credits: 2 (2-0-0)
Also Offered As: ATS 543.
Course Description: Climate fundamentals and current topics in climate change.
Prerequisite: BZ 300 to 499 or ECOL 300 to 499 or LIFE 300 to 499 or CHEM 300 to 499.
Registration Information: Credit not allowed for both ESS 543 and ATS 543. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ESS 545 Applications in Greenhouse Gas Inventories Credits: 4 (2-6-0)
Course Description: Overview of methods for estimating greenhouse gas emissions and mitigation potential for agriculture and forestry activities.
Prerequisite: ESS 524 and STAT 511A.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 555 Life Cycle Assessment for Sustainability Credits: 3 (3-0-0)
Also Offered As: ENGR 555.
Course Description: The quantitative and qualitative measure of cradle-to-grave impacts of products and services on the environment, the economy, and society.
Prerequisite: BIOM 300 to 479 or BZ 300 to 379 or BZ 400 to 479 or CHEM 300 to 379 or CHEM 400 to 479 or CIVE 300 to 479 or ECOL 300 to 379 or ENGR 300 or MECH 300 to 379.
Registration Information: Sections may be offered: Online. Credit allowed for only one of the following: ENGR 555, ESS 555, ENGR 581A1, or ESS 581A1.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 565 Niche Models Credits: 4 (3-2-0)
Course Description: Concepts and application of niche models in ecosystem science.
Prerequisite: (BSPM 526 or BZ 526 or BZ 535 or BZ 548 or BZ 561 or ECOL 505 or ECOL 600 or ECOL 610 or ECOL 620 or FW 555 or FW 662) and (STAT 511A).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ESS 575 Models for Ecological Data Credits: 4 (3-2-0)
Course Description: Gaining insight about the operation of ecological processes using models and data.
Prerequisite: MATH 255 and STAT 340.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 587 Internship Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ESS 625 Ecology of Forest Production Credits: 3 (3-0-0)
Also Offered As: F 625.
Course Description: Develops student expertise in understanding carbon and nutrient flows in forests.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken a 300-level course in ECOL. Credit not allowed for both ESS 625 and F 625. Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ESS 655 Multivariate Analysis for Community Ecology Credits: 2 (2-0-0)
Course Description: Techniques and conceptual understanding for analyzing multivariate ecological data characteristic of community ecology, including ordination, classification, and permanova.
Prerequisite: (STAT 511A) and (BZ 500 to 679 - at least 3 credits or ECOL 500 to 679 - at least 3 credits or ESS 500 to 679 - at least 3 credits or FW 500 to 679 - at least 3 credits).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ESS 660 Biogeochemical Cycling in Ecosystems Credits: 3 (3-0-0)
Course Description: Biotic and abiotic processes responsible for distribution and fluxes of elements at ecosystem, landscape, and global scales.
Prerequisite: CHEM 245 and SOCR 240 and ECOL 300 to 699.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 692 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ESS 695 Independent Study in Ecosystem Science Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ESS 696 Group Study Credits: Var[1-6] (0-0-0)
Course Description: Group study projects on topics in ecosystem science and sustainability.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ESS 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ESS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ESS 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ESS 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Educ-Cnsling/Career Dev-EDCO (EDCO)

Courses

EDCO 500 Career and Employment Concepts Credits: 3 (0-0-3)
Course Description: Career and lifestyle studies that provide an understanding of career development, employment concepts, and career counseling resources.
Prerequisite: None.
Registration Information: Bachelor's degree. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 550 Professional School Counseling Credits: 3 (3-0-0)
Course Description: History, professionalism, ethics, program planning and program development of school counseling programs.
Prerequisite: None.
Registration Information: Admission to Counseling and Career Development Program or approval of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 552 School Counseling Program Delivery/Evaluation Credits: 3 (0-0-3)
Course Description: Effective school counseling program development, delivery, and evaluation.
Prerequisite: EDCO 550.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 590 Workshop Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCO 625 Foundations of Counseling Credits: 3 (2-0-1)
Course Description: Foundations and techniques of individual guidance and counseling.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor's degree. Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 650 Theories of Counseling and Development Credits: 3 (2-0-1)
Course Description: Theories of individual counseling and development.
Prerequisite: EDCO 625.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. This is a partial semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 651 Group Guidance and Counseling Credits: 3 (2-0-1)
Course Description: Theory and techniques of group guidance and counseling.
Prerequisite: EDCO 650.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 652 Ethics in Counseling/Career Development Credits: 3 (3-0-0)
Course Description: Awareness and critical analysis of ethical and legal issues in counseling and career development.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Counseling and Career Development Program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 653 Counseling for Cultural Diversity Credits: 3 (2-0-1)
Course Description: Influence of cultural differences in delivering culturally responsive counseling.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.Ed. Counseling and Career Development specialization or written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 655 Brief Counseling Credits: 3 (3-0-0)
Course Description: Continued development, knowledge, and use of counseling theories and skills such as solution focus counseling/therapy and motivational interviewing techniques. Develop understanding of the change model (Transtheoretical Model) to assist in helping clients make desired changes in their lives.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Proof of professional counseling liability insurance.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 656 Counseling Assessment and Appraisal Credits: 3 (2-0-1)
Course Description: The topics include (a) history and philosophy of educational, psychological, and vocational testing; (b) introduction to the basic statistical concepts surrounding test validation, scoring and interpretation; (c) essential criteria for evaluating and selecting appropriate assessment instruments; (d) principles of standardized administration and scoring; (e) interpretation of test results and appropriate consultation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Offered as Mixed Face-to-Face.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 660 Career Development Counseling Credits: 3 (3-0-0)
Course Description: Career development programs and processes over the life span with particular attention to career choice.
Prerequisite: EDCO 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 661 Career and Life Design Counseling Credits: 3 (2-0-1)
Course Description: Career and life design counseling knowledge, skills, and practices with a focus on emerging career development and career counseling theories, concepts, and models; career programming and evaluation; and career development and counseling advocacy.
Prerequisite: EDCO 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 662 Counseling Children and Adolescents Credits: 3 (2-0-1)
Course Description: Counseling theories and interventions applied to the child and adolescent client population.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Counseling and Career Development Program.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 665 Career Development Institute Credits: 3 (1-0-2)
Course Description: Current issues related to employment, employee development, career planning, and labor market information are examined. Site visits and career development audits of local employers as well as other structured activities and assignments encourage students to consider educational and labor market trends and career development within a global society.
Prerequisite: EDCO 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Offered as Mixed Face-to-Face. This is a partial semester course. Required field trips.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 670 Introduction to Mental Health Counseling Credits: 3 (3-0-0)
Course Description: How psychopathology is experienced and displayed by the client and the key principles in diagnosing mental health disorders.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 675 Mental Health Counseling and Treatment Credits: 3 (2-0-1)
Course Description: The clinical mental health counseling (CMHC) field and counseling treatment, with a focus on emerging current trends, multicultural considerations, professional issues, and credentialing of CMHCs. Topics include clinical interviewing, case conceptualizations, and treatment and diagnosis of specialty populations.
Prerequisite: EDCO 650 and EDCO 693.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 686 Practicum-Guidance and Counseling Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCO 687 Internship-Guidance and Counseling Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCO 692 Seminar Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 693 Seminar-Guidance and Counseling Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCO 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCO 792A Seminar: Individual Counseling Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCO 792B Seminar: Group Counseling Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCO 792C Seminar: Contemplative Practice-Counseling & Education Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Instructor Option.
Special Course Fee: No.

Education, Adult-EDAE (EDAE)

Courses

EDAE 495 Independent Study-Adult Education Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDAE 520 Adult Education Credits: 3 (0-0-3)
Course Description: Philosophical foundations, a description of program service areas, adult participation trends, and current issues.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 530 Adult Basic Education Credits: 3 (2-0-1)
Course Description: Enhance instructor skills in literacy and numeracy instruction for adult learners functioning below the 12th grade equivalency.
Prerequisite: None.
Registration Information: Bachelor's degree or consent of instructor. Must register for lecture and recitation. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 540 Teach English as Second Lang—Adult Learners Credits: 3 (2-0-1)
Course Description: Instructors learn the tools necessary to successfully deliver English learning to adult speakers of other languages.,
Prerequisite: None.
Registration Information: Bachelor's degree or consent of instructor. Must register for lecture and recitation. Offered as an online course only.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 586 Practicum Credits: Var[1-18] (0-0-0)
Course Description: Participation in field experience relevant to study program and objectives.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDAE 590 Workshop Credits: Var[1-18] (0-0-0)
Course Description: Specially designed learning situations to provide opportunities for concentrated problem-solving experiences.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDAE 601 Philosophy/Organization of Workforce Education Credits: 3 (3-0-0)
Course Description: Principles, philosophy, practices, and innovations of workforce education and human resources.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 620 Processes and Methods Credits: 3 (0-0-3)
Course Description: Processes and methods including helping theories used by adult learning facilitators.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 624 Adult Teaching and Learning I Credits: 3 (0-0-3)
Course Description: Using theory and best practices to design and deliver instruction for adults.
Prerequisite: EDAE 520.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 629 Program Development Credits: 3 (0-0-3)
Course Description: Models for planning, implementing, and evaluating programs for adult learners.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 630 Using Mobile Technology for Training Credits: 3 (1-0-2)
Course Description: Facilitating learning and developing knowledge access through mobile technologies for adult learners. Using mobile technologies to develop a learning event for targeted adult learners.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online or Mixed Face-to-Face.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 639 Instructional Design Credits: 3 (1-0-2)
Course Description: Apply instructional design principles in the development of a course or workshop and explore application of various learning methods.
Prerequisite: EDAE 620 and EDAE 624 and EDRM 600.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 664 Assessment and Evaluation in Adult Education Credits: 3 (2-0-1)
Course Description: Assessment of learning, evaluation of learning events, and determining the value of the training to the adult learners in the organization.
Prerequisite: EDAE 620.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 668 Cognitive Theory and Learning Transfer Credits: 3 (1-0-2)
Course Description: Investigation of learning processes and training strategies that lead to application of learning outside of the classroom.
Prerequisite: EDAE 620 and EDAE 624.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 682 Cultural Applications of Lifelong Learning Credits: 3 (0-0-3)
Course Description: Immersion experience examining cultural differences and establishing lifelong learning practices in Belize.
Prerequisite: EDUC 651.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have completed 6 credits in the Adult Education and Training specialization under the M.Ed.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 682A Study Abroad: Applications of Lifelong Learning-Thailand Credits: 3 (0-0-3)
Course Description: Historical, social, political, and cultural perspectives that shape lifelong learning in the host country-Thailand. The educational activities are structured to allow reflection of pedagogical approaches and teaching philosophies specific to adult learners. Develop a deep understanding of adult education concepts through immersion, comparison, reflection, and application.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as Mixed Face-to-Face.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 687 Internship Credits: Var[1-18] (0-0-0)
Course Description: Career or job fieldwork experience with an adult education institution, agency, or program.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDAE 692 Seminar-Adult Education Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDAE 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDAE 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: EDAE 520 and EDAE 624 and EDRM 600.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDAE 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: EDAE 520 and EDAE 624 and EDRM 600.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDAE 724 Adult Teaching and Learning II Credits: 3 (0-0-3)
Course Description: Adult teaching and learning, alternative delivery systems, performance technology, and faculty evaluation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

Education-Career + Tech-EDCT (EDCT)

Courses

EDCT 300 Principles of Career and Technical Education Credits: 2 (0-0-2)
Course Description: History, purpose, administration, funding, programs, services and delivery of career and technical education within educational systems.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 387 Internship Credits: Var[1-18] (0-0-0)
Course Description: Coordinated and supervised experiences in business, industry, or agriculture selected to strengthen the intern's specialty through experience.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCT 400 Building Student Organizations/Partnerships Credits: 2 (2-0-0)
Course Description: Techniques and methods to implement and advise student leaders; establish and nurture business/industry partners and work-based experiences.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 420 Agricultural Experience and Adult Education Credits: 3 (3-0-0)
Course Description: Developing secondary agriculture experience programs. Organizing and teaching adult education classes in agriculture.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 425 Methods/Materials in Agricultural Education Credits: 4 (4-0-0)
Course Description: Methods and procedures in teaching and evaluating agricultural education in the classroom and laboratory; vocational foundations; microteaching.
Prerequisite: EDUC 350, may be taken concurrently or EDUC 450, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 431 Methods/Materials in Business Education Credits: 4 (4-0-0)
Course Description: Methods for teaching business education.
Prerequisite: EDUC 350, may be taken concurrently or EDUC 450, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 441 Methods/Materials-Vocational Marketing Education Credit: 1 (1-0-0)
Course Description: Instructional methods and resource materials development for vocational marketing education.
Prerequisite: (EDCT 431) and (EDUC 350, may be taken concurrently or EDUC 450, may be taken concurrently).
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 451 Methods-Family/Consumer Sciences Education Credits: 4 (3-2-0)
Course Description: Teaching methods, processes, and materials for family and consumer sciences education.
Prerequisite: EDUC 350, may be taken concurrently or EDUC 450, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 465 Methods and Materials in Technology Education Credits: 3 (3-0-0)
Course Description: Strategies and practices of teaching in a technical laboratory setting.
Prerequisite: EDUC 350, may be taken concurrently or EDUC 450, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 471 Orientation and Assessment of New Teachers Credits: 2 (2-0-0)
Course Description: Orientation to teaching and individual assessment of teaching skills: development and implementation of professional growth plan.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 472 Classroom Management Credit: 1 (0-0-1)
Course Description: Orientation to teaching and individual assessment of teaching skills: development and implementation of professional growth plan.
Prerequisite: EDCT 471.
Registration Information: Admission to TAP. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 473 Communication Strategies Credit: 1 (0-0-1)
Course Description: Introduction to student management techniques and program management. Teachers will create a preliminary plan for instruction.
Prerequisite: EDCT 471.
Registration Information: Admission to TAP. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 485 Student Teaching Credits: Var[1-18] (0-0-0)
Course Description: Teacher education candidates participate in an intensive and extensive on-site capstone experience within a public school setting.
Prerequisite: (EDUC 450) and (EDUC 460 or EDUC 474 or EDUC 463 or EDUC 464 or EDUC 465 or EDUC 466 or EDUC 475 or EDUC 476 or EDUC 477 or EDCT 425 or EDCT 431 or EDCT 441 or EDCT 451 or EDCT 465 or EDUC 462).
Registration Information: Appropriate special content methods courses.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

EDCT 486 Practicum Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCT 492 Seminar-Professional Relations Credits: Var[1-18] (0-0-0)
Course Description: Collegial and professional discussions, support, and assistance.
Prerequisite: EDUC 450.
Registration Information: Appropriate special content methods course.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDCT 494 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCT 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCT 520 Teaching Agricultural Education Credits: Var[1-18] (0-0-0)
Course Description: Methods of teaching recent developments in the field of agriculture and allied industries.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 571 Vocational Assessment for Special Needs Credits: 3 (0-0-3)
Course Description: Information on techniques regarding vocational assessment of special needs students including traditional and curriculum-based strategies.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 590 Workshop Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCT 612 Career and Technical Administrative Strategy Credits: 3 (0-0-3)
Course Description: Basic educational systems; the scientific method as a basis for analysis; systems as a tool for planning and decision making.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 693 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Education-Community Coll-EDCL (EDCL)

Courses

EDCL 675 The Community College Credits: 3 (3-0-0)
Course Description: Role and scope of community college: history, philosophy, organization, administration.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in EDCL 702.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCL 687 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCL 701 Higher Education Law Credits: 3 (0-0-3)
Course Description: Legal theory, analysis, and review of cases relevant to higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDCL 702 Community College Curriculum Credits: 3 (2-0-1)
Course Description: Investigation and research of critical curricular issues affecting the community college now and in the future.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in EDCL 675. Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCL 703 Community College Leadership Credits: 3 (2-0-1)
Course Description: Investigation and research of critical leadership issues affecting the community college now and in the future.
Prerequisite: EDCL 675.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDCL 750 Simulated Presidential Cabinet I Credits: 3 (0-0-3)
Course Description: Issues and challenges relating to students, faculty, instructional programs, noninstructional programs, and instructional delivery.
Prerequisite: EDCL 701 and EDUC 710.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCL 751 Simulated Presidential Cabinet II Credits: 3 (0-0-3)
Course Description: Issues and challenges relating to internal/external governances, legal authority, institutional revenues, expenditures and insurances, human resources.
Prerequisite: EDCL 701 and EDUC 710.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCL 792 Seminar Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

Education-General-EDUC (EDUC)

Courses

EDUC 275 Schooling in the United States (GT-SS3) Credits: 3 (3-0-0)
Course Description: Historical, social, political, philosophical, cultural, and economic forces that shape the United States public school system. Current issues of educational reform, educational technology, and considerations related to becoming a teacher in the state of Colorado are explored. Special interest will be paid to the topic of diversity in the PK-12 school system.
Prerequisite: None.
Registration Information: Completion of 30 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).

EDUC 296 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 320 Educational Psychology Credits: 3 (2-0-1)
Course Description: Psychological conditions of classroom learning and teaching including understanding needs of all children in the classroom.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 331 Educational Technology and Assessment Credits: 2 (1-2-0)
Course Description: Skills and strategies for the use of appropriate technology and assessment in teacher education.
Prerequisite: EDUC 275 and EDUC 340.
Registration Information: Admission to Teacher Licensure Program. Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 340 Literacy and the Learner Credits: 3 (1-2-1)
Course Description: Understanding and supporting literacy and numeracy development. Field experiences, service learning experiences.
Prerequisite: None.
Registration Information: Required background check through CDE, CBI, FBI. 30 credits of course work completed. Must register for lecture, laboratory, and recitation.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 350 Instruction I-Individualization/Management Credits: 3 (2-2-0)
Course Description: Theory, research and practice of teaching at the junior high/middle school level; adapting instruction for individuals including learners with special needs.
Prerequisite: EDUC 275 and EDUC 340.
Registration Information: Must have concurrent registration in EDUC 386. Admission to Teacher Licensure Program. Must register for lecture and laboratory. Includes fieldwork in public schools. Site placement may change due to public school needs.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 375 Comparative Education Credits: 3 (2-0-1)
Course Description: Exploring and comparing education in various countries. Using a variety of lenses as the exploration of the relationship between education, culture and society in a global context to understand schooling around the world. Among the issues discussed will be gender, race, class, socio-political and economic structures and their relationship to the schooling process.
Prerequisite: None.
Registration Information: Sophomore standing. Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 386 Practicum-Instruction I Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: EDUC 275 and EDUC 340.
Registration Information: Must have concurrent registration in EDUC 350. Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 400 Diagnostic Teaching of Reading Credits: 3 (1-4-0)
Course Description: Development of the knowledge base, skills, and strategies for teaching reading from birth to age 8. Service learning experiences.
Prerequisite: EDUC 275 and EDUC 340 and HDFS 217 and HDFS 310.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 425 Early Childhood Education I Credits: 4 (2-6-0)
Course Description: Integrated methods; theoretical bases; teacher's role; appropriate curriculum; measurement; environments; pedagogy; instructional design and decisions.
Prerequisite: EDUC 275 and EDUC 340.
Registration Information: Admission to Teacher Licensure Program. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 426 Early Childhood Education II Credits: 4 (2-4-0)
Course Description: Integrated methods; organizing/presenting materials/activities; applying decisions; managing groups; individual instruction; assessment/evaluation.
Prerequisite: EDUC 425.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 450 Instruction II-Standards and Assessment Credits: 4 (2-4-0)
Course Description: Theory, research, and practice of standards-based instruction: assessment, literacy, and technology. Includes work in public schools.
Prerequisite: EDUC 350 and EDUC 386 and EDUC 331.
Registration Information: Must have concurrent registration in EDUC 486E. Must register for lecture and laboratory. Course must be taken semester immediately prior to student teaching semester.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 460 Methods and Materials in Teaching Science Credits: 4 (3-2-0)
Course Description: Current trends in science education, K-12; techniques of experimentation demonstrations; study of equipment, facilities, and resource materials.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 462 Methods and Assessment in Teaching Languages Credits: 4 (4-0-0)
Course Description: Objectives, methods, and resource materials for teaching languages in secondary schools.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program; oral and written competency in language endorsement area.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

EDUC 463 Methods in Teaching Language Arts Credits: 4 (4-0-0)
Course Description: Objectives, content, and methods of teaching English, speech, and journalism in secondary schools.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 464 Methods and Materials in Teaching Mathematics Credits: 4 (4-0-0)
Course Description: Problems and techniques of teaching secondary mathematics; evaluation of student achievement and teacher effectiveness.
Prerequisite: MATH 100 to 481 - at least 18 credits.
Registration Information: Admission to Teacher Licensure Program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 465 Methods and Materials in Social Studies Credits: 4 (4-0-0)
Course Description: Methods of teaching social studies; sources of information and teaching materials and literature for social studies teachers.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 466 Methods and Assessment in K-12 Art Education Credits: 4 (4-0-0)
Course Description: Objectives, methods, and resource materials for teaching art in elementary and secondary schools.
Prerequisite: EDUC 275.
Registration Information: Admission to Teacher Licensure Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 474 Elementary Music Methods I Credits: 2 (1-3-0)
Course Description: Developmentally appropriate strategies and materials for K-6 music instruction; emphasis on common methodologies, resources, standards-based teaching.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 475 Elementary Music Methods II Credits: 2 (1-3-0)
Course Description: Classroom management, motivational strategies, technology tools, assessment/evaluation of music learning and field experiences in K-6 music education.
Prerequisite: EDUC 474.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 476 Choral Methods for Secondary Schools Credits: 2 (1-3-0)
Course Description: General music classes, choral techniques and literature; current practices and trends.
Prerequisite: MU 217.
Registration Information: Admission to Teacher Licensure Program. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 477 Instrumental Methods for Secondary Schools Credits: 2 (1-3-0)
Course Description: Organization and administration of instrumental music, grades 5-12.
Prerequisite: MU 217.
Registration Information: Admission to Teacher Licensure Program. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 485A Student Teaching: Elementary Credits: Var[6-14] (0-0-0)
Course Description: Teacher education candidates participate in an intensive and extensive on-site capstone experience within a public school setting.
Prerequisite: (EDUC 450) and (EDUC 460 or EDUC 474 or EDUC 463 or EDUC 464 or EDUC 465 or EDUC 466 or EDUC 475 or EDUC 476 or EDUC 477 or EDCT 425 or EDCT 431 or EDCT 441 or EDCT 451 or EDCT 465 or EDUC 462).
Registration Information: Appropriate special methods course(s) required.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 485B Student Teaching: Secondary Credits: Var[6-14] (0-0-0)
Course Description: Teacher education candidates participate in an intensive and extensive on-site capstone experience within a public school setting.
Prerequisite: (EDUC 450) and (EDUC 460 or EDUC 474 or EDUC 463 or EDUC 464 or EDUC 465 or EDUC 466 or EDUC 475 or EDUC 476 or EDUC 477 or EDCT 425 or EDCT 431 or EDCT 441 or EDCT 451 or EDCT 465 or EDUC 462).
Registration Information: Appropriate special methods course(s) required.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

EDUC 485C Student Teaching: Early Childhood Credits: Var[6-14] (0-0-0)
Course Description: Teacher education candidates participate in an intensive and extensive on-site capstone experience within a public school setting.
Prerequisite: EDUC 426.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

EDUC 486A Practicum: K-12 Classroom Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 486B Practicum: Reading Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 486C Practicum: Mathematics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 486D Practicum: Literacy Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 486E Practicum: Instruction II Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 493A Seminar: Professional Relations Credits: Var[1-3] (0-0-0)
Course Description: Collegial and professional discussions, support, and assistance.
Prerequisite: (EDUC 426 or EDUC 450) and (EDUC 485A, may be taken concurrently or EDUC 485B, may be taken concurrently or EDUC 485C, may be taken concurrently or EDCT 485) and (EDUC 460 or EDUC 474 or EDUC 463 or EDUC 464 or EDUC 465 or EDUC 466 or EDUC 475 or EDUC 476 or EDUC 477 or EDCT 425 or EDCT 431 or EDCT 441 or EDCT 451 or EDCT 465 or EDUC 462).
Registration Information: Appropriate special methods course(s).
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 493B Seminar: Assessment of Learning Credits: Var[1-3] (0-0-0)
Course Description: Information and techniques that enable educators to use assessment results to inform planning and instructional practices.
Prerequisite: (EDUC 426 or EDUC 450) and (EDUC 485B, may be taken concurrently or EDUC 485C, may be taken concurrently or EDCT 485, may be taken concurrently or EDUC 485A, may be taken concurrently) and (EDUC 460 or EDUC 462 or EDUC 463 or EDUC 464 or EDUC 465 or EDUC 466 or EDUC 474 or EDUC 475 or EDUC 476 or EDUC 477 or EDCT 425 or EDCT 431 or EDCT 441 or EDCT 451 or EDCT 465).
Registration Information: Appropriate special methods course(s).
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 494 Independent Field Studies Credits: Var[1-18] (0-0-0)
Course Description: Specialized field study in the public schools under direction and supervision of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 502 Human Relations in Education Credits: 3 (3-0-0)
Course Description: Human relations in an individual's educational, organizational, and social activities as applied to various educational settings.
Prerequisite: EDCT 300.
Registration Information: Bachelor's degree can substitute for EDCT 300. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 525C Expert Teaching: Literacy and Numeracy Credits: 3 (0-0-3)
Course Description: Theories related to effective classroom instruction.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program; Bachelor's degree.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 526 Interdisciplinary Methods Credits: 4 (0-4-2)
Course Description: Theories related to effective classroom instruction.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program; Bachelor's degree.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 530 Technology Enhanced Learning Credits: 3 (2-2-0)
Course Description: Enhancing instruction and learning through the effective use of technology.
Prerequisite: None.
Registration Information: Bachelor's degree. Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 570 Perspectives of Special Education Credits: 3 (2-2-0)
Course Description: Historical and legal, philosophical foundations, student characteristics, and building collaborative relationships in special education.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 573 Differentiating Instruction for Diverse Needs Credits: 3 (3-0-0)
Course Description: Information techniques, and practice regarding methods for differentiating instruction.
Prerequisite: EDUC 570.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 591A Workshop: Instruction Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 591B Workshop: Community Partnerships Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 591C Workshop: Annenberg/CPB Science Instruction Credits: Var[1-3] (0-0-0)
Course Description: Science pedagogy for practicing K-12 teachers.
Prerequisite: None.
Registration Information: Offered as a telecourse only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 591D Workshop: Annenberg/CPB Mathematics Instruction Credits: Var[1-3] (0-0-0)
Course Description: Mathematics pedagogy for practicing K-12 teachers.
Prerequisite: None.
Registration Information: Offered as a telecourse or an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 591E Workshop: Annenberg/CPB Educ Theory and Issues Credits: Var[1-3] (0-0-0)
Course Description: General educational theory and current issues for practicing K-12 teachers.
Prerequisite: None.
Registration Information: Offered as telecourse only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 591F Workshop: Annenberg/CPB Humanities Instruction Credits: Var[1-3] (0-0-0)
Course Description: English, social studies, or art pedagogy for practicing K-12 teachers.
Prerequisite: None.
Registration Information: Offered as telecourse only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 610 Principles of Supervision and Evaluation Credits: 3 (2-0-1)
Course Description: Supervision and evaluation of instruction including required Colorado evaluation training.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 618 School Law Credits: 3 (3-0-0)
Course Description: Legal framework for operation and management of public and private schools emphasizing legal responsibilities for administrators and teachers.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 619 Curriculum Development Credits: 3 (3-0-0)
Course Description: Principles and procedures for school personnel in planning the public school curriculum.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 625 Contexts of Schooling Credits: 3 (3-0-0)
Course Description: History, purpose, structure, and role of schooling with relevance to current issues, U.S. and international.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to graduate program required.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 628 Models of Teaching Credits: 3 (2-0-1)
Course Description: Exploration of the theories and skills that underlie instructional effectiveness, improvement and innovation across levels and disciplines.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Offered as an online or Mixed Face-to-Face course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 629 Communication and Classrooms Credits: 3 (2-0-1)
Course Description: Exploration of pedagogical topics and growth experiences related to effective communication, classroom management, and presentation skills.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online or Mixed Face-to-Face.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 635 Educators, Systems and Change Credits: 3 (2-0-1)
Course Description: Process of change in education, focusing on the teacher's role in curriculum development and professional improvement.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online or Mixed Face-to-Face.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 645 Leadership and Ethics in Public Education Credits: 3 (3-0-0)
Course Description: Focus on leadership functions for public schools and ethical dimensions of leadership.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Administrator Licensure Program.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 646 School Resource Management Credits: 3 (3-0-0)
Course Description: School resource management including fiscal, personnel, and organization.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Administrator Licensure Program. Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 647 School Culture, Climate, and Communications Credits: 3 (3-0-0)
Course Description: Assist public school leaders in their facilitation role in enhancing human relations and communication within schools and communities.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in EDUC 645 and EDUC 646. Admission to Administrator Licensure Program.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 648A Role of the Principal: Professional Learning Community Credit: 1 (1-0-0)
Course Description: Role of the principal as a result of changes in society and in the schools.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in EDUC 687B. Admission to Administrator Licensure Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 648B Role of the Principal: Managing and Leading Change Credits: 2 (1-0-1)
Course Description: Role of the principal as a result of changes in society and in the schools.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in EDUC 687B. Admission to Administrator Licensure Program. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 651 Multicultural and Special Populations Credits: 3 (2-0-1)
Course Description: Special concerns for working with people of various cultural, ethnic, exceptional, and special interest groups.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor's degree. Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 660 Advanced Methods-Science and Math Instruction Credits: 3 (0-0-3)
Course Description: Knowledge and skills to improve the teaching of science, technology, engineering, and mathematics for in service K-12 teachers.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 670 Grant Writing Credits: 3 (1-0-3)
Course Description: Mechanics of proposal writing, including intangibles of the grant-seeker's art.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 675 Analyzing Education Literature Credits: 3 (1-0-2)
Course Description: Analyze, critique, and interpret scholarly literature in the discipline.
Prerequisite: EDRM 700 or EDRM 702 or EDRM 704.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 686A Practicum: Administration Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 686B Practicum: Urban Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 687A Internship: Administration Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 687B Internship: Principal Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 687C Internship: Guidance and Counseling Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 687D Internship: Teacher Licensure I Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate or professional standing only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 687E Internship: Teacher Licensure II Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate or professional standing only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 693A Seminar: Administrator Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 693B Seminar: Instruction Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 693C Seminar: Teacher Licensure Capstone Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate or professional standing only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 709 Leadership Development Credits: 3 (3-0-0)
Course Description: Principles, theories, attributes, and skills related to individual leadership development.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 710 Higher Education Finance Credits: 3 (0-0-3)
Course Description: Federal, state, and local revenue distribution, budget preparation and controls, accounting options, audit preparation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 713 Teaching, Learning, and Professional Growth Credits: 3 (2-0-1)
Course Description: Teaching, learning, and professional development perspectives related to educational transformation and sustainable reform, especially in the context of cases that address equity and fairness, diversity and inclusiveness, social and environmental justice.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to PhD program. Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 714 Education Policy Analysis Credits: 3 (3-0-0)
Course Description: Frameworks for analyzing, designing policy proposals, and implementing plans.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Ph.D. program.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 715 Critical Theory, Educational Equity & Praxis Credits: 3 (1-0-2)
Course Description: Systems of power and oppression in understanding how educational institutions work. Examine educational opportunity, excellence, dignity, and equity from social, cultural, and political perspectives. How critical theories inform educational practice and contribute to transformative action across educational settings.
Prerequisite: EDUC 651.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 716 Capstone: Educational Equity and Reform Credits: 3 (3-0-0)
Course Description: Applies tenets of educational leadership research and theory into a context of equity, global citizenship and environmental responsibility.
Prerequisite: EDUC 709 and EDUC 713.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 720 Human Learning, Cognition, and Motivation Credits: 3 (3-0-0)
Course Description: Theories of learning, cognition, and motivation applicable to enhancing effective and efficient learning for individuals and teams.
Prerequisite: EDUC 628 or EDUC 629.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 725 Professionalism in Education and Leadership Credits: 3 (3-0-0)
Course Description: Professional choices and ethical decision making in education and leadership, with emphasis on higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Ph.D. program.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 786 Practicum Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 787 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 792 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 793 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Education-Higher Ed-EDHE (EDHE)

Courses

EDHE 590A Workshop: Student Personnel-Admissions Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590B Workshop: Student Personnel-College Union Administration Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590C Workshop: Student Personnel-Housing/Auxiliary Services Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590D Workshop: Student Personnel-International Programs Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590E Workshop: Student Personnel-Career Services Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590F Workshop: Student Personnel-Service Learning Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590G Workshop: Student Personnel-Wellness Programs Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590H Workshop: Advising Student Groups Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590J Workshop: Student Personnel-Access and Opportunity in Higher Education Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Spring (odd years).
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDHE 590K Workshop: Student Personnel-Leadership and Service in Higher Education Credit: 1 (0-0-1)
Course Description: Various theories of leadership and citizenship development applied to different higher education and student affairs settings.
Prerequisite: None.
Registration Information: enrollment in the SAHE program.
Term Offered: Fall (even years).
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDHE 590L Workshop: Student Personnel-Working with Student's Parents and Families Credit: 1 (0-0-1)
Course Description: Philosophies and best practices regarding partnering with the parents and families of today's college students.
Prerequisite: None.
Registration Information: Enrollment in the SAHE program.
Term Offered: Fall (even years).
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDHE 590M Workshop: Student Personnel-Spiritual Dimensions of Student Development Credit: 1 (0-0-1)
Course Description: Intersection of faith and spirituality and the learning, growth, and development of college students.
Prerequisite: None.
Registration Information: Enrollment in the SAHE program.
Term Offered: Spring (odd years).
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDHE 640A Study Abroad – Global Perspectives: Higher Education and Student Services Credits: 3 (0-0-3)
Course Description: International field experience prepares student affairs professionals to work with culturally diverse student, staff, and faculty populations; students who study abroad and the transitional challenges of returning from international experiences; growing populations of international undergraduate and graduate students, and the increasing demands from the federal government and education institutions for internationalization of higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 650 College Opportunity Program Models Credits: 3 (2-0-1)
Course Description: Examines rationale and structure of postsecondary retention programs that support underrepresented students based on college type and program purpose.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor's degree or consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 651 Pre-College Program Models Credits: 3 (2-0-1)
Course Description: Rationale and structure of pre-college programs that support underrepresented students' successful enrollment into higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor's degree required. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 653 Precollege Access Programs Credits: 3 (3-0-0)
Course Description: Precollege access programs effective practices to support underrepresented middle-high school students to prepare for and enroll in postsecondary.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor's degree or written consent of instructor Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 655 Foundations of College Opportunity Programs Credits: 3 (2-0-1)
Course Description: Exploration of college opportunity programs for expanding access to American higher education. Understanding the implications of financial aid, opportunity support programs, achievement gaps, policies, and advocacy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only. Credit not allowed for EDHE 655 and EDHE 680A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 656 Postsecondary Opportunity Programs Practice Credits: 3 (2-0-1)
Course Description: Examines effective college opportunity program practices in context of institutional and student demographics, which support students' transition, persistence, achievement, engagement, and completion. Reviews retention literature and practices focused on low income, first generation, and other underrepresented students.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 658 Higher Education Enrollment Management Credits: 3 (3-0-0)
Course Description: Holistic understanding of enrollment management beginning with understanding factors shaping students' college choice options and decisions. Exploration of theory, policy and practice of marketing, admissions, financial aid, tuition setting, and retention as critical areas of enrollment management.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 660 Financial Management in Student Affairs Credits: 2 (1-0-1)
Course Description: Budgeting, fiscal planning, and financial administration in student affairs.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program; written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 661 Inclusive University Credits: 3 (3-0-0)
Course Description: Exploration of broad range of human differences and their impact in higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 662 Trends/Issues/Assessment in Higher Education Credits: 2 (2-0-0)
Course Description: Assessment and research involving students in collegiate settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in the SAHE program. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 670 Foundations and Trends in Student Affairs Credits: 3 (3-0-0)
Course Description: Historical and philosophical foundations, and current trends including analysis of the role of student affairs in higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program or one of the graduate certificates--Campus Crisis Management; Student Affairs Management in Auxiliary Enterprises; Student Affairs Administration. Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 671 Higher Education Administration Credits: 3 (3-0-0)
Course Description: History, purpose, structure, and role of leadership within the administration of higher education with relevance to present day higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 672 Ethical and Practical Issues-Student Affairs Credits: 2 (2-0-0)
Course Description: Ethical principles and standards used in student affairs.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in the SAHE program. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 673 Student Development Theory Credits: 3 (0-0-3)
Course Description: Strategies for application of student development theories in practice.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

EDHE 674 Campus Ecology Credits: 3 (3-0-0)
Course Description: Patterns of relationships among students and the college campus' social and physical environments.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 675 Campus Crisis Management Credits: 3 (3-0-0)
Course Description: Crisis management on college campuses.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor's degree; enrollment in SAHE program. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 676 Organizational Behavior in Student Affairs Credits: 3 (3-0-0)
Course Description: Understanding and application of basic organizational behavior principles within administration of student affairs in higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 677 Law in Student Affairs Credits: 3 (3-0-0)
Course Description: Legal issues focusing on sources and application of educational law and responsibilities of higher education administrators.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 678 Capstone in Student Affairs Credits: 2 (2-0-0)
Course Description: Capstone analyzing current issues and leadership in transition to professional roles.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program. Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 692A Seminar: Current Trends and Issues Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 692B Seminar: Working with Student Groups Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 692C Seminar: Service Learning Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 692D Seminar: International Programs Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 694 Independent Field Studies Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 771 Higher Education Leadership Credits: 3 (3-0-0)
Course Description: History, purpose, structure, culture, and role of leadership within higher education, with critical issues relevant to present day higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 773 Student Development in a Collegiate Context Credits: 3 (3-0-0)
Course Description: Theories and research related to student development and learning in a college context, including adult development and learning theory.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Education-Org Prfrm+Chnge-EDOD (EDOD)

Courses

EDOD 506 Human Resource Development Credits: 3 (3-0-0)
Course Description: Human resource development foundational theory, research, and techniques for workplace and organizational learning and performance.
Prerequisite: None.
Registration Information: Admission to Organizational Learning, Performance and Change specialization or written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 651 On-Demand Learning–Improving Performance Credits: 3 (1-2-1)
Course Description: On-demand learning theories and tools and techniques for developing impactful digital learning objects to create learning objects for the purpose of improving performance. Utilization of learning network to accelerate understanding of course topics and objectives.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, lab, and recitation. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 652 High Impact On-Demand Solutions Credits: 3 (1-2-1)
Course Description: Design of high-impact, on-demand (HI-OD) performance solutions that drive organizational results.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, lab, and recitation. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 653 Managing Development of On-Demand Solutions Credits: 3 (1-0-2)
Course Description: Learn to conduct consultative conversations, develop value propositions, and create detailed request for service (RFS) proposals that direct the development to high impact-on demand assets. Oversee and participate in the development of HI-OD assets based on organizational opportunities.
Prerequisite: EDOD 652.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 667 Power-Politics-Influence in Organizations Credits: 3 (3-0-0)
Course Description: Creation and execution of power relationships, political engagements, and communications in organizations.
Prerequisite: EDOD 506.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Term Offered: Summer (even years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 670 Strategic Human Resource Development Credits: 3 (3-0-0)
Course Description: Examine fundamentals of strategy from a HRD perspective, utilizing management tools, recent research and contemporary theory.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Term Offered: Summer (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 671 Establish Relations, Diagnose Organizations Credits: 3 (3-0-0)
Course Description: Build relationships with clients and examine current practices to diagnose organizational learning and performance issues.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning, Performance, and Change specialization or written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 672 Change Facilitation Credits: 3 (3-0-0)
Course Description: Roles and responsibilities of change agents and the fundamentals of change: principles, practices, processes, and resistance strategies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 673 Plan and Implement Change Interventions Credits: 3 (3-0-0)
Course Description: Plan strategies and facilitate change interventions to improve organizational learning and performance.
Prerequisite: EDOD 677, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning, Performance and Change specialization or written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 674 Analyze Workplace Learning Credits: 3 (3-0-0)
Course Description: Analyze workplace learning and performance issues drawing on foundational principles.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning, Performance and Change specialization or written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 675 Design, Develop, Implement Workplace Learning Credits: 3 (3-0-0)
Course Description: Design, develop, and implement workplace learning and performance interventions drawing on foundational principles.
Prerequisite: EDOD 674.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning, Performance and Change specialization or written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 676 Evaluate Workplace Learning Credits: 3 (3-0-0)
Course Description: Evaluate workplace learning and performance interventions drawing on foundational principles. Examine satisfaction, learning, and performance results.
Prerequisite: EDOD 675, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning, Performance and Change specialization or written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 677 Action Learning and Inquiry Credits: 3 (3-0-0)
Course Description: Literature reviews and data collection methods as the basis for diagnosing organizational learning and performance issues.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning, Performance and Change specialization or written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 678 Assess Change Interventions Credits: 3 (3-0-0)
Course Description: Assess and institutionalize change interventions to improve organizational learning and performance.
Prerequisite: EDOD 500 to 799 - at least 15 credits.
Restriction: Must be a: Graduate, Professional.
Registration Information: 15 credits of EDOD 500-level or above courses or written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 687 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDOD 692A Seminar: HRD Concepts--Workplace Learning Credits: 3 (0-0-3)
Course Description:
Prerequisite: EDOD 500 to 799 - at least 6 credits.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning, Performance and Change specialization. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDOD 692B Seminar: HRD Concepts--Organizational Learning Credits: 3 (0-0-3)
Course Description:
Prerequisite: EDOD 500 to 799 - at least 6 credits.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning, Performance and Change specialization. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDOD 706 Organizational Learning, Performance, Change Credits: 3 (2-0-1)
Course Description: History, development, and current status of organizational learning, performance and change theory, research and practice (praxis).
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning, Performance and Change specialization under the Education and Human Resource Studies Ph.D. Must register for lecture and recitation. Offered as Mixed Face-to-Face.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 761 Evaluation and Assessment of Interventions Credits: 3 (2-0-1)
Course Description: Evaluation and assessment of organizational learning, performance, and change (OLPC) interventions.
Prerequisite: EDOD 706 and EDOD 768.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Offered as Mixed Face-to-Face.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 765 Strategic Planning of Education for Work Credits: 3 (3-0-0)
Course Description: Human capital as component of strategic planning of education; training and development at national, regional, and organizational levels.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 766 Scenario Planning in Organizations Credits: 3 (2-0-1)
Course Description: Theory and practice of scenario planning. Application of scenario planning in organizations.
Prerequisite: EDOD 761 and EDOD 769.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Offered as Mixed Face-to-Face.
Term Offered: Summer (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 768 Workforce Development Credits: 3 (3-0-0)
Course Description: Characteristics and elements of workforce development with special attention to the roles and responsibilities of employers and managers.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning, Performance and Change specialization under the Ph.D. in Education and Human Resource Studies. Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 769 Theory and Practice of Change Credits: 3 (3-0-0)
Course Description: Theory, history, characteristics, nature, levels, and types of change and modern conceptual and integrated models of change.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 770 Organizational Culture Credits: 3 (3-0-0)
Course Description: Theories, methods, and practices for evaluating, analyzing, and changing organizational culture.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 771 Social Foundations of the Workplace Credits: 3 (2-0-1)
Course Description: Social, cultural and political systems in organizations and their implications for employees.
Prerequisite: EDOD 761 and EDOD 769.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Offered as Mixed Face-to-Face.
Term Offered: Summer (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 772 Theory Building in Applied Disciplines Credits: 3 (2-0-1)
Course Description: Theory building in workplace environments. Develop a theory and examine and critique existing theories.
Prerequisite: EDOD 766 and EDOD 771.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as Mixed Face-to-Face.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 773 Systems Leadership Credits: 3 (2-0-1)
Course Description: A systems conceptualization and approach to leadership and leadership development.
Prerequisite: EDOD 771 and EDOD 772, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Offered as Mixed Face-to-Face.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 786 Practicum Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDOD 792 Seminar-Human Resource Development Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDOD 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description: Dissertation research, writing, and defense.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Education-Research Methds-EDRM (EDRM)

Courses

EDRM 600 Introduction to Research Methods Credits: 3 (3-0-0)
Course Description: Methods of research, scientific methods, problem identification, research design, preparation and evaluation of research reports.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AGED 600 and EDRM 600.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 602 Action Research Credits: 3 (3-0-0)
Course Description: Provide educators with knowledge and skills to plan and implement school-based research to improve teaching and learning.
Prerequisite: EDRM 600.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 606 Principles: Quantitative Data Analysis Credits: 3 (3-0-0)
Course Description: Quantitative data analysis in social science research; descriptive statistics; fundamentals of inference.
Prerequisite: (EDRM 600) and (STAT 201).
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Face-to-Face or Mixed Face-to-Face. Credit not allowed for VS 562, EDRM 606 and PBHL 560.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 612 Assessing Students in Educational Settings Credits: 3 (2-0-1)
Course Description: Various ways of assessing students including traditional, authentic, and portfolio techniques for P-20 education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admissions into a Master's Program within the School of Education.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 663 Autoethnography & Reflective Practice I Credits: 2 (2-0-0)
Course Description: Introduces basic autoethnographic research skills that underpin the creation of the culminating SAHE program portfolio. Foundational research methods, the portfolio process, cultivating reflective practice, and critical analysis skills are necessary to both conduct autoethnography and develop as a practitioner-scholar.
Prerequisite: EDRM 600.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Student Affairs in Higher Education program. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 665 Qualitative Methods in Student Affairs Credits: 2 (2-0-0)
Course Description: Introduction to the epistemologies and methodologies related to qualitative frameworks used in student affairs research. How to design a basic qualitative study, including research questions, data collection and analysis, as well as findings and discussion appropriate for topics related to student affairs.
Prerequisite: EDRM 600.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Student Affairs in Higher Education program. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 666 Program Evaluation Credits: 3 (3-0-0)
Course Description: Models and practices of program evaluation in both public and private sector organizations.
Prerequisite: EDRM 600.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 692 Seminar-Research Methods/Proposal Design Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 700 Quantitative Research Methods Credits: 3 (3-0-0)
Course Description: Design, data analysis, interpretation of results, and evaluation of educational research studies.
Prerequisite: EDRM 606, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 701 Applied Linear Models-Educational Research Credits: 3 (3-0-0)
Course Description: General linear model applications in educational research emphasizing conceptual understanding and characteristics of non-experimental designs.
Prerequisite: EDRM 606.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 702 Foundations of Educational Research Credits: 3 (3-0-0)
Course Description: Philosophical, theoretical, and ethical foundations of educational research.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 703 Applied Longitudinal Data Analysis Credits: 3 (3-0-0)
Course Description: Methods and empirical applications of individual growth modeling and discrete-time event history analysis in educational research.
Prerequisite: EDRM 701.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 704 Qualitative Research Credits: 3 (3-0-0)
Course Description: Examination of qualitative research theory, methods, and applications to education and the social sciences.
Prerequisite: EDRM 600.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 705 Qualitative Data Analysis Credits: 3 (3-0-0)
Course Description: Examination of qualitative methods of data analysis, data presentation, and use of computer.
Prerequisite: EDRM 704.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 706 Analysis of Variance--Education Research Credits: 3 (3-0-0)
Course Description: Analysis of variance applications in educational research; experimental design and analysis of data from experiments.
Prerequisite: EDRM 700, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 707 Quantitative Data Collection Methods/Analysis Credits: 3 (0-0-3)
Course Description: Selection or development of questionnaires, tests, structured interviews, and observations. Reliability and validity. Reporting educational studies.
Prerequisite: EDRM 700.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 708 Narrative Inquiry Credits: 3 (3-0-0)
Course Description: Theory, methods and design of narrative approaches to research including data collection and analysis applications.
Prerequisite: EDRM 704.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 711 Ethnographic Research Credits: 3 (3-0-0)
Course Description: Theoretical underpinnings, research design, ethics and practical application of ethnographic research in a naturalistic setting.
Prerequisite: EDRM 704.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 786 Practicum Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDRM 792A Seminar: Research Methodology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 792B Seminar: Proposal Development Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 798 Research Credits: 18 (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Electricl + Computer Engrg-ECE (ECE)

Courses

ECE 102 Digital Circuit Logic Credits: 4 (3-2-0)
Course Description: Fundamentals of digital circuit logic, including Boolean algebra; Karnaugh maps; multiplexers, decoders, ROMS, PLAS, flip-flops, counters; sequential networks; and state tables.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ECE 103 DC Circuit Analysis Credits: 3 (2-2-0)
Course Description: Basic DC circuit analysis. Use of scientific-oriented software to solve problems and analyze small projects.
Prerequisite: MATH 160 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ECE 202 Circuit Theory Applications Credits: 4 (3-3-0)
Course Description: Basic circuit analysis techniques and applications to engineering design problems.
Prerequisite: ECE 103 with a minimum grade of C and MATH 161 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ECE 204 Introduction to Electrical Engineering Credits: 3 (3-0-0)
Course Description: Basic analog and digital circuits and systems; introduction to electromechanical devices.
Prerequisite: MATH 161 and PH 142.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 251 Introduction to Microprocessors Credits: 4 (3-3-0)
Course Description: Microprocessor organization, assembly language, I/O techniques, real-time interfaces, applications, hardware/software.
Prerequisite: ECE 102 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ECE 303 Introduction to Communications Principles Credits: 3 (3-0-0)
Also Offered As: STAT 303.
Course Description: Basic concepts in design and analysis of communication systems.
Prerequisite: MATH 340, may be taken concurrently and MATH 261 with a minimum grade of C.
Registration Information: Sections may be offered: Online. Credit not allowed for both ECE 303 and STAT 303.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 311 Linear System Analysis I Credits: 3 (3-0-0)
Course Description: Continuous and discrete time signals and systems representations in time and frequency domain; time convolution.
Prerequisite: (ECE 202 with a minimum grade of C and MATH 340 with a minimum grade of C and ECE 331, may be taken concurrently) and (ECE 341, may be taken concurrently or ECE 451, may be taken concurrently).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 312 Linear System Analysis II Credits: 3 (3-0-0)
Course Description: Laplace and Z transforms, applications to modulation, filtering and sampling, state space representation.
Prerequisite: ECE 311 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 325 Telecommunication Networks Credits: 3 (3-0-0)
Course Description: Principle technologies that support data and voice communications.
Prerequisite: MATH 141 or MATH 155 or MATH 160.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 331 Electronics Principles I Credits: 4 (3-3-0)
Course Description: Discrete component semiconductor devices, characteristics and applications. Rectifier circuits, single-stage and multi-stage amplifiers.
Prerequisite: (ECE 202 with a minimum grade of C and ECE 311, may be taken concurrently and PH 142 with a minimum grade of C and MATH 340 with a minimum grade of C) and (ECE 341, may be taken concurrently or ECE 451, may be taken concurrently).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ECE 332 Electronics Principles II Credits: 4 (3-3-0)
Course Description: Discrete and integrated-circuit amplifiers-frequency response, negative feedback; digital logic circuits.
Prerequisite: ECE 331 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ECE 341 Electromagnetic Fields and Devices I Credits: 3 (3-0-0)
Course Description: Basic concepts of electrostatic and magnetostatic fields.
Prerequisite: PH 142 with a minimum grade of C and MATH 340 with a minimum grade of C and ECE 202 with a minimum grade of C and ECE 311, may be taken concurrently and ECE 331, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 342 Electromagnetic Fields and Devices II Credits: 3 (3-0-0)
Course Description: Basic concepts of time varying electromagnetic fields and transmission lines.
Prerequisite: ECE 341 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 395A Independent Study Credits: Var[1-6] (0-0-0)
Course Description: Development and implementation of a project in an Electrical and Computer Engineering field of special interest under the supervision of a faculty member.
Prerequisite: None.
Registration Information: Contact department for registration. May be taken up to 6 times for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 395B Independent Study: Open Option Project Credits: Var[1-6] (0-0-0)
Course Description: Students will work on an array of different electrical and computer engineering projects independently or under the guidance of industry mentors. Projects will be initiated by students or outside sources and will consist of small-scale service/outreach projects or market-driven projects that simulate a business environment.
Prerequisite: None.
Registration Information: Contact department for registration. May be taken up to 6 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 395C Independent Study : Vertically Integrated Project Credits: Var[1-6] (0-0-0)
Course Description: Explore and develop comprehensive applications of electrical and computer engineering technologies as a member of a team, especially as they relate to active research areas of CSU faculty members.
Prerequisite: None.
Registration Information: Contact department for registration. May be taken up to 6 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 401 Senior Design Project I Credits: 3 (1-4-0)
Course Description: Advanced project, seminar series, formal written report, and oral presentation.
Prerequisite: (CS 320 with a minimum grade of C or ECE 332 with a minimum grade of C) and (ECE 312 with a minimum grade of C or PH 314 with a minimum grade of C and PH 353 with a minimum grade of C) and (ECE 342 with a minimum grade of C or ECE 452 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ECE 402 Senior Design Project II Credits: 3 (1-4-0)
Course Description: Advanced project, formal report, and oral presentation.
Prerequisite: ECE 401.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ECE 404 Experiments in Optical Electronics Credits: 2 (1-3-0)
Course Description: Experiments in optical electronics and lasers.
Prerequisite: None.
Registration Information: Must have concurrent registration in ECE 441. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 411 Control Systems Credits: 4 (3-3-0)
Course Description: Control system analysis and design for linear systems: stability and performance; time and frequency domain techniques.
Prerequisite: ECE 312 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 412 Digital Control and Digital Filters Credits: 3 (3-0-0)
Course Description: FIR and IIR digital filter design, analog and digital invariance and direct digital control algorithms, hybrid systems analysis.
Prerequisite: ECE 411.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 421 Telecommunications I Credits: 3 (3-0-0)
Course Description: Digital communication (source coding; modulation and detection; channel coding), analog communication (modulation).
Prerequisite: (ECE 303 with a minimum grade of C or STAT 303 with a minimum grade of C) and (ECE 312 with a minimum grade of C).
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 430 Fourier and Wavelet Analysis with Apps Credits: 3 (3-0-0)
Also Offered As: MATH 430.
Course Description: Fourier analysis and transforms, FFTs; sampling theorems, computational algorithms; wavelets; applications to communication, imaging, and compression.
Prerequisite: MATH 340 or MATH 345.
Registration Information: Credit not allowed for both MATH 430 and ECE 430.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 431 Biomedical Signal and Image Processing Credits: 3 (3-0-0)
Also Offered As: BIOM 431.
Course Description: Principles, features and mathematical processing of biomedical signals and images including interference and noise filtering and feature enhancement.
Prerequisite: (ECE 303 with a minimum grade of C or STAT 303 with a minimum grade of C) and (ECE 311 with a minimum grade of C and PH 142 with a minimum grade of C).
Registration Information: Credit not allowed for both BIOM 431 and ECE 431.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 441 Optical Electronics Credits: 3 (3-0-0)
Course Description: Concepts of modern physics, optical properties of atoms, light sources, lasers, optical detectors, optical cavities, and optical fiber transmission.
Prerequisite: ECE 342 with a minimum grade of C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 442 Numerical Algorithms for VLSI Modeling Credits: 4 (3-3-0)
Course Description: Provide the foundational knowledge of numerical algorithms for modeling and simulations of high speed VLSI circuits.
Prerequisite: ECE 312 with a minimum grade of C and ECE 332 with a minimum grade of C and ECE 342 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 444 Antennas and Radiation Credits: 3 (3-0-0)
Course Description: Retarded potential theory, antenna arrays, long wire antennas, dipoles, aperture antennas, receiving antennas.
Prerequisite: ECE 342 with a minimum grade of C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 450 Digital System Design Laboratory Credit: 1 (0-3-0)
Course Description: Small digital circuits are designed and simulated using very high speed hardware description language and synthesis tools.
Prerequisite: None.
Registration Information: Must have concurrent registration in ECE 451.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 451 Digital System Design Credits: 3 (3-0-0)
Course Description: State machines with PLAs as controllers and small computers; timing and race elimination considerations; state and microprogramming implementation.
Prerequisite: ECE 102 with a minimum grade of C and ECE 202 with a minimum grade of C.
Registration Information: Concurrent registration in ECE 450.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 452 Computer Organization and Architecture Credits: 3 (3-0-0)
Course Description: CPU design; microarchitecture; data path and control path; pipelining; memory system; I/O system; program optimization by system software/hardware.
Prerequisite: ECE 251 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 455 Introduction to Robot Programming/Simulation Credits: 3 (3-0-0)
Course Description: Fundamentals of simulating and programming of workcells that include robots and other articulated objects.
Prerequisite: CS 155 with a minimum grade of C and CS 156 with a minimum grade of C and CS 157 with a minimum grade of C or CS 163 with a minimum grade of C or CS 164 with a minimum grade of C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 456 Computer Networks Credits: 4 (3-3-0)
Course Description: Circuit/packet switching, protocols, LAN/MAN, TCP/IP, error correction, wireless LANS, mobile networks.
Prerequisite: (CS 163 with a minimum grade of C or CS 164 with a minimum grade of C or CS 157 with a minimum grade of C and CS 155 with a minimum grade of C and CS 156 with a minimum grade of C) and (ECE 251 with a minimum grade of C) and (ECE 303 with a minimum grade of C or STAT 303 with a minimum grade of C) and (ECE 311 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 457 Fourier Optics Credits: 3 (3-0-0)
Course Description: Introduction to optical systems for signal and information processing with emphasis on Fourier optics.
Prerequisite: ECE 311 with a minimum grade of C and ECE 342 with a minimum grade of C.
Registration Information: Credit not allowed for both ECE 457 and ECE 502.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 461 Power Systems Credits: 3 (3-0-0)
Course Description: Multi-phase power systems; power generation, transformer design, power distribution, power costs.
Prerequisite: ECE 332 with a minimum grade of C and ECE 462 with a minimum grade of C, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 462 Power Systems Laboratory Credit: 1 (0-3-0)
Course Description: Set of labs designed to enhance students' understanding of power systems.
Prerequisite: ECE 332 with a minimum grade of C and ECE 461 with a minimum grade of C, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 465 Electrical Energy Generation Technologies Credits: 3 (3-0-0)
Course Description: Various electrical energy generation alternatives. Comparisons based on cost, reliability, availability and environmental impact.
Prerequisite: ECE 202 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 466 Integrated Lighting Systems Credits: 3 (3-0-0)
Course Description: Technical underpinnings of light sources, their associated heat sink fixtures and power electronics drivers.
Prerequisite: ECE 331.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 471A Semiconductor Physics Credit: 1 (1-0-0)
Course Description: Fundamentals of semiconductor electron, hole states and motion: bandgap, effective mass, carrier density, Fermi level, doping, drift and diffusion.
Prerequisite: (MATH 340 or MATH 345) and (PH 142).
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 471B Semiconductor Junctions Credit: 1 (1-0-0)
Course Description: Quantitative analysis of field, carrier and current distributions in pn and metal-semiconductor junctions.
Prerequisite: ECE 331 with a minimum grade of C and ECE 471A, may be taken concurrently.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 495A Independent Study Credits: Var[1-6] (0-0-0)
Course Description: Development and implementation of a project in an electrical and computer engineering field of special interest under the supervision of a faculty member.
Prerequisite: None.
Registration Information: Junior standing. Contact department for registration. May be taken up to 6 times for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 495B Independent Study: Open Option Project Credits: Var[1-6] (0-0-0)
Course Description: Students will work on an array of different electrical and computer engineering projects independently or under the guidance of industry mentors. Projects will be initiated by students or outside sources and will consist of small-scale service/outreach projects or market-driven projects that simulate a business environment.
Prerequisite: None.
Registration Information: Junior standing. Contact department for registration. May be taken up to 6 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 495C Independent Study: Vertically Integrated Projects Credits: Var[1-6] (0-0-0)
Course Description: Explore and develop comprehensive applications of electrical and computer engineering technologies as a member of a team, especially as they relate to active research areas of CSU faculty members.
Prerequisite: None.
Registration Information: Junior standing. Contact department for registration. May be taken up to 6 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 502 Advanced Fourier Optics Credits: 4 (3-0-1)
Course Description: Introduction to optical systems for signal and information processing with emphasis on Fourier optics. Engineering design principles, models, and computational techniques for forward optical imaging and optical image reconstruction.
Prerequisite: ECE 311 with a minimum grade of C and ECE 342 with a minimum grade of C and MATH 340 with a minimum grade of C.
Registration Information: Junior standing. Must register for lecture and recitation. Credit not allowed for both ECE 457 and ECE 502.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 503 Ultrafast Optics Credits: 3 (3-0-0)
Course Description: Principles and theory behind ultrashort pulse generation, amplification, and manipulation.
Prerequisite: (ECE 341) and (ECE 342 or ECE 343).
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 504 Physical Optics Credits: 3 (3-0-0)
Course Description: Classical optics from first principles; basic electromagnetic theory to wave and geometric guides.
Prerequisite: ECE 342.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 505 Nanostructures: Fundamentals and Applications Credits: 3 (3-0-0)
Course Description: Fundamentals of quantum confinement; nanostructures optical properties; fabrication and characterization.
Prerequisite: ECE 342 and PH 353.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 506 Optical Interferometry and Laser Metrology Credits: 3 (3-0-0)
Course Description: High resolution metrology techniques utilizing and interferometric sensors using lasers and other light sources.
Prerequisite: ECE 342 and ECE 441.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 507 Plasma Physics and Applications Credits: 3 (3-0-0)
Course Description: Fundamental principles and industrial applications of plasmas.
Prerequisite: ECE 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 508 Introduction to Power System Markets Credits: 3 (3-0-0)
Also Offered As: ENGR 508.
Course Description: Deregulated electrical power systems, system security, investments in generation and transmission, ancillary services, and nodal pricing.
Prerequisite: ECE 461.
Registration Information: Credit not allowed for both ECE 508 and ENGR 508. Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 509 Signal Processing for Power Systems Credits: 3 (3-0-0)
Also Offered As: ENGR 509.
Course Description: Signal processing tools for analyzing power systems, voltage frequency, magnitude variations, unbalance, waveform distortion.
Prerequisite: ECE 312 and ECE 461.
Registration Information: Credit not allowed for both ECE 509 and ENGR 509. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 510 Wide-Area Monitoring for Power Systems Credits: 3 (3-0-0)
Course Description: WAMS for modern power grid including signal processing, communications and networking techniques in WAMS/WAMS applications.
Prerequisite: ECE 312 with a minimum grade of C and ECE 461 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 511 Global Navigation Satellite System Receivers Credits: 3 (3-0-0)
Course Description: Fundamentals of global navigation satellite systems (GNSS) receivers and software-based implementation of GNSS receiver functions.
Prerequisite: ECE 312 with a minimum grade of C and ECE 411, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 512 Digital Signal Processing Credits: 3 (3-0-0)
Course Description: Discrete time signals and systems, digital filter design and implementation, fast algorithms, quantization effects.
Prerequisite: ECE 312 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 513 Digital Image Processing Credits: 3 (3-0-0)
Course Description: Image acquisition and display systems, image enhancement, restoration and encoding, image analysis; real-life applications.
Prerequisite: (ECE 303 with a minimum grade of C or STAT 303 with a minimum grade of C) and (ECE 312 with a minimum grade of C).
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 514 Applications of Random Processes Credits: 3 (3-0-0)
Course Description: Bit-error rates, signal-to-noise power ration, signal detection, signal estimation, Wiener filter, application.
Prerequisite: (ECE 303 with a minimum grade of C or STAT 303 with a minimum grade of C) and (ECE 312 with a minimum grade of C).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 515 Satellite Navigation Systems Engineering Credits: 3 (3-0-0)
Course Description: Fundamentals of GPS, satellite orbits, ground monitoring and control, receiver systems, measurement errors and correction techniques, and position, velocity, and time calculations.
Prerequisite: (CS 163 with a minimum grade of C or CS 164 with a minimum grade of C) and (ECE 311 with a minimum grade of C and MATH 261 with a minimum grade of C and PH 142 with a minimum grade of C).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 516 Information Theory Credits: 3 (3-0-0)
Course Description: Information measures and their properties; lossless data compression; channel capacity; channel coding theorem; rate distortion theorem.
Prerequisite: (ECE 303 or STAT 303) and (ECE 421).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 517 Advanced Optical Imaging Credits: 3 (3-0-0)
Also Offered As: BIOM 517.
Course Description: Engineering design principles of advanced optical imaging techniques and image formation theory.
Prerequisite: ECE 342 or MATH 340 or MATH 345.
Registration Information: Credit allowed for only one of the following: BIOM 517, BIOM 581B7, ECE 517 or ECE 581B7.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 518 Biophotonics Credits: 3 (3-0-0)
Also Offered As: BIOM 518.
Course Description: Engineering design principles of optical instrumentation for medical diagnostics. Light propagation and imaging in biological tissues.
Prerequisite: ECE 342 or ECE 457 or MATH 340 or MATH 345.
Registration Information: Credit allowed for only one of the following: BIOM 518, BIOM 581A9, ECE 518 or ECE 581A9.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 520 Optimization Methods-Control & Communication Credits: 3 (3-0-0)
Course Description: Linear and nonlinear optimization theory and methods; applications in systems, control, and communication.
Prerequisite: (MATH 229 or MATH 369) and (MATH 317).
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 521 Satellite Communication Credits: 3 (3-0-0)
Course Description: Principles of satellite communication systems engineering.
Prerequisite: ECE 421.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 526 Biological Physics Credits: 3 (3-0-0)
Also Offered As: BIOM 526.
Course Description: Mathematical and physical modeling of biological systems. Mass transport in cellular environments. Electrical/mechanical properties of biomolecules.
Prerequisite: (MATH 340 or MATH 345) and (PH 122 or PH 142).
Registration Information: Credit not allowed for both BIOM 526 and ECE 526. Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 527A Biosensing: Cells as Circuits Credit: 1 (1-0-0)
Also Offered As: BIOM 527A.
Course Description: Treatment of biological cells as circuits and their electrical time-dependent function and frequency-dependent impedance. Topics include the Hodgkin–Huxley circuit model, diffusion equation, and modeling action potential propagation.
Prerequisite: (BIOM 101 or LIFE 102) and (CHEM 111) and (MATH 340 or MATH 345) and (PH 142).
Registration Information: Junior standing. This is a partial semester course. Credit allowed for only one of the following: BIOM 527A, BIOM 581B1, ECE 527A, or ECE 581B1.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 527B Biosensing: Signal and Noise in Biosensors Credit: 1 (1-0-0)
Also Offered As: BIOM 527B.
Course Description: Quantitative treatment of concepts of noise, interference and signal including noise types and spectra, filtering, and limitations imposed by noise. Example applications to Biosensors.
Prerequisite: (MATH 340, may be taken concurrently or MATH 345, may be taken concurrently) and (PH 142).
Registration Information: Junior standing. This is a partial semester course. Credit allowed for only one of the following: BIOM 527B, BIOM 581B2, ECE 527B, or ECE 581B2.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 527C Biosensing: Sensor Circuit Fundamentals Credit: 1 (1-0-0)
Also Offered As: BIOM 527C.
Course Description: Introduction to circuit concepts used in sensors, including review of basic circuit elements of resistors, capacitors, and MOS (Metal-Oxide-Semiconductor transistors) elements. Fundamentals of the application of MOS circuits for signal conditioning and amplification and how sensor's backend signal processing is carried out after the sensor signal transduction stage.
Prerequisite: (BIOM 101 or LIFE 102) and (MATH 340, may be taken concurrently or MATH 345, may be taken concurrently) and (PH 142).
Registration Information: Junior standing. This is a partial semester course. Credit allowed for only one of the following: BIOM 527C, BIOM 581B3, ECE 527C, or ECE 581B3.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 527D Biosensing: Electrochemical Sensors Credit: 1 (1-0-0)
Also Offered As: BIOM 527D.
Course Description: Introduction to the electrochemistry, and applications of electrochemical methods, used for detection of certain classes of chemicals and molecules.
Prerequisite: (BIOM 101 or LIFE 102) and (CHEM 111) and (MATH 255 or MATH 261) and (PH 142).
Registration Information: Junior standing. This is a partial semester course. Credit allowed for only one of the following: BIOM 527D, BIOM 581B5, ECE 527D, or ECE 581B5.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 527E Biosensing: Affinity Sensors Credit: 1 (1-0-0)
Also Offered As: BIOM 527E.
Course Description: Fundamentals of affinity sensor application and design, including optical and electrical approaches and technologies.
Prerequisite: (BIOM 101 or LIFE 102) and (CHEM 111) and (MATH 340, may be taken concurrently or MATH 345, may be taken concurrently) and (PH 142).
Registration Information: Junior standing. This is a partial semester course. Credit allowed for only one of the following: BIOM 527E, BIOM 581B4, ECE 527E, or ECE 581B4.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 527F Biosensing: Biophotonic Sensors Using Refractive Index Credit: 1 (1-0-0)
Also Offered As: BIOM 527F.
Course Description: Operating principles of optical biosensors based on changes in refractive index, such as thin films, ring-resonators, Mach-Zehnder interferometers, and other evanescent wave sensors. Basic supporting optical concepts, including thin-film interference, optical waveguides and evanescent waves.
Prerequisite: (BIOM 527E or ECE 527E) and (MATH 340, may be taken concurrently or MATH 345, may be taken concurrently) and (PH 142).
Registration Information: Junior standing. This is a partial semester course. Credit allowed for only one of the following: BIOM 527F, BIOM 581B6, ECE 527F, or ECE 581B6.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 532 Dynamics of Complex Engineering Systems Credits: 3 (3-0-0)
Also Offered As: ENGR 532.
Course Description: Higher-level behavior and issues that emerge from interaction between components in complex socio-technical systems.
Prerequisite: ENGR 501, may be taken concurrently or ECE 501, may be taken concurrently.
Registration Information: Credit not allowed for both ECE 532 and ENGR 532. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 534 Analog Integrated Circuit Design Credits: 3 (3-0-0)
Course Description: Design methods for state-of-the-art analog integrated circuits including CMOS op-amps, comparators, and phase-locked loops.
Prerequisite: ECE 332 with a minimum grade of C.
Registration Information: Must have concurrent registration in ECE 535. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 535 Analog Integrated Circuit Laboratory Credit: 1 (0-2-0)
Course Description: Analog integrated circuits are designed and simulated using modern software tools.
Prerequisite: None.
Registration Information: Must have concurrent registration in ECE 534. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 536 RF Integrated Circuit Design Credits: 3 (3-0-0)
Course Description: Design of state-of-the-art ICs for RF applications including CMOS low-noise amplifiers, voltage-controlled oscillators, mixers and power amplifiers.
Prerequisite: ECE 332.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 537 Biomedical Signal Processing Credits: 3 (3-0-0)
Also Offered As: BIOM 537.
Course Description: Measuring, manipulating, and interpreting biomedical signals.
Prerequisite: MATH 340 or ECE 311 or STAT 303.
Registration Information: Credit not allowed for both ECE 537 and BIOM 537.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 538 Design/Analysis of Analog Digital Interface Credits: 4 (3-3-0)
Course Description: Topics of interface circuit designs analog and digital interfaces. Basic concept of designing and analyzing analog and digital interface circuits.
Prerequisite: ECE 312 with a minimum grade of C and ECE 332 with a minimum grade of C and ECE 451 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 540 Computational Electromagnetics Credits: 3 (3-0-0)
Course Description: Computational techniques for practical applications in electromagnetic fields, devices, scattering, propagation, and radiation.
Prerequisite: ECE 342.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 541 Applied Electromagnetics Credits: 3 (3-0-0)
Course Description: High- and low-frequency electromagnetics, wave propagation, radiation, and scattering, wireless and guided-wave systems, bioelectromagnetics.
Prerequisite: ECE 342.
Registration Information: Credit not allowed for both ECE 541 and ECE 580B5.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 542 Parallel CAD Algorithms for IC Design Credits: 3 (3-0-0)
Course Description: Cutting edge CAD paradigms for fast simulation of massively coupled circuits in nanoscale integrated circuits.
Prerequisite: ECE 311 with a minimum grade of C and ECE 331 with a minimum grade of C.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 543 Accelerator Engineering Credits: 3 (3-0-0)
Course Description: Development and uses of accelerators and storage rings. Principles of electric and magnetic fields used to bend, focus and accelerate charged particles.
Prerequisite: ECE 342 with a minimum grade of C or PH 351 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 546 Laser Fundamentals and Devices Credits: 3 (3-0-0)
Course Description: Amplification of light, laser excitation mechanisms, laser devices, characteristics and design.
Prerequisite: ECE 441.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 548 Microwave Theory and Component Design Credits: 3 (3-0-0)
Course Description: Fundamentals of microwave engineering, components, devices, and measurements.
Prerequisite: ECE 342 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 549 Radar Systems and Design Credits: 3 (3-0-0)
Course Description: Fundamental ideas of radar operation and basic design of various radar types including current topics.
Prerequisite: ECE 444.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 551 Microwave and Beam Instrumentation Lab Credits: 3 (2-3-0)
Course Description: Particle beam instrumentation, microwave measurements and magnetic measurements used in the design and diagnoses of charged particle beam accelerators.
Prerequisite: ECE 342 with a minimum grade of C or PH 351 with a minimum grade of C.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 552 Pulsed Power and Intense Beams Credits: 3 (3-0-0)
Course Description: Engineering concepts of high-power pulsed electronics and RF systems; how to produce and utilize intense beams. The conversion of electrical power.
Prerequisite: ECE 341 with a minimum grade of C or ECE 342 with a minimum grade of C or PH 351 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 554 Computer Architecture Credits: 3 (3-0-0)
Course Description: Fundamentals of computer design, multiprocessors and thread-level parallelism, storage systems, and interconnection networks and clusters.
Prerequisite: ECE 452 or CS 470.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 555 Advanced Robotics–Redundancy & Optimization Credits: 3 (3-0-0)
Course Description: Advanced analysis, design, and control of kinematically redundant articulated objects, including both robotic and biological systems.
Prerequisite: ECE 455 and MATH 369.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 560 Foundations of Fine-Grain Parallelism Credits: 4 (3-2-0)
Also Offered As: CS 560.
Course Description: Programming novel architectures; performance tuning; automatic parallelization; program transformation; polyhedral model; equational programming.
Prerequisite: CS 475.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both ECE 560 and CS 560.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 561 Hardware/Software Design of Embedded Systems Credits: 4 (3-3-0)
Also Offered As: CS 561.
Course Description: Embedded systems design including system level modeling, design space exploration, hardware-software partitioning, high level synthesis.
Prerequisite: CS 270 or CS 470 or ECE 251 or ECE 452.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CS 561 and ECE 561. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 562 Power Electronics I Credits: 3 (3-0-0)
Course Description: Switch mode and resonant converters, control using switch averaged dynamic models, modeling of all circuit components including sources, loads, and switches.
Prerequisite: ECE 332 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 565 Electrical Power Engineering Credits: 3 (3-0-0)
Also Offered As: ENGR 565.
Course Description: Analysis of power systems in terms of current, voltage, and active/reactive power; introduction of computer-aided tools for power systems.
Prerequisite: ECE 332 and ECE 342.
Registration Information: Credit not allowed for both ECE 565 and ENGR 565. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 566 Grid Integration of Wind Energy Systems Credits: 3 (3-0-0)
Course Description: Aspects of integration of wind energy conversion systems (WECS) to electric power transmission grids.
Prerequisite: ECE 461 and ECE 462 or ECE 565.
Registration Information: Credit not allowed for both ECE 566 and ENGR 566. Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 569 Micro-Electro-Mechanical Devices Credits: 3 (3-0-0)
Also Offered As: MECH 569.
Course Description: Micro-electro-mechanical processes and applications in sensors, optics, and structures.
Prerequisite: ECE 331 with a minimum grade of C or MECH 344 with a minimum grade of C.
Registration Information: Credit not allowed for both ECE 569 and MECH 569. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 571 VLSI System Design Credits: 3 (3-0-0)
Course Description: Design of integrated circuits at the system level including cell design, digital systems, parallel architecture, systolic arrays.
Prerequisite: ECE 451.
Registration Information: Must have concurrent registration in ECE 575.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 572 Semiconductor Transistors Credit: 1 (1-0-0)
Course Description: Quantitative analysis of electric field, carrier and current distributions in MOSFETs and bipolar junction transistors; scaling, non-idealities.
Prerequisite: ECE 331 with a minimum grade of C and ECE 471B, may be taken concurrently.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 573 Semiconductor Optoelectronics Laboratory Credits: 3 (1-4-0)
Course Description: Experimental characterization techniques for semiconductor optoelectronic devices and design and testing of related electronic circuits.
Prerequisite: ECE 471B.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 574 Optical Properties in Solids Credits: 3 (3-0-0)
Course Description: Light propagation and interaction with materials; linear and non-linear optical properties.
Prerequisite: ECE 441 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 575 Experiments in VLSI System Design I Credit: 1 (0-3-0)
Course Description: Set of labs designed to enhance students' understanding of the materials in ECE 571.
Prerequisite: ECE 451.
Registration Information: Must have concurrent registration in ECE 571.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 587 Internship Credits: Var[1-6] (0-0-0)
Course Description: Internship experience in Electrical or Computer Engineering.
Prerequisite: ECE 312 or ECE 456.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ECE 604 Nonlinear Optics Credits: 3 (3-0-0)
Course Description: Principles of nonlinear optics, symmetry properties, multiple order nonlinear phenomenon, and nonlinear spectroscopy.
Prerequisite: ECE 504 and PH 451.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 611 Nonlinear Control Systems Credits: 3 (3-0-0)
Course Description: Controller analysis and design for nonlinear systems.
Prerequisite: ECE 412.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 612 Robust Control Systems Credits: 3 (3-0-0)
Course Description: Introduction to modern robust control theory techniques for analysis and design of large-scale uncertain multivariable systems.
Prerequisite: ECE 411.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 614 Principles of Digital Communications Credits: 3 (3-0-0)
Course Description: Information theory, optimal receiver design, waveform coding, error correcting coding.
Prerequisite: ECE 514.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 622 Energy Networks and Power Distribution Grids Credits: 3 (3-0-0)
Also Offered As: ENGR 622.
Course Description: Energy networks: generation, storage, consumers. Systems approach to analysis of distribution networks and transition to intelligent grid systems.
Prerequisite: ECE 461 or ECE 508 or ENGR 508 or ECE 565 or ENGR 565.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECE 622 and ENGR 622. Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 623 Electric Power Quality Credits: 3 (3-0-0)
Also Offered As: ENGR 623.
Course Description: Interconnecting power electronic devices and renewable energy sources to power systems.
Prerequisite: ECE 461 or ECE 562.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online. Credit not allowed for both ECE 623 and ENGR 623.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 641 Electromagnetics Credits: 3 (3-0-0)
Course Description: Electrostatics, magnetostatics, boundary value problems, EM induction, quasi-statics, Maxwell's equations.
Prerequisite: ECE 342.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 642 Time Harmonic Electromagnetics Credits: 3 (3-0-0)
Course Description: Maxwell's equations, radiation, boundary value problem, dyadic Green's functions, scattering theory.
Prerequisite: ECE 641.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 643 Advanced Accelerator Engineering Credits: 3 (3-0-0)
Course Description: Advanced concepts in particle beam accelerator technology and engineering, linear accelerators and principles of intense pulsed electron ion beams.
Prerequisite: ECE 543 with a minimum grade of C.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 647 Synchrotron Rad, FELs and Hard X-Ray Optics Credits: 3 (3-0-0)
Course Description: Advanced concepts in particle beam accelerator technology and engineering, linear accelerators and principles of intense pulsed electron ion beams.
Prerequisite: ECE 341 with a minimum grade of C or ECE 342 with a minimum grade of C or PH 351 with a minimum grade of C.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 650 Extreme Ultraviolet and Soft X-Ray Radiation Credits: 3 (3-0-0)
Course Description: Fundamental principles of short wavelength electromagnetic radiation.
Prerequisite: ECE 342.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 652 Estimation and Filtering Theory Credits: 3 (3-0-0)
Course Description: Linear and Nonlinear parameter and state estimation methods; Optimal Kalman state estimation and applications.
Prerequisite: ECE 514 or STAT 525.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 653 Detection Theory Credits: 3 (3-0-0)
Course Description: Neyman-Pearson and Bayes detectors and properties, matched filter and matched subspace detectors, distributed detection, and applications.
Prerequisite: ECE 652.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECE 651 and ECE 653.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 656 Machine Learning and Adaptive Systems Credits: 3 (3-0-0)
Course Description: Adaptive system theory, statistical pattern recognition, supervised and unsupervised learning, support vector machines, manifold learning, applications.
Prerequisite: ECE 512.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 658 Internet Engineering Credits: 4 (3-3-0)
Also Offered As: CS 658.
Course Description: Link technologies, multiple access, hardware and software for internetworks routing, switching flow control, multicast, performance, and applications.
Prerequisite: ECE 456 or CS 457.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online. Credit not allowed for both ECE 658 and CS 658.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 661 Advanced Topics in Embedded Systems Credits: 4 (3-3-0)
Course Description: Embedded systems design: networks on chip, novel memory architectures, synthesis algorithms, optimization for low power, fault tolerance, security.
Prerequisite: (ECE 452) and (ECE 561 or CS 561).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 666 Topics in Robotics Credits: 3 (3-0-0)
Course Description: Recent advances in robotics, automation, and intelligent systems.
Prerequisite: ECE 455.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 670B Topics in Architecture/Systems: Performance Evaluation and Modeling Credits: Var[1-4] (0-0-0)
Also Offered As: CS 670B.
Course Description:
Prerequisite: ECE 554 or CS 570.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both CS 670B and ECE 670B.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 670C Topics in Architecture/Systems: Distributed Systems Credits: Var[1-4] (0-0-0)
Also Offered As: CS 670C.
Course Description:
Prerequisite: ECE 554 or CS 570.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both CS 670C and ECE 670C.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 670D Topics in Architecture/Systems: Architecture of Advanced Systems Credits: Var[1-4] (0-0-0)
Also Offered As: CS 670D.
Course Description:
Prerequisite: ECE 554 or CS 570.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both CS 670D and ECE 670D.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 673 Thin Film Growth Credits: 3 (3-0-0)
Course Description: Microstructures of physically vapor-deposited films; thin-film morphological development; atomistic processes of condensation, nucleation, and growth.
Prerequisite: CHEM 474 or CHEM 476 or MECH 337 or PH 361 or PH 531.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 697 Group Study Credits: Var[1-6] (0-0-0)
Also Offered As: ENGR 697.
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECE 697 and ENGR 697.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 742 Topics in Electromagnetics Credits: 3 (3-0-0)
Course Description: Applications of wave propagation and scattering to microwave radar, Doppler radar, meteorological radar applications.
Prerequisite: ECE 641.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 752 Topics in Signal Processing Credits: 3 (3-0-0)
Course Description: Adaptive filtering, spectral estimation, sonar/radar signal processing, and detection/classification schemes.
Prerequisite: (ECE 512) and (ECE 514 or STAT 525).
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 777 X-Ray Lasers Credits: 3 (3-0-0)
Course Description: Fundamentals, design, and implementation of soft X-ray lasers and X-ray optics.
Prerequisite: ECE 546.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Engineering Science-EGSC (EGSC)

Courses

EGSC 492 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

EGSC 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Engineering-ENGR (ENGR)

Courses

ENGR 101 Grand Challenges in Engineering Credits: 3 (3-0-0)
Course Description: National Academy of Engineering's Grand Challenges in Engineering: overview, roles of engineering disciplines, engineering and societal challenges.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 102 Problem Solving for Engineers Credits: 3 (3-0-0)
Course Description: Engineering problem solving: dimensional analysis; precision, accuracy, repeatability; problems from all major engineering disciplines.
Prerequisite: MATH 160, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 298 Undergraduate Research Credits: Var[1-3] (0-0-0)
Course Description: Directed undergraduate research with a faculty mentor.
Prerequisite: None.
Registration Information: Written consent of research mentor; written consent of department chair.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 300 3D Printing Lab for Engineers Credit: 1 (0-3-0)
Course Description: Basics of 3D printing, technology, workflows, techniques and related software, focused on practical usage and project development in engineering. Topics include technology of devices, usage, calibration and tuning, repair and maintenance, and techniques for maximizing part quality with minimal waste.
Prerequisite: BIOM 101 or CBE 101 or CIVE 102 or ECE 102 or ENGR 101 or MECH 103.
Registration Information: Credit not allowed for both ENGR 300 and ENGR 381A1.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ENGR 370 Study Abroad: Grand Challenges in Engineering--China Credits: 3 (0-0-3)
Course Description: Faculty-led study abroad program that includes cultural, language, and engineering instruction. Course will be held at a host institution in China with instruction at CSU before the travel portion of the course.
Prerequisite: None.
Registration Information: Credit not allowed for both ENGR 370 and ENGR 382A.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 382A Study Abroad: Grand Challenges in Engineering--China Credits: 3 (0-0-3)
Course Description: Faculty-led study abroad program that includes cultural, language, and engineering instruction. Course will be held at a host institution in China.
Prerequisite: None.
Registration Information: Credit not allowed for both ENGR 382 and ENGR 382A.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 389 Engineering Cooperative Experience Credit: 1 (0-0-40)
Course Description: Semester-long full-time industry engineering experience in a position relevant to the student's major field.
Prerequisite: None.
Registration Information: Written consent of instructor. May be taken up to 9 times.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ENGR 422 Technology Entrepreneurship Credits: 3 (3-0-0)
Course Description: Principles of technology-based entrepreneurship, including recognizing, analyzing, and acting on technology-based business opportunities; and development of an opportunity analysis.
Prerequisite: MGT 340.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 423 Intellectual Property and Invention Systems Credits: 3 (3-0-0)
Course Description: Focused on the appropriate application of "patterns for patenting" together with intuition, inspiration, and cross-disciplinary connecting. De-mystify "inventing" as applied to science, engineering and technology.
Prerequisite: None.
Registration Information: Junior standing. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 486 Practicum Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ENGR 496 Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: Instructor Option, Traditional.
Special Course Fee: No.

ENGR 498 Undergraduate Research Credits: Var[1-3] (0-0-0)
Course Description: Directed undergraduate research with a faculty mentor.
Prerequisite: None.
Registration Information: 30 credits in engineering and/or science; written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 501 Foundations of Systems Engineering Credits: 3 (3-0-0)
Course Description: Functional components of systems engineering, application of systems engineering to practical problems, system life-cycle process.
Prerequisite: None.
Registration Information: Credit not allowed for both ECE 501 and ENGR 501. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 502 Engineering Project and Program Management Credits: 3 (3-0-0)
Course Description: Engineering program management fundamentals, program planning and control strategies, risk assessment, work breakdown structures and costing options.
Prerequisite: None.
Registration Information: Credit not allowed for both ENGR 502 and MECH 501. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 508 Introduction to Power System Markets Credits: 3 (3-0-0)
Also Offered As: ECE 508.
Course Description: Deregulated electrical power systems, system security, investments in generation and transmission, ancillary services, and nodal pricing.
Prerequisite: ECE 461.
Registration Information: Credit not allowed for both ECE 508 and ENGR 508. Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 509 Signal Processing for Power Systems Credits: 3 (3-0-0)
Also Offered As: ECE 509.
Course Description: Signal processing tools for analyzing power systems, voltage frequency, magnitude variations, unbalance, waveform distortion.
Prerequisite: ECE 312 and ECE 461.
Registration Information: Credit not allowed for both ENGR 509 and ECE 509. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 510 Engineering Optimization: Method/Application Credits: 3 (3-0-0)
Course Description: Optimization methods; linear programming, network flows, integer programming, interior point methods, quadratic programming, engineering applications.
Prerequisite: MATH 261 and MATH 229.
Registration Information: Credit not allowed for both ENGR 510 and MATH 510. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 520 Engineering Decision Support/Expert Systems Credits: 3 (3-0-0)
Course Description: Decision support systems for complex engineering problems; multicriteria decision making and optimization; hybrid knowledge-based/algorithmic methods.
Prerequisite: ENGR 510 or MATH 510.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 522 Object-Oriented GIS Programming for Engineers Credits: 3 (3-0-0)
Course Description: Object-oriented GIS programming with C# & .NET framework; integration of GIS libraries; development of custom desktop GIS applications in engineering.
Prerequisite: CIVE 577.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 530 Overview of Systems Engineering Processes Credits: 3 (3-0-0)
Course Description: Systems engineering life-cycle process and analysis techniques. Reliability and robustness.
Prerequisite: ECE 303 or STAT 303 or STAT 315.
Registration Information: Credit not allowed for both ECE 530 and ENGR 530. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 531 Engineering Risk Analysis Credits: 3 (3-0-0)
Course Description: Estimation and risk identification, development of mitigation techniques.
Prerequisite: ECE 303 or STAT 303 or STAT 315.
Registration Information: Credit not allowed for both ECE 531 and ENGR 531. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 532 Dynamics of Complex Engineering Systems Credits: 3 (3-0-0)
Also Offered As: ECE 532.
Course Description: Higher-level behavior and issues that emerge from interaction between components in complex socio-technical systems.
Prerequisite: ENGR 501, may be taken concurrently or ECE 501, may be taken concurrently.
Registration Information: Credit not allowed for both ECE 532 and ENGR 532. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 550 Numerical Methods in Science and Engineering Credits: 3 (3-0-0)
Also Offered As: MATH 550.
Course Description: Finite elements, finite differences, spectral methods, method of lines, conservation laws; stability and convergence analysis for PDEs.
Prerequisite: MATH 340 or MATH 345 or MATH 530.
Registration Information: Credit not allowed for both ENGR 550 and MATH 550.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 555 Life Cycle Assessment for Sustainability Credits: 3 (3-0-0)
Also Offered As: ESS 555.
Course Description: The quantitative and qualitative measure of cradle-to-grave impacts of products and services on the environment, the economy, and society.
Prerequisite: BIOM 300 to 479 or BZ 300 to 379 or BZ 400 to 479 or CHEM 300 to 379 or CHEM 400 to 479 or CIVE 300 to 479 or ECOL 300 to 379 or ENGR 300 or MECH 300 to 379.
Registration Information: Sections may be offered: Online. Credit allowed for only one of the following: ENGR 555, ESS 555, ENGR 581A1, or ESS 581A1.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 565 Electrical Power Engineering Credits: 3 (3-0-0)
Also Offered As: ECE 565.
Course Description: Analysis of power systems in terms of current, voltage, and active/reactive power; introduction of computer-aided tools for power systems.
Prerequisite: ECE 332 and ECE 342.
Registration Information: Credit not allowed for both ECE 565 and ENGR 565. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 567 Systems Engineering Architecture Credits: 3 (3-0-0)
Course Description: Observation/classification of systems architecture. Systems architecture principles and critical evaluation through design studies.
Prerequisite: ECE 501 or ENGR 501.
Registration Information: Credit not allowed for both ECE 567 and ENGR 567. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 569 Cybersecurity Awareness for Systems Engineers Credits: 3 (3-0-0)
Course Description: Cybersecurity principles, practices, technologies, design approaches, and terminology needed to incorporate cybersecurity principles into effective systems designs.
Prerequisite: ENGR 501.
Registration Information: Bachelor's degree required. Sections may be offered: Online. Credit not allowed for both ENGR 569 and ENGR 580A4.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 570 Coupled Electromechanical Systems Credits: 3 (3-0-0)
Course Description: Coupled electrical and mechanical systems and the analysis of energy transfer between these systems. Analysis of field energy and the relationship between electrical, mechanical and electromagnetic forces.
Prerequisite: ECE 202 or ECE 204.
Registration Information: Sections may be offered: Online. Credit not allowed for both ENGR 570 and ENGR 581A2.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 571 Analytics in Systems Engineering Credits: 3 (3-0-0)
Course Description: Focus on the appropriate application of data mining, knowledge generation, data analytics and data algorithmics to large complex systems. Demystify "big data" for systems engineers as applied to intelligent systems.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Bachelor's degree required. Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 596 Group Study-Systems Engineering Skills Credits: Var[1-2] (0-0-0)
Course Description: Topics related to building specialized skills relevant for the systems engineering field.
Prerequisite: None.
Registration Information: Bachelor's degree required. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 597 Group Study in Systems Engineering Credits: 3 (0-0-3)
Course Description: Special and contemporary topics in the field of systems engineering.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 602 Systems Requirements Engineering Credits: 3 (3-0-0)
Course Description: Introduction to the rigorous requirements process within systems engineering, including system requirements analysis, requirements decomposition, allocation, tracking, verification, and validation.
Prerequisite: ENGR 501 and ENGR 530.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online. Credit not allowed for both ENGR 602 and ENGR 680A2.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 603 Introduction to Systems Test and Evaluation Credits: 3 (3-0-0)
Course Description: Test and evaluation of systems at both the component and systems levels to provide insights into how systems succeed or fail based on test methodologies.
Prerequisite: ENGR 502 and ENGR 531.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor's degree required. Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online. Credit not allowed for both ENGR 603 and ENGR 680A3.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 622 Energy Networks and Power Distribution Grids Credits: 3 (3-0-0)
Also Offered As: ECE 622.
Course Description: Energy networks: generation, storage, consumers. Systems approach to analysis of distribution networks and transition to intelligent grid systems.
Prerequisite: ECE 461 or ECE 508 or ENGR 508 or ECE 565 or ENGR 565.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECE 622 and ENGR 622. Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 623 Electric Power Quality Credits: 3 (3-0-0)
Also Offered As: ECE 623.
Course Description: Interconnecting power electronic devices and renewable energy sources to power systems.
Prerequisite: ECE 461 or ECE 562.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online. Credit not allowed for both ECE 623 and ENGR 623.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 667 Advanced Model-Based Systems Engineering Credits: 3 (3-0-0)
Course Description: Theory and application of formal systems architecture modeling.
Prerequisite: ENGR 567.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ENGR 697 Group Study Credits: Var[1-6] (0-0-0)
Also Offered As: ECE 697.
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ENGR 697 and ECE 697.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ENGR 710 Leadership/Innovation in Systems Engineering Credits: 3 (3-0-0)
Course Description: Background in technical leadership skill sets, systems engineering skillsets, and intellectual toolkit to develop a successful applied and translational research project/practicum.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor's degree required. Sections may be offered: Online. Course is not available for credit toward the PhD in Systems Engineering.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 711 Ethics in Systems Engineering Credit: 1 (0-0-1)
Course Description: Ethical principles and their application to systems engineering.
Prerequisite: ENGR 501.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 786 Applied Systems Engineering Practicum Credits: Var[1-9] (0-0-0)
Course Description: Research techniques, critical thinking, evaluation criteria, and methods of technical writing.
Prerequisite: (ENGR 502) and (ENGR 531 or CIS 600 or CIS 670).
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ENGR 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ENGR 799A Dissertation: PhD Credits: Var[1-18] (0-0-0)
Course Description: Dissertation for PhD in System Engineering Program.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ENGR 799B Dissertation: Professional Doctorate Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor. Admission to Professional Doctorate of Engineering, Systems Engineering.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

English-Academic Purposes-EAP (EAP)

Courses

EAP 150 English for International Students I Credits: 6 (6-0-0)
Course Description: Academic English for international students, emphasizing analysis and integration of text and lecture-based information and its application.
Prerequisite: None.
Registration Information: Admission to Pathways program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EAP 151 English for International Students II Credits: 3 (3-0-0)
Course Description: Academic English for international students, emphasizing research and writing papers in various academic genres using appropriate academic language.
Prerequisite: EAP 150.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EAP 152 English for International Graduate Students Credits: 6 (6-0-0)
Course Description: Academic English for international graduate students with emphasis on both academic reading and research.
Prerequisite: EAP 150.
Registration Information: Admission to graduate INTO CSU Pathway Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EAP 153 Writing for International Graduate Students Credits: 3 (3-0-0)
Course Description: Development of academic English for international graduate students with an emphasis on academic research writing.
Prerequisite: None.
Registration Information: Admission to an accelerated graduate INTO CSU Pathway Program.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

English-E (E)

Courses

E 140 The Study of Literature (GT-AH2) Credits: 3 (3-0-0)
Course Description: Basic principles of reading literary texts.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

E 142 Reading Without Borders (GT-AH2) Credits: 3 (3-0-0)
Course Description: Authors from a range of international, cross-national, cultural, and ethnic backgrounds focusing on themes of immigration, exile, or education.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Literature & Humanities (GT-AH2).

E 179 Western American Literature Credits: 3 (3-0-0)
Course Description: Trans-Mississippi West in fiction and other literary forms.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 210 Beginning Creative Writing Credits: 3 (3-0-0)
Course Description: Basic techniques of writing fiction and poetry, including writer workshops. May include some elements of drama and/or creative non-fiction.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 232 Introduction to Humanities (GT-AH2) Credits: 3 (3-0-0)
Course Description: Great literature of Western cultural tradition from ancient times to present.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

E 234 Introduction to Native American Literature Credits: 3 (3-0-0)
Also Offered As: ETST 234.
Course Description: Native American writings and their significance in American culture.
Prerequisite: None.
Registration Information: Credit not allowed for both E 234 and ETST 234.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 236 Short Fiction Credits: 3 (3-0-0)
Course Description: Examines form, technique and interpretation in short fiction.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B.

E 237 Introduction to Science Fiction Credits: 3 (3-0-0)
Course Description: Historical development and major themes of science fiction, featuring writers such as Wells, Huxley, Bradbury, and LeGuin.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 238 20th-Century Fiction (GT-AH2) Credits: 3 (3-0-0)
Course Description: 20th-century fiction chosen for its relevance to global and cultural awareness.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Literature & Humanities (GT-AH2).

E 239 Introduction to Chicano Literature Credits: 3 (3-0-0)
Also Offered As: ETST 239.
Course Description: Chicano fiction and poetry with consideration of historical roots and influences.
Prerequisite: None.
Registration Information: Credit not allowed for both E 239 and ETST 239.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 240 Introduction to Poetry Credits: 3 (3-0-0)
Course Description: Development of critical skills necessary to understand and enjoy poetry.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 242 Reading Shakespeare (GT-AH2) Credits: 3 (3-0-0)
Course Description: Reading of Shakespeare texts, using various approaches of interpretation for understanding and relation to our contemporary cultural situation.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

E 245 World Drama (GT-AH2) Credits: 3 (3-0-0)
Course Description: World drama in cultural contexts.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Literature & Humanities (GT-AH2).

E 270 Introduction to American Literature (GT-AH2) Credits: 3 (3-0-0)
Course Description: History and development of American writings from 16th-century travel narratives through early 20th-century modernism.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

E 276 Survey of British Literature I (GT-AH2) Credits: 3 (3-0-0)
Course Description: British literature from Beowulf through the 18th century in relation to its historical contexts.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

E 277 Survey of British Literature II (GT-AH2) Credits: 3 (3-0-0)
Course Description: British literature from the Romantics to the present in relation to its historical contexts.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

E 300 American Lives-Methods in American Studies Credits: 3 (3-0-0)
Also Offered As: AMST 300.
Course Description: Methods and changing approaches of American studies since 1950s using autobiography as organizing theme.
Prerequisite: AMST 100 and AMST 101.
Registration Information: Credit not allowed for both E 300 and AMST 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 302 Reading and the Web Credits: 3 (3-0-0)
Course Description: Critical examination of reading processes, as well as the rhetorical and cultural contexts of readers on the web.
Prerequisite: CO 150 or HONR 193.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 305 Principles of Writing and Rhetoric Credits: 3 (3-0-0)
Course Description: Humanities-based exploration of central principles of rhetoric in written communication.
Prerequisite: CO 300 or CO 301A to 301D - at least 1 course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 310 Researching and Writing Literary Criticism Credits: 3 (3-0-0)
Course Description: Discipline-specific conventions of literary criticism and composing essays framed for literary scholars. Preparation for sharing research with public audiences, outside the classroom, in undergraduate research conferences and appropriate publication venues.
Prerequisite: E 100 to 499 - at least 3 credits or CO 100 to 499 - at least 3 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 311A Intermediate Creative Writing: Fiction Credits: 3 (2-0-1)
Course Description: Group discussion of student writing, literary models, and theory; emphasis on developing individual style.
Prerequisite: E 210 with a minimum grade of B-.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 311B Intermediate Creative Writing: Poetry Credits: 3 (2-0-1)
Course Description: Group discussion of student writing, literary models, and theory; emphasis on developing individual style.
Prerequisite: E 210 with a minimum grade of B-.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 311C Intermediate Creative Writing: Nonfiction Credits: 3 (2-0-1)
Course Description: Group discussion of student writing, literary models, and theory; emphasis on developing individual style.
Prerequisite: (CO 150 or HONR 193) and (E 210 with a minimum grade of B- or JTC 210 with a minimum grade of B-).
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 320 Introduction to the Study of Language Credits: 3 (3-0-0)
Course Description: Covers a range of topics including general linguistics, the relationships between language and literature, or society and science.
Prerequisite: CO 150.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 322 English Language for Teachers I Credits: 3 (3-0-0)
Course Description: Foundations of language structure, emphasizing grammar, sounds, spelling, word structure, linguistic variation, usage, acquisition, and pedagogy.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 323 English Language for Teachers II Credits: 3 (3-0-0)
Course Description: Advanced grammar; language history; meaning; applications to teaching composition, reading, and literature.
Prerequisite: E 322.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 324 Teaching English as a Second Language Credits: 3 (3-0-0)
Course Description: Introduction to teaching English to speakers of other languages for teacher certification candidates and for those wanting to teach abroad.
Prerequisite: E 320 or E 322.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 326 Development of the English Language Credits: 3 (3-0-0)
Course Description: Chronological study of four historical stages of English (Old, Middle, Early Modern, Modern) with emphasis on grammar, vocabulary, and phonology.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 327 Syntax and Semantics Credits: 3 (3-0-0)
Course Description: Linguistic study of sentence structure and grammatical relations, semantic roles and representation.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 328 Phonology, Morphology, and Lexis Credits: 3 (3-0-0)
Course Description: Linguistic study of pronunciation, word-formation, and vocabulary.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 329 Pragmatics and Discourse Analysis Credits: 3 (3-0-0)
Course Description: Linguistic study of general principles of interpretation and textual patterns.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 330 Gender in World Literature Credits: 3 (3-0-0)
Course Description: Selected world literature ranging from ancient world to present, considered in light of various complexities of gender relations.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 331 Early Women Writers Credits: 3 (3-0-0)
Course Description: Selected women writers from any period before the 20th century.
Prerequisite: E 276 or E 277.
Registration Information: May be taken twice for a maximum of 6 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 332 Modern Women Writers Credits: 3 (3-0-0)
Course Description: Selected 20th-century women writers in variety of genres emphasizing relationships between gender, writing, and reading.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 333 Critical Studies of Popular Texts Credits: 3 (3-0-0)
Course Description: Texts representing one or more popular modes focusing on issues of gender, sexuality, racial or ethnic identity, technology, and colonialism.
Prerequisite: CO 150.
Registration Information: May be taken twice for a maximum of 6 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 334 Gay and Lesbian Literature Credits: 3 (3-0-0)
Course Description: Literature by gay and lesbian authors on gay and lesbian themes.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 337 Western Mythology Credits: 3 (3-0-0)
Course Description: Major themes in western myth: classical, Biblical, and Germanic.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 338 Ethnic Literature in the United States Credits: 3 (3-0-0)
Course Description: Comparative study of literatures from a range of U.S. ethnic experiences and perspectives.
Prerequisite: ETST 100 to 481 - at least 1 course or E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 339 Literature of the Earth Credits: 3 (3-0-0)
Course Description: Non-fiction, fiction, and poetry on landscape, climate, animality, ecology, place.
Prerequisite: CO 150.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 340 Literature and Film Studies Credits: 3 (3-0-0)
Course Description: Studies film adaptations of literary works with attention to narrative, style, theme, adaptation, and revision.
Prerequisite: E 100 to 499.
Registration Information: Freshman not allowed.
Grade Mode: Traditional.
Special Course Fee: No.

E 341 Literary Criticism and Theory Credits: 3 (3-0-0)
Course Description: Theory and practice of modern literary analysis and evaluation; writing about literature.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 342 Shakespeare I Credits: 3 (3-0-0)
Course Description: Shakespeare's development as a poet and dramatist from the early plays through Hamlet.
Prerequisite: E 240 or E 276.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 343 Shakespeare II Credits: 3 (3-0-0)
Course Description: Shakespeare's development as a poet and dramatist after Hamlet.
Prerequisite: E 240 or E 276.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 345 American Drama Credits: 3 (3-0-0)
Course Description: Representative examples from mainstream and alternative drama.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 350 The Gothic in Literature and Film Credits: 3 (3-0-0)
Course Description: Interdisciplinary, cross-cultural approach to gothic works from the 18th to the 20th centuries.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 352 Study Abroad: Reading and Writing the Zambia Experience Credits: 3 (0-0-3)
Course Description: Community education and health initiatives in Livingstone, Zambia, in the context of fiction and nonfiction about such development work.
Prerequisite: None.
Registration Information: This is a partial semester course. Completion of AUCC Category 2.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 356 Asian Literature Credits: 3 (3-0-0)
Course Description: Masterpieces of classical and contemporary literature of China, India, and Japan.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 370 American Literature in Cultural Contexts Credits: 3 (3-0-0)
Course Description: American literature in social, political, economic, aesthetic, intellectual, and multimedia contexts.
Prerequisite: E 270.
Registration Information: May be taken twice for a maximum of 6 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 382B Study Abroad: Shakespeare in Oxford Credits: 3 (0-0-3)
Course Description: Experiential study of Shakespeare's plays in text and performance in Oxford and surrounding areas of the UK.
Prerequisite: CO 150.
Restriction: Must be a: Undergraduate.
Registration Information: Sophomore standing. This is a partial semester course. Registration is through the Office of International Programs.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 382C Study Abroad: Writing Stories of Community in Todos Santos Credits: 3 (0-0-3)
Course Description: Explores writing, representation, community literacy, ethnography and autoethnography, and human intersections with built and natural environments, in Baja California Sur, Mexico. Employs theories and tools of autoethnographic research and writing as well as community literacy theory.
Prerequisite: CO 150.
Registration Information: Sophomore standing. Offered as Mixed Face-to-Face.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 384A Supervised College Teaching: Classroom Credits: Var[1-3] (0-0-0)
Course Description: Supervised assistance in instruction.
Prerequisite: None.
Registration Information: Written consent of department chair. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 384B Supervised College Teaching: Writing Center Credits: Var[1-3] (0-0-0)
Course Description: Supervised assistance in instruction.
Prerequisite: None.
Registration Information: Written consent of department chair. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 401 Teaching Reading Credits: 3 (3-0-0)
Course Description: Theory and pedagogy for understanding, interpreting, and evaluating print and visual texts.
Prerequisite: CO 301D.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 402 Teaching Composition Credits: 3 (3-0-0)
Course Description: Theory and practice of the analysis and the teaching of writing.
Prerequisite: CO 301A to 301D - at least 1 course.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 403 Writing the Environment Credits: 3 (3-0-0)
Course Description: Creative writing in conjunction with study of recent American literature on nature and landscape.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356 or CO 301A to 301D - at least 1 course or E 311A to 311C - at least 1 course.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 405 Young Adult Literature Credits: 3 (3-0-0)
Course Description: Survey of literature for young adults emphasizing development of critical ability, appreciation, and taste.
Prerequisite: None.
Registration Information: 3 credits of CO or E.
Grade Mode: Traditional.
Special Course Fee: No.

E 406 Topics in Literacy Credits: 3 (3-0-0)
Course Description: Exploring literacy through writing theory; specific issues of cultural difference, gender, technology, acquisition, school, and workplace.
Prerequisite: None.
Registration Information: Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 412A Creative Writing Workshop: Fiction Credits: 3 (2-0-1)
Course Description: Individual projects with group discussion and analysis.
Prerequisite: E 311A with a minimum grade of B-.
Registration Information: Must register for lecture and recitation. Maximum of 6 credits allowed in course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 412B Creative Writing Workshop: Poetry Credits: 3 (2-0-1)
Course Description: Individual projects with group discussion and analysis.
Prerequisite: E 311B with a minimum grade of B-.
Registration Information: Must register for lecture and recitation. Maximum of 6 credits allowed in course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 412C Creative Writing Workshop: Nonfiction Credits: 3 (2-0-1)
Course Description: Individual projects with group discussion and analysis.
Prerequisite: E 311A with a minimum grade of B- or E 311C with a minimum grade of B-.
Registration Information: Must register for lecture and recitation. Maximum of 6 credits allowed in course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 420 Beat Generation Writing Credits: 3 (3-0-0)
Course Description: Shared experiences and historical pressures that made Beat Generation writers, including Kerouac, Ginsberg, Burroughs, and Waldman, a countercultural movement.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 421 Asian-American Literature Credits: 3 (3-0-0)
Course Description: Asian American writing on immigration, exile, exclusion, detainment, neocolonialism, resistance, hybridity, and transnationalism.
Prerequisite: CO 150 and E 270.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 422 African-American Literature Credits: 3 (3-0-0)
Also Offered As: ETST 422.
Course Description: African-American literature as a distinct tradition of writing and protest.
Prerequisite: None.
Registration Information: Credit not allowed for both E 422 and ETST 422.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 423 Latino/a Literature Credits: 3 (3-0-0)
Course Description: Latino/a writing on themes of settlement, expropriation, resistance, conquest, immigration, exile, hybridity and transnationalism.
Prerequisite: CO 150 and E 270.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 424 English Renaissance Credits: 3 (3-0-0)
Course Description: English Renaissance literature (1500-1670) covering a range of poetry, drama, and prose.
Prerequisite: E 276 or E 342 or E 343.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 425 Restoration and 18th Century Literature Credits: 3 (3-0-0)
Course Description: Poetry, drama, and prose, 1600-1789.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

E 426 British Romanticism Credits: 3 (3-0-0)
Course Description: British Romantic era literature (1780-1830) with emphasis on the social and cultural context.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 427 Victorian Age Credits: 3 (3-0-0)
Course Description: Victorian era literature (1830-1900) in social and cultural context with attention to multiple genres (poetry , fiction, drama, and essay).
Prerequisite: E 276 or E 277 or E 341.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 428 Postcolonial Literature Credits: 3 (3-0-0)
Course Description: Selected readings in postcolonial literatures and theory.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 430 18th-Century English Fiction Credits: 3 (3-0-0)
Course Description: English fiction from Defoe to Austen stressing Richardson, Fielding, Smollett, and Sterne.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 431 19th-Century English Fiction Credits: 3 (3-0-0)
Course Description: English fiction in Victorian and Edwardian eras emphasizing Dickens, the Brontes, Thackeray, George Eliot, and Hardy.
Prerequisite: E 276 or E 277 or E 341.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 432 20th-Century British Fiction Credits: 3 (3-0-0)
Course Description: British fiction from Conrad to the present emphasizing Joyce, Lawrence, Forster, Woolf, and Beckett.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 433 Literatures of the American West Credits: 3 (3-0-0)
Course Description: Relationships between places, environments, cultures, and literature in the American West.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356 or HIST 351 or HIST 352 or HIST 353.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 436 American Fiction, 1945-Present Credits: 3 (3-0-0)
Course Description: Form, content, and context of American fiction from 1945 to present. Kesey, Updike, Heller, Pynchon, Barthelme, Vonnegut, and others.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Registration Information: Offered as an online course only.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 438 Native American Literature Credits: 3 (3-0-0)
Also Offered As: ETST 438.
Course Description: Literature of Native Americans emphasized as distinctive tradition in American literature and cultural expression of indigenous peoples.
Prerequisite: None.
Registration Information: Credit not allowed for both E 438 and ETST 438.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 440 American Prose Before 1900 Credits: 3 (3-0-0)
Course Description: Novels, stories, and/or literary non-fiction prose written in the U.S. before 1900.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 441 American Prose Since 1900 Credits: 3 (3-0-0)
Course Description: Novels, stories, and/or literary non-fiction prose written in the U.S. from 1900 to the present.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 443 English Renaissance Drama Credits: 3 (3-0-0)
Course Description: Interplay between dramatic form and cultural context in the plays of Marlowe, Jonson, Cary, Middleton, Heywood, Dekker, Webster.
Prerequisite: E 276 or E 342 or E 343.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 444 Restoration and 18th-Century Drama Credits: 3 (3-0-0)
Course Description: Major plays and dramatic issues from 1660 to 1780 including Dryden, Etherege, Congreve, Sheridan, and others.
Prerequisite: None.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 445 Modern British and European Drama Credits: 3 (3-0-0)
Course Description: Realism and anti-realism in modern British and European drama.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 451 Medieval Literature Credits: 3 (3-0-0)
Course Description: Genres, themes, and authors of the Middle Ages.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 452 Masterpieces of European Literature Credits: 3 (3-0-0)
Course Description: Selected works of European literature through the 19th century.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 455 European Literature after 1900 Credits: 3 (3-0-0)
Course Description: Continental European texts in translation since 1900.
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 456 Topics in Critical Theory Credits: 3 (3-0-0)
Course Description: Advanced study of literary and cultural theory.
Prerequisite: E 341.
Registration Information: May be repeated once for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 460 Chaucer Credits: 3 (3-0-0)
Course Description: Chaucer's works in medieval context.
Prerequisite: E 341.
Registration Information: One other upper-division E prefix course.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 463 Milton Credits: 3 (3-0-0)
Course Description: Milton's poetry and prose emphasizing Paradise Lost.
Prerequisite: E 341 and E 276.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 465 Topics in Literature and Language Credits: 3 (3-0-0)
Course Description: Selected issues in literature and language.
Prerequisite: E 341.
Registration Information: One other upper-division E prefix course. Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 470 Individual Author Credits: 3 (3-0-0)
Course Description: Intensive study of works of a single major author.
Prerequisite: E 341.
Registration Information: One other upper-division E prefix course. Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 475 American Poetry Before 1900 Credits: 3 (3-0-0)
Course Description: Major American poets through the nineteenth century including Whitman, Dickinson, and Frost.
Prerequisite: E 240.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 478 Modern Poetry Credits: 3 (3-0-0)
Course Description: Major British and American poets from late 19th century to World War II.
Prerequisite: E 240.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 479 Recent Poetry of the United States Credits: 3 (3-0-0)
Course Description: US poetry since World War II, emphasis on the 1980s through the present.
Prerequisite: E 240.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 482A Study Abroad: Energy Transitions in Europe Credits: 3 (0-0-3)
Also Offered As: LB 482A.
Course Description: A multi-disciplinary and multi-national study of energy transitions.
Prerequisite: CO 150.
Registration Information: Sophomore standing. Registration is through the Office of International Programs. Credit not allowed for both E 482A and LB 482A.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 487A Internship: Supervised Work Experience Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: 2.5 GPA. Written consent of department chair. Maximum of 4 credits allowed in E 487A and E 487B.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 487B Internship: Literary Editing Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Registration Information: 2.5 GPA. Written consent of department chair. Maximum of 4 credits allowed in E 487A and E 487B.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 487C Internship: Community Literacy Center Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: CO 150.
Registration Information: 2.500 GPA. Written consent of CLC director.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 487D Internship: CSU Writing Center Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: CO 300 or CO 301.
Registration Information: 2.500 GPA. Written consent of Writing Center director.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description: Individually guided studies in literature, writing, English language, and linguistics.
Prerequisite: None.
Registration Information: Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 501 Theories of Composition Credits: 3 (0-0-3)
Course Description: Overview of composition/writing studies including various pedagogical approaches to teaching composition and the contexts that shape effective writing.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 502 The Politics of Literacy Credits: 3 (0-0-3)
Course Description: Socio-cultural theories and practical perspectives on language and literacy practices in academic and non-academic contexts.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

E 503 Investigating Classroom Literacies Credits: 3 (3-0-0)
Course Description: Research methods and ethical issues in classroom-based inquiry into oral and written literacy practices.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 504 Professional Issues in Composition & Writing Credits: 3 (0-0-3)
Course Description: Examines contemporary professional concerns, debates, and approaches in composition and writing studies.
Prerequisite: E 501.
Grade Mode: Traditional.
Special Course Fee: No.

E 505A Major Authors: English Credits: 3 (3-0-0)
Course Description: Intensive study of the works of one or two major authors.
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 505B Major Authors: American Credits: 3 (3-0-0)
Course Description: Intensive study of the works of one or two major authors.
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 505C Major Authors: World Credits: 3 (3-0-0)
Course Description: Intensive study of the works of one or two major authors.
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 506A Literature Survey: English Credits: 3 (3-0-0)
Course Description: Synthesis of literary attitudes, modes, genres of an age.
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 506B Literature Survey: American Credits: 3 (3-0-0)
Course Description: Synthesis of literary attitudes, modes, genres of an age.
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 506C Literature Survey: Comparative Credits: 3 (3-0-0)
Course Description: Synthesis of literary attitudes, modes, genres of an age.
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 345 or E 343 or E 160.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 507 Special Topics in Linguistics Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 513A Form and Technique in Modern Literature: Fiction Credits: 3 (3-0-0)
Course Description: Selected readings in and discussion of modern literature and criticism from the writer's point of view with emphasis on form and technique.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 513B Form and Technique in Modern Literature: Poetry Credits: 3 (3-0-0)
Course Description: Selected readings in and discussions of modern literature and criticism from the writer's point of view with emphasis on form and technique.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 513C Form and Technique in Modern Literature: Essay Credits: 3 (3-0-0)
Course Description: Selected readings in and discussions of modern literature and criticism from the writer's point of view with emphasis on form and technique.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 514 Phonology/Morphology-ESL/EFL Credits: 3 (3-0-0)
Course Description: English sound system and word formation in relation to second language acquisition and teaching.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 515 Syntax for ESL/EFL Credits: 3 (3-0-0)
Course Description: Major grammatical structures of English in relation to second language acquisition and teaching.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 520 English Phonetics and Phonology Credits: 3 (3-0-0)
Course Description: Articulatory phonetics, phonological theory and analysis with principal applications to American English and to pedagogy.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 522 Semantics, Pragmatics, and Discourse Credits: 3 (3-0-0)
Course Description: Linguistic study of literal and nonliteral meaning, including role of textual and situational context.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 526 Teaching English as a Foreign/Second Language Credits: 3 (3-0-0)
Course Description: Principles of teaching English as a foreign/second language. Development of a coherent method, including activities, materials, and course design.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 527 Theories of Foreign/Second Language Learning Credits: 3 (3-0-0)
Course Description: Theories of second language learning/acquisition; emphasis on psycholinguistic processes of language learning.
Prerequisite: E 526.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 528 Professional ESL Teaching: Theory to Practice Credits: 3 (3-0-0)
Course Description: Theory and practice in the planning and teaching of English as a second/foreign language.
Prerequisite: E 514 and E 515 and E 527.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 590 Workshop in TESOL Credits: Var[1-3] (0-0-0)
Course Description: Methodology/linguistic theory designed to solve practical problems in teaching, testing, and materials development.
Prerequisite: E 526.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 600A Research Methods/Theory: Literary Scholarship Credits: 3 (3-0-0)
Course Description: Research methods in English studies: literary scholarship.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 600B Research Methods/Theory: Writing Studies Credits: 3 (0-0-3)
Course Description: Research design principles emphasizing qualitative methods in writing studies; an introduction to quantitative concepts.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 601 Research in Teaching English as Second Language Credits: Var[2-3] (0-0-0)
Course Description: Evaluation and design of research in language acquisition.
Prerequisite: E 526.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 603 Critical Digital Rhetoric Credits: 3 (0-0-3)
Course Description: Critical theories and applications of digital rhetoric, emphasis on how issues of accessibility, intellectual property, infrastructure, and multimodality impact circulation of knowledge within digital environments.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

E 605 Critical Studies in Reading and Writing Credits: 3 (0-0-3)
Course Description: Examination of the social and political contexts of reading and writing policy and instruction.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

E 607A Teaching Writing: Composition and Rhetoric Credits: 3 (3-0-0)
Course Description: Addresses theoretical and applied understandings of reading and writing processes in the first-year college writing classroom; considers practical implications for professional practice in the teaching of writing; critically examines theory, disciplinary conventions, and policies in regard to writing pedagogy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 607B Teaching Writing: Creative Writing Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 608 Integrating Writing in the Academic Core Credit: 1 (0-0-1)
Course Description: Theories and best practices associated with writing integration in the academic core.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 610 Literature Program Colloquium Credit: 1 (1-0-0)
Course Description: Organizational strategies for researching and writing a final project/thesis. Opportunities to address specific challenges in order to ensure high-quality work and a timely defense. Career opportunities and professionalization issues are addressed.
Prerequisite: E 600A.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 615 Reading Literature-Recent Theories Credits: 3 (3-0-0)
Course Description: Recent developments in critical and cultural theories of discourse.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 630A Special Topics in Literature: Area Studies Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 630B Special Topics in Literature: Genre Studies Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 630C Special Topics in Literature: Theory and Technique Studies Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 630D Special Topics in Literature: Gender Studies Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 631 Crossing Boundaries Credits: 3 (3-0-0)
Course Description: Cross-topical studies of literature.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 632 Professional Concerns in English Credits: Var[1-3] (0-0-0)
Course Description: Professional concerns of secondary school teachers of English.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 633 Special Topics in Writing and Rhetoric Credits: 3 (0-0-3)
Course Description: Varied topics covering social, political, cultural or historical areas, or literacy and rhetorical theory and practice, or professional and pedagogical issues.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

E 634 Special Topics in TEFL/TESL Credits: 3 (3-0-0)
Course Description: Theory, practice, and professional conduct of teaching English as a foreign or second language.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 635 Critical Studies in Literature and Culture Credits: 3 (3-0-0)
Course Description: Advanced interpretation in contemporary literary and critical studies.
Prerequisite: E 615.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 636 Environmental Literature and Criticism Credits: 3 (3-0-0)
Course Description: Literary, critical, and theoretical representations of nature, animals, human-environment relations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 637 Histories of Writing and Rhetoric Credits: 3 (0-0-3)
Course Description: Historiographic examination of literate systems, practices and technologies of writing across time, cultures, and contexts.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

E 638 Assessment of English Language Learners Credits: 3 (3-0-0)
Course Description: Theory, practice, and professional conduct in the assessment of English language learners.
Prerequisite: E 514 and E 527.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 640A Graduate Writing Workshop: Fiction Credits: Var[1-5] (0-0-0)
Course Description: Individual projects with group discussion and analysis.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 11 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 640B Graduate Writing Workshop: Poetry Credits: Var[1-5] (0-0-0)
Course Description: Individual projects with group discussion and analysis.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 11 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 640C Graduate Writing Workshop: Essay Credits: Var[1-5] (0-0-0)
Course Description: Individual projects with group discussion and analysis.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 11 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 641 Nonfiction Workshop Credits: Var[1-5] (0-0-0)
Course Description: Writing workshop exploring various areas within literary nonfiction.
Prerequisite: E 640C.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 642 Writing Hypertexts Credits: Var[1-5] (0-0-0)
Course Description: Writing workshop exploring development of texts in electronic formats.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 643 Special Topics in Literary Craft Credits: 3 (0-0-3)
Course Description: A seminar-based class combining creative and craft-based experiments with traditional literary critical approaches to various topics utilizing poetry, fiction, creative non-fiction, and other alternate hybrid genres.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission into MA English or MFA Creative Writing Programs.
Grade Mode: Traditional.
Special Course Fee: No.

E 679 Community Service Learning in TESOL Credit: 1 (1-0-0)
Course Description: Opportunities to learn, practice, and develop skills by serving the community.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 684A Supervised College Teaching: Composition Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 684B Supervised College Teaching: ESL Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 684C Supervised College Teaching: Creative Writing Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 684D Supervised College Teaching: Literature Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 684E Supervised College Teaching: Computer-Assisted Instruction Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 687A Internship: Teaching College English Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 687B Internship: Composition Supervision/Administration Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: E 501 and E 684A.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 687C Internship: Literary Editing Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 687E Internship: Teaching ESL, K-12 Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 687H Internship: ESL-Adult Learning Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 687I Internship: ESL-Supervision/Administration Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 687J Internship: Arts Administration in Literature Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 687K Internship: Public Education Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 687L Internship: Computers and Writing Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 687M Internship: Writing/Editing for Specific Purposes Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 692 Seminar in Writing, Rhetoric, & Social Change Credit: 1 (0-0-1)
Course Description: Seminar featuring faculty and student research and projects and disciplinary and professional concerns related to writing, rhetoric, pedagogy, and social change.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 694 Independent Study: Portfolio Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 698 Research Project Credits: Var[1-3] (0-0-0)
Course Description: Research, composition, and revision of final project in accordance with disciplinary requirements.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Advisor approval.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 700 Introduction to Doctoral Studies in English Credits: 3 (0-0-3)
Course Description: Disciplinary approaches to the study of written discourse.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the doctoral program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 710 Writing for Publication Credits: 3 (3-0-0)
Course Description: Shaping research questions, determining publication venues, writing and revising for publication.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 792A Seminar: New Literacies Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 792B Seminar: Writing About Science and Environment Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 792C Seminar: Writing and Cultural Contexts Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: Individually guided study in doctoral topic.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Env'l+Radiolgl Health Sci-ERHS (ERHS)

Courses

ERHS 174 Freshman Scholar Credit: 1 (1-0-0)
Course Description: Scholarship-supported exploration of biomedical research theory and practice.
Prerequisite: None.
Registration Information: Admission to CVMBS Freshman Scholar's Program required. Up to 2 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 192 Environmental Health First Year Seminar Credit: 1 (1-0-0)
Course Description: Introduction to biosciences, college life, learning skills, problem solving, and degree planning.
Prerequisite: None.
Registration Information: Freshman standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 210 Cancer Biology, Medicine, and Society Credits: 2 (2-0-0)
Course Description: A broad overview of cancer biology and cancer medicine.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 220 Environmental Health Credits: 3 (3-0-0)
Course Description: Impact of people on the physical and biological environment as well as impact of the environment on people; emphasis placed on human health.
Prerequisite: BZ 101, may be taken concurrently or BZ 104, may be taken concurrently or BZ 110, may be taken concurrently or BZ 120, may be taken concurrently or LIFE 102, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 230 Environmental Health Field Methods Credits: 3 (0-6-0)
Course Description: Field and laboratory techniques necessary for practice of environmental health.
Prerequisite: CHEM 113 with a minimum grade of C and CHEM 114 with a minimum grade of C.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ERHS 320 Environmental Health--Water Quality Credits: 3 (3-0-0)
Course Description: Identify natural and man-made contaminants that impact water quality and human health; biological, chemical, and physical treatment techniques used to protect water quality.
Prerequisite: MIP 300, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 332 Principles of Epidemiology Credits: 3 (3-0-0)
Course Description: Use of epidemiological methods in studying distribution of diseases in human populations.
Prerequisite: (STAT 301, may be taken concurrently or STAT 307, may be taken concurrently) and (MIP 300, may be taken concurrently).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 350 Principles of Occupational Safety and Health Credits: 3 (3-0-0)
Course Description: Industrial and airborne hazards, disease prevention, hazard control and evaluation.
Prerequisite: (BMS 300) and (CHEM 245 or CHEM 341) and (ERHS 230) and (PH 121 or PH 141).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 400 Radiation Safety Credits: 3 (3-0-0)
Course Description: Radiation physics, dosimetry, radiation measurement, emergencies and waste management. Essentials of radiation safety.
Prerequisite: CHEM 112 and ERHS 450 and PH 122.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 405 Fundamentals of Ergonomics Credits: 2 (2-0-0)
Course Description: Basic skills, knowledge, and abilities in ergonomics; focus on musculoskeletal injury prevention.
Prerequisite: None.
Registration Information: One college-level animal biology or anatomy/physiology or engineering design course or concurrent registration. Offered as an online course only. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 410 Environmental Health-Air and Waste Management Credits: 3 (3-0-0)
Course Description: Preventing and managing hazards from air pollution sources and handling waste; administrative management for air and waste programs.
Prerequisite: (CHEM 245, may be taken concurrently or CHEM 341, may be taken concurrently or CHEM 346, may be taken concurrently) and (ERHS 230).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 430 Human Disease and the Environment Credits: 3 (2-0-1)
Course Description: Overview of the human diseases which are associated with the environment.
Prerequisite: (BMS 300 or BMS 360) and (MIP 300) and (STAT 301 or STAT 307).
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 446 Environmental Toxicology Credits: 3 (3-0-0)
Course Description: Essentials of environmental toxicology based on problem-oriented discussions addressing environmental impacts of organic/inorganic chemicals.
Prerequisite: CHEM 245 or CHEM 343 or CHEM 346.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 448 Environmental Contaminants: Exposure and Fate Credits: 3 (3-0-0)
Course Description: Pathways of exposure and behavior of environmental contaminants. Exposure assessment in environmental health protection.
Prerequisite: (CHEM 245 or CHEM 341 or CHEM 345) and (LIFE 102).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 450 Introduction to Radiation Biology Credits: 3 (3-0-0)
Course Description: Genetic and somatic effects of radiation on cells, tissues, and the whole organism; tumor therapy; carcinogenesis; risks vs. benefits of radiation.
Prerequisite: LIFE 102.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 479 Environmental Health Practice Credit: 1 (0-0-1)
Course Description: Networking, preparation of resume and statement of qualifications for professional internship or employment.
Prerequisite: ERHS 230, may be taken concurrently.
Registration Information: Written consent of instructor. This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Assist with environmental health course teaching under guidance of faculty in classroom, laboratory or field.
Prerequisite: ERHS 220 and ERHS 230.
Restriction: Must be a: Undergraduate.
Registration Information: Sophomore standing. Written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted toward graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 487 Internship-Environmental Health Credits: Var[4-7] (0-0-0)
Course Description: Professional field practice in environmental health with a public or private sector agency.
Prerequisite: ERHS 479.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 494 Independent Study in Environmental Health Credits: Var[1-18] (0-0-0)
Course Description: Directed independent study or project under faculty guidance.
Prerequisite: ERHS 220.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 498 Research Credits: Var[1-4] (0-0-0)
Course Description: Research in environmental and radiological health sciences.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 502 Fundamentals of Toxicology Credits: 3 (3-0-0)
Course Description: Fundamental principles of toxicology; dose-response, organ targets, toxic agents.
Prerequisite: (BMS 300 or BMS 360) and (CHEM 245 or CHEM 341 or CHEM 345).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 503 Toxicology Principles Credit: 1 (1-0-0)
Course Description: Principles of toxicology for applications in industrial hygiene and environmental public health.
Prerequisite: CHEM 113 and LIFE 102.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 504 Occupational and Environmental Toxicology Credits: 2 (2-0-0)
Course Description: Toxic effects of harmful agents found in occupational and environmental settings.
Prerequisite: ERHS 446 or ERHS 502 or ERHS 503, may be taken concurrently.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 505 Epidemiologic Research Credit: 1 (1-0-0)
Course Description: Professional skills and knowledge regarding topics in the epidemiologic research process.
Prerequisite: ERHS 532, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 507A Toxicology Toolbox: Fundamentals Credit: 1 (1-0-0)
Course Description: Qualitative description of toxicant molecules relevant to their behavior in biological systems and the environment. Quantitative characterization of toxicant concentrations (dose) and how they change with time (toxicokinetics).
Prerequisite: ERHS 446, may be taken concurrently or ERHS 448, may be taken concurrently or ERHS 502, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 507B Toxicology Toolbox: Metabolism and Disposition Credit: 1 (1-0-0)
Course Description: Qualitative and quantitative description of toxicant molecules and the consequences of molecular alterations resulting from biotransformation. The role of reactive molecules in toxic effects. Quantification of toxicant behavior in biological systems.
Prerequisite: ERHS 502 or ERHS 504, may be taken concurrently or ERHS 601.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 510 Cancer Biology Credits: 3 (3-0-0)
Also Offered As: VS 510.
Course Description: Cancer biology will address each of the hallmarks of cancer, including sustained proliferative signaling, evasion of growth suppression, invasion and metastasis, replicative immortality, angiogenesis, resisting cell death, genome instability and mutation, tumor promoting inflammation, deregulation of cellular energetics and avoidance of immune destruction. Lectures will integrate the biology behind these hallmarks with strategies for the treatment and prevention of cancer.
Prerequisite: BC 351 or BC 403, may be taken concurrently or BZ 310 or CM 501.
Registration Information: Credit not allowed for both ERHS 510 and VS 510.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 515 Non-Ionizing Radiation Safety Credits: 2 (2-0-0)
Course Description: Evaluation and safe use of non-ionizing radiation sources. Calculation of safe distances for exposure and maximum permissible exposures.
Prerequisite: (CHEM 107 or CHEM 113) and (MATH 118) and (PH 122 or PH 142).
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 520 Environmental and Occupational Health Issues Credits: 3 (3-0-0)
Course Description: Issues in environmental and occupational health sciences in the context of public health and regulatory concerns.
Prerequisite: BZ 110 or CHEM 103 or CHEM 107 or CHEM 111 or ERHS 220 or LIFE 102.
Registration Information: Admission to the Master of Public Health program can be substituted for LIFE 102. Sections may be offered: Online. Credit not allowed for both ERHS 520 and PBHL 530.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 526 Industrial Hygiene Credits: 3 (3-0-0)
Course Description: Theory and application of industrial hygiene principles to management of the occupational environment.
Prerequisite: (CHEM 245 or CHEM 341 or CHEM 345) and (ERHS 520, may be taken concurrently) and (PH 110 or PH 121).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 527 Industrial Hygiene Laboratory Credit: 1 (0-3-0)
Course Description: Industrial hygiene field monitoring equipment and techniques.
Prerequisite: ERHS 526, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 528 Occupational Safety Credits: 3 (3-0-0)
Course Description: Introduction to occupational safety hazard recognition and control.
Prerequisite: ERHS 350.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 530 Radiological Physics and Dosimetry I Credits: 3 (3-0-0)
Course Description: Theory and detection of ionizing radiation; measurement and calculation of exposure and dose.
Prerequisite: (MATH 155 or MATH 160) and (PH 122).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 531 Nuclear Instruments and Measurements Credits: 2 (1-3-0)
Course Description: Instrument systems for measurements and identification of ionizing radiations.
Prerequisite: ERHS 530, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 532 Epidemiologic Methods Credits: 3 (2-0-1)
Course Description: Method of epidemiologic investigation and study design. Applications to disease control with literature examples.
Prerequisite: ERHS 307 or STAT 307.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 534 SAS and Epidemiologic Data Management Credits: 3 (3-0-0)
Course Description: Basic concepts and skills necessary for data management and analyses using SAS programming in epidemiology studies.
Prerequisite: None.
Registration Information: Graduate standing in Environmental Health.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 535 R Programming for Research Credits: 3 (2-2-0)
Course Description: In-depth instruction on data collection, data management, programming, and visualization, using data examples relevant to academic research. Taught using the statistical programming language R, but the principles will be translatable to other programming languages (e.g., Python, Matlab, SAS). Conducting reproducible research in R and how to construct custom functions and bundle these in a shareable R package.
Prerequisite: None.
Registration Information: Graduate standing. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 536 Advanced Occupational Health Credits: 3 (3-0-0)
Course Description: Advanced topics in occupational health emphasizing contemporary issues, topics, trends, and problems in the field of industrial hygiene.
Prerequisite: ERHS 446 or ERHS 526.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 538 Geographic Information Systems and Health Credits: 3 (1-3-1)
Course Description: Applications of geographic information systems (GIS) in public health. Topics include geographic theory, spatial data, cartography, data visualization, spatial analysis, geocoding, primary and secondary data acquisition, and application of GIS for epidemiologic analyses.
Prerequisite: ERHS 532.
Registration Information: Must register for lecture, lab, and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 540 Principles of Ergonomics Credits: 3 (3-0-0)
Course Description: Theory and practice of ergonomics.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 541 Ergonomics in Product and Process Design Credits: 3 (3-0-0)
Course Description: Application of ergonomics to design of products and processes with respect to health, safety, function, and quality.
Prerequisite: ERHS 540.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 542 Biostatistical Methods for Qualitative Data Credits: 3 (3-0-0)
Course Description: Statistical analysis of categorical data as obtained in epidemiology, toxicology, occupational health, and clinical sciences.
Prerequisite: STAT 301 or ERHS 307 or STAT 307.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 544 Biostatistical Methods for Quantitative Data Credits: 3 (3-0-0)
Also Offered As: STAT 544.
Course Description: Regression and analysis of variance methods applied to both observational studies and designed experiments in the biological sciences.
Prerequisite: STAT 301 or ERHS 307 or STAT 307.
Registration Information: Credit not allowed for both ERHS 544 and STAT 544.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 546 Environmental Exposure Assessment Credits: 2 (2-0-0)
Course Description: Approaches and techniques for quantitative characterization of environmental exposure to harmful agents via inhalation, ingestion, and dermal pathways.
Prerequisite: CHEM 113.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 547 Equipment and Instrumentation Credits: 3 (0-6-0)
Course Description: Sample collection, quality control, theory and application of equipment and instrumentation for analysis and confirmation of organic-inorganic chemicals.
Prerequisite: ERHS 446 or ERHS 502.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ERHS 549 Environmental Health Risk Assessment Credits: 3 (3-0-0)
Course Description: Environmental contamination and health effects of chemicals using risk assessment, management and communication approaches.
Prerequisite: ERHS 332 or ERHS 446 or ERHS 502 or ERHS 503 or ERHS 532.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 550 Principles of Radiation Biology Credits: 5 (5-0-0)
Course Description: Dose-response relationships; physical, chemical, and biological modification of radiation damage; radiation oncology; radiation genetics and oncogenesis.
Prerequisite: (BZ 310) and (ERHS 450 or ERHS 530).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 551A Radiation Biology Principles for Medicine: Principles of Radiation Biology Credits: 2 (2-0-0)
Course Description: Biological responses to radiation exposure; DNA damage and repair, cell killing and survival, carcinogenesis and genetic effects.
Prerequisite: BZ 310.
Registration Information: Credit not allowed for both ERHS 551A and ERHS 550. Offered only online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 551B Radiation Biology Principles for Medicine: Principles of Radiation Oncology Credits: 2 (2-0-0)
Course Description: Application of basic radiation biology to the clinical application of radiation therapy. Radiation sensitivity and tolerance is evaluated based on normal tissue architecture and kinetics. The mechanisms of acute and late radiation effects are elucidated. The impact of time, dose, and fractionation on tumor control and radiation effects are clarified and related to established and newer treatment modalities, including combination therapies and emerging technologies.
Prerequisite: ERHS 551A.
Registration Information: Credit not allowed for both ERHS 551B and ERHS 550. Offered only online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 551C Radiation Biology Principles for Medicine: Principles of Radiation Protection Credit: 1 (1-0-0)
Course Description: Radiation risk assessment and protection; risk versus benefit associated with environmental and medical exposures.
Prerequisite: ERHS 551B.
Registration Information: Credit not allowed for both ERHS 551C and ERHS 550. Offered only online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 555 Quantitative Methods for Radiation Safety Credits: 3 (3-0-0)
Course Description: Analytical methods used in health physics, radioecology and radiochemistry. Quantification of uncertainty in radioactive samples and dosimetry.
Prerequisite: ERHS 530, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 556 Monte Carlo Methods in Health Physics Credits: 3 (3-0-0)
Course Description: Monte Carlo methods for the assessment of complex systems or macroscopic quantities on basis of statistical nature of microscopic components.
Prerequisite: ERHS 530, may be taken concurrently.
Registration Information: Eligibility for access to government software.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 561 Radiation Public Health Credits: 2 (2-0-0)
Course Description: Aspects of radiation public health for students in health physics with emphasis on contemporary issues in radiation protection.
Prerequisite: ERHS 400 and ERHS 450 or ERHS 530 and ERHS 550, may be taken concurrently.
Registration Information: ERHS 400 with written consent of instructor or ERHS 530.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 563 Environmental Contaminant Modeling I Credits: 2 (2-0-0)
Course Description: Mathematical modeling of radionuclide and chemical transport in aquatic and terrestrial ecosystems.
Prerequisite: MATH 155.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ERHS 565 Chemical and Biological Warfare Agents Credits: 2 (2-0-0)
Course Description: Current understanding of chemical and biological agents used in asymmetric warfare.
Prerequisite: CHEM 245 or CHEM 346.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 566 Forensic Toxicology Credits: 3 (2-2-0)
Course Description: Toxic effects of commonly encountered abused substances and laboratory methods to identify and measure these.
Prerequisite: CHEM 245 or CHEM 343 or CHEM 346.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ERHS 567 Cell and Molecular Toxicology Techniques Credits: 3 (0-6-0)
Course Description: Hands-on techniques exposure to molecular toxicology.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ERHS 568 Pharmaceutical and Regulatory Toxicology Credits: 3 (3-0-0)
Course Description: Toxicology as applied in public (regulatory) and private (pharmaceutical, industrial) sectors.
Prerequisite: ERHS 502.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 569 Immunotoxicology Credits: 3 (2-0-1)
Course Description: Must register for lecture and recitation.
Prerequisite: ERHS 446 and MIP 342 or ERHS 502 or ERHS 503.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 570 Radioecology Credits: 2 (2-0-0)
Course Description: Environmental transport and exposure assessment of radioactive and other contaminants; estimating risk for human health and ecological impacts.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ERHS 595B Independent Study: Large Animal Radiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595D Independent Study: Radiation Therapy Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595E Independent Study: Radiation Physics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595F Independent Study: Dosimetry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595G Independent Study: Radiation Chemistry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595H Independent Study: Radiation Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595I Independent Study: Radiological Health Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595J Independent Study: Radiation Ecology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595K Independent Study: Microcomputer Analysis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 596C Group Study: Toxicology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 601 Metabolism and Disposition of Toxic Agents Credits: 3 (3-0-0)
Course Description: Metabolism of toxic agents and effects on their fate in the body. Covalent and non-covalent interactions with cellular targets.
Prerequisite: ERHS 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 602 Toxicological Mechanisms Credits: 3 (3-0-0)
Course Description: Role of cellular information systems in toxic mechanisms: DNA expression, signal transduction and control of cellular processes.
Prerequisite: ERHS 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 603 Toxicological Pathology Credits: 3 (3-0-0)
Course Description: Toxicological study of pharmacologic, chemical and environmental agents and resulting morphologic and cellular changes.
Prerequisite: BMS 300 or BMS 360.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 611 Cancer Genetics Credits: 2 (2-0-0)
Course Description: Role of genetic background in determining individual susceptibility to cancer.
Prerequisite: BZ 350 or MIP 450.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 630 Radiological Physics and Dosimetry II Credits: 3 (3-0-0)
Course Description: Calculations and measurement techniques for dosimetry shielding and protection from ionizing radiations.
Prerequisite: ERHS 530.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 632 Techniques in Radiation Dosimetry Credit: 1 (0-3-0)
Course Description: Techniques for determining the absorbed dose in tissue from ionizing radiations.
Prerequisite: ERHS 630, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 633 Radiation Detection Methods in Radiobiology Credit: 1 (0-3-0)
Course Description: Detection and measurement of ionizing radiation appropriate for radiobiologists.
Prerequisite: ERHS 630, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 636 Industrial Hygiene Control Methods Credits: 3 (3-0-0)
Course Description: Controlling occupational exposures to chemical agents, emphasizing local exhaust ventilation; personal protective devices.
Prerequisite: ERHS 526 and ERHS 536, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 637 Environment, Safety, and Health Management Credits: 3 (3-0-0)
Course Description: Environment, safety, and health management systems for occupational health practitioners; major environmental and DOT regulatory standards and laws.
Prerequisite: ERHS 526.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 640 Advanced Epidemiology Credits: 3 (3-0-0)
Course Description: In-depth exploration of advanced epidemiologic methods.
Prerequisite: ERHS 532.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 642 Applied Logistic Regression Credits: 3 (3-0-0)
Course Description: Basic and advanced concepts of logistic regression with focus on practical applications in epidemiology using SAS.
Prerequisite: ERHS 532 and ERHS 542.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 656 Occupational Noise Control Credits: 3 (3-0-0)
Course Description: Measurement and control of industrial or environmental noise emphasizing practical solutions.
Prerequisite: ERHS 527.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 658 Environmental/Occupational Epidemiology Credits: 3 (2-0-1)
Course Description: Epidemiologic analyses of effects of exposure to environmental and occupational health hazards.
Prerequisite: ERHS 532.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 665 Radiochemistry Credits: 3 (2-3-0)
Course Description: Radionuclide separation and measurement and radiotracer applications in physical and biological systems.
Prerequisite: (CHEM 114 and MATH 155) and (ERHS 530, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 670 Directed Readings Credits: Var[1-3] (0-0-0)
Course Description: Advanced study through supervised readings on specialized topics.
Prerequisite: ERHS 520.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 671 Experimental Radioecology Credit: 1 (0-3-0)
Course Description: Experimental techniques used in radioecological and environmental radioactivity studies.
Prerequisite: (ERHS 400 or ERHS 532) and (ERHS 570).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ERHS 675 Environmental Health Regulatory Compliance Credits: 3 (3-0-0)
Course Description: Requirements and strategies for meeting obligations under regulations and laws involved in environmental and occupational health protection.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: 15 credits of ERHS courses 500-level or above or written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 679 Occ Env Health Interdisciplinary Symposium Credits: 2 (0-0-2)
Course Description: Evaluation of occupational and environmental health issues, through multidisciplinary interactions in seminars and field visits.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in a graduate program related to occupational, environmental, or public health. May be repeated for credit. Required field trips.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ERHS 684 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Participation in environmental health course teachings under guidance of faculty in classroom, laboratory, or field.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 687 Internship Credits: Var[1-6] (0-0-0)
Course Description: Advanced study or research in environmental health with a governmental agency, private sector entity, or research facility.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 692 Seminar Credit: 1 (0-0-1)
Course Description: Professional seminar series with student interaction on weekly basis; topics presented by outside experts, faculty, or doctoral candidates.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 693A Research Seminar: Epidemiology Credit: 1 (0-0-1)
Course Description: Presentation of student research and discussion of publications from scientific literature.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 693B Research Seminar: Industrial Hygiene Credit: 1 (0-0-1)
Course Description: Presentation of student research and discussion of publications from scientific literature.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 693C Research Seminar: Toxicology Credit: 1 (0-0-1)
Course Description: Presentation of student research and discussion of publications from scientific literature.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 693D Research Seminar: Health Physics Credit: 1 (0-0-1)
Course Description: Presentation of student research and discussion of publications from scientific literature.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ERHS 695A Independent Study: Epidemiology Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in epidemiology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695B Independent Study: Occupational and Environmental Health Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in occupational and environmental health under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695C Independent Study: Toxicology Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in toxicology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695D Independent Study: Radiation Chemistry Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in radiation chemistry under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695E Independent Study: Radiation Ecology Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in radiation ecology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695F Independent Study: Cancer Biology Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in cancer biology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695G Independent Study: Health Physics Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in health physics under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695H Independent Study: Exposure Assessment Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in exposure assessment under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695I Independent Study: Small Animal Radiology Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in small animal radiology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695J Independent Study: Large Animal Radiology Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in large animal radiology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695K Independent Study: Special Techniques in Radiology Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in special techniques in radiology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695L Independent Study: Radiation Therapy Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in radiation therapy under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695M Independent Study: Computed Tomography Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in computed tomography under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695N Independent Study: Magnetic Resonance Imaging Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in magnetic resonance imaging under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695O Independent Study: Ultrasound Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in ultrasound under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695P Independent Study: Nuclear Medicine Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in nuclear medicine under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 696A Group Study: Epidemiology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: ERHS 520.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 696B Group Study: Industrial Hygiene Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: ERHS 520.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 696C Group Study: Toxicology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 696D Group Study: Health Physics Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: ERHS 530.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 698 Research Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 701 Advanced Diagnostic Imaging Modalities Credits: 4 (4-0-0)
Course Description: Interpretation/applications of advanced imaging methods including ultrasound, nuclear medicine, magnetic resonance imaging and computed tomography.
Prerequisite: VM 786A or VM 786B.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 701A Advanced Diagnostic Imaging Modalities: Small Animal Imaging Credits: 3 (3-0-0)
Course Description: Interpretation/applications of advanced imaging methods as applied to small animals including ultrasound, nuclear medicine, magnetic resonance imaging and computed tomography.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Credit allowed for only one of the following courses: ERHS 701, ERHS 701A, or ERHS 701C. Credit is allowed for both ERHS 701A and ERHS 701B.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 701B Advanced Diagnostic Imaging Modalities: Large Animal Credit: 1 (1-0-0)
Course Description: Interpretation/applications of advanced imaging methods as applied to large animals including ultrasound, nuclear medicine, magnetic resonance imaging and computed tomography.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Credit allowed for only one of the following courses: ERHS 701, ERHS 701B, or ERHS 701C. Credit is allowed for both ERHS 701A and ERHS 701B.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 701C Advanced Diagnostic Imaging Modalities: Small and Large Animal Imaging Credits: 4 (4-0-0)
Course Description: Interpretation/applications of advanced imaging methods including ultrasound, nuclear medicine, magnetic resonance imaging and computed tomography. Covers both small and large animal imaging.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ERHS 701 and ERHS 701C. Students registering for ERHS 701C may not also receive credit for either ERHS 701A and/or ERHS 701B.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 711 Advanced Radiographic Interpretation Credits: Var[1-4] (0-0-0)
Course Description: Radiographic interpretation of disease processes of all major systems in large and small animals.
Prerequisite: VM 786A or VM 786B.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 712 Physics of Diagnostic Imaging Credits: 3 (3-0-0)
Course Description: Physics of imaging for radiology, ultrasound, computerized tomography, magnetic resonance, and nuclear medicine.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM or equivalent professional veterinary medicine degree required.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 714 Radiation Therapy Physics Credits: 3 (3-0-0)
Course Description: Radiation therapy physics, photon and electron production for therapeutic use, teletherapy, brachytherapy, radiation protection and quality assurance.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM or health physics, physics, or engineering graduate student.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 721 Radiation Oncology Credits: Var[1-3] (0-0-0)
Course Description: Management of spontaneous and experimental tumors with emphasis on radiation therapy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 726 Aerosols and Environmental Health Credits: 3 (3-0-0)
Course Description: Properties and behavior of environmental and occupational aerosols emphasizing how airborne particles affect health of humans and the environment.
Prerequisite: PH 141.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 730 Principles of Flow Cytometry & Cell Sorting Credits: 2 (1-2-0)
Also Offered As: MIP 730.
Course Description: Explores the background of flow cytometry, fluorescent molecules, experimental design, Flow Cytometry data Analysis, applications, and principles of cell sorting.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. This is a partial semester course. Credit not allowed for both ERHS 730 and MIP 730.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 733 Environmental Carcinogenesis Credits: 3 (3-0-0)
Course Description: Molecular and cellular mechanisms by which environmental carcinogens exert effects.
Prerequisite: BC 403.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 751 Advanced Radiation Biology I Credits: 3 (3-0-0)
Course Description: Molecular and cellular mechanisms of radiation damage and repair; mammalian radiation genetics.
Prerequisite: ERHS 550.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 753 Advanced Radiation Biology II Credits: 3 (3-0-0)
Course Description: Perturbations in cell cycle and cell population growth kinetics by radiation; radiation effects on normal tissues; radiation oncogenesis.
Prerequisite: ERHS 550.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 765 Environmental Contaminant Modeling II Credit: 1 (0-3-0)
Course Description: Development and analysis of advanced computer models for radionuclide and chemical transport in aquatic and terrestrial ecosystems.
Prerequisite: ERHS 563 and ERHS 570.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ERHS 770 Radiation Biology Basic to Tumor Therapy Credit: 1 (0-0-1)
Course Description: Current aspects of radiation biology pertinent to improvements in radiation therapy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ERHS 784 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 786 Practicum Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: ERHS 530.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 787 Internship Credits: Var[1-6] (0-0-0)
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 792 Seminar Credit: 1 (0-0-1)
Course Description: Professional seminar series with student interaction on weekly basis; topics presented by outside experts, faculty, or doctoral candidates.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 793 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795A Independent Study: Epidemiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795B Independent Study: Occupational and Environmental Health Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795C Independent Study: Toxicology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795D Independent Study: Radiation Chemistry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795E Independent Study: Radiation Ecology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795F Independent Study: Cancer Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795G Independent Study: Health Physics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795H Independent Study: Exposure Assessment Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795I Independent Study: Small Animal Radiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795J Independent Study: Large Animal Radiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795K Independent Study: Special Techniques in Radiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795L Independent Study: Radiation Therapy Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795M Independent Study: Computed Tomography Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795N Independent Study: Magnetic Resonance Imaging Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795O Independent Study: Ultrasound Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795P Independent Study: Nuclear Medicine Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 796 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description: Doctoral-level research and preparation of dissertation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Ethnic Studies-ETST (ETST)

Courses

ETST 100 Introduction to Ethnic Studies (GT-SS3) Credits: 3 (3-0-0)
Course Description: Key concepts, theories, and historical experiences that form the basis of scholarly work in comparative ethnic studies, domestically and internationally.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

ETST 110 Blacks in Higher Education Credit: 1 (0-0-1)
Course Description: Contemporary issues of Blacks in higher education.
Prerequisite: None.
Registration Information: Must be enrolled in the Black Issues Forum.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ETST 120 Native Americans in Higher Education Credit: 1 (0-0-1)
Course Description: Contemporary issues of Native Americans in higher education.
Prerequisite: None.
Registration Information: Must be enrolled in the Native American Issues Forum.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ETST 130 West Africa in Global and Local Perspective Credit: 1 (1-0-0)
Course Description: Sociopolitical and historical perspective of social and cultural issues in contemporary Ghana, West Africa, and connections to the African diaspora.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ETST 182A Study Abroad: Cuba Credit: 1 (0-0-1)
Course Description: Spring break travel to Cuba. Lectures and guided tours by Cuban experts. Variable topics dealing with Cuban society, race, and gender issues.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 182A and ETST 182.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 182B Study Abroad: Ghana Credit: 1 (0-0-1)
Also Offered As: WS 182B.
Course Description: Winter intersession travel to Ghana, West Africa. Lectures and guided tours by Ghanaian experts. Variable topics dealing with intersectionalities between gender, race, economic development, history, and youth in Ghanaian society.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 182B and WS 182B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 201 Introduction to Queer Studies Credits: 3 (3-0-0)
Course Description: Intersectional framework for understanding historical and contemporary applications of queer theory and queer studies.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 205 Ethnicity and the Media (GT-SS3) Credits: 3 (3-0-0)
Course Description: Ethnic representation across time as represented in auto/biography, fiction, poetry, and popular media.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

ETST 234 Introduction to Native American Literature Credits: 3 (3-0-0)
Also Offered As: E 234.
Course Description: Native American writings and their significance in American culture.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 234 and E 234.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 239 Introduction to Chicano Literature Credits: 3 (3-0-0)
Also Offered As: E 239.
Course Description: Chicano fiction and poetry with consideration of historical roots and influences.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 239 and E 239.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 240 Native American Cultural Experience (GT-AH2) Credits: 3 (3-0-0)
Course Description: Exploration of Native lives and expressions through examination of Native architecture, art, music, film, activism, and literature.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

ETST 250 African American History (GT-HI1) Credits: 3 (3-0-0)
Also Offered As: HIST 250.
Course Description: Slavery, emancipation, labor, political, socioeconomic, and cultural history of African Americans since colonial times.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 250 and HIST 250.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

ETST 252 Asian American History (GT-HI1) Credits: 3 (3-0-0)
Also Offered As: HIST 252.
Course Description: Asian American historical experience in the United States from 1850s to the present time.
Prerequisite: None.
Registration Information: Sections may be offered: Online. Credit not allowed for both ETST 252 and HIST 252.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

ETST 253 Chicanx History and Culture (GT-HI1) Credits: 3 (3-0-0)
Course Description: Historical study of Chicanx and Mexican people and culture from Spanish colonization to beginning of 20th century.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, History (GT-HI1).

ETST 254 La Chicana in Society Credits: 3 (3-0-0)
Course Description: Historical contributions of Chicana women and current gender issues in Chicano communities in the US.
Prerequisite: None.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ETST 255 Native American History (GT-HI1) Credits: 3 (3-0-0)
Also Offered As: HIST 255.
Course Description: History of Native American peoples in the United States to the present, including origin stories.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 255 and HIST 255.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

ETST 256 Border Crossings: People/Politics/Culture (GT-SS3) Credits: 3 (3-0-0)
Course Description: Colonial and post-colonial discourse, politics of representation and epistemology of "location" it has produced: first and third world.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

ETST 260 Contemporary Indigenous Issues Credits: 3 (3-0-0)
Course Description: International, national, regional, and local perspectives on current issues in Native America. Key issues include identity, gender, tribal governance and sovereignty, settler colonialism, law and policy, education, language, culture, health disparities, cultural resources, religious freedom, the environment, and activism.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C.

ETST 261 Latinx Populations in the U.S. Credits: 3 (3-0-0)
Course Description: Historical processes and sociocultural phenomena that define Latinx populations in the U.S.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 277 Racial Representations of Black Athletes Credits: 3 (3-0-0)
Course Description: Racial representations in the U.S. of Black/African American athletes at the intersections of sport and the sociocultural spaces of society—both historically and in contemporary contexts. Explore how racial representations have been shaped by forces of political significance, social and cultural movements, people, images, and ideologies.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 277 and ETST 280A2.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C.

ETST 300 Queer Studies and Women of Color Credits: 3 (3-0-0)
Course Description: Historical/contemporary analysis of the contributions of women of color to queer studies; racialized sexual/gender identities; written and cultural works.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 310 African-American Studies Credits: 3 (3-0-0)
Course Description: Meaning of African American studies in context of American higher education; historical development of such studies; perceptions and misperceptions.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 314 Inclusive Sports Organizations Credits: 3 (3-0-0)
Course Description: Issues of diversity and inclusion across U.S. and international sport organizations to advance sport industries.
Prerequisite: None.
Registration Information: Freshman not allowed.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 320 Ethnicity and Film: Asian-American Experience Credits: 3 (3-0-0)
Course Description: Asian American film image and film representation through both mainstream and independent movies.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 324 Asian-Pacific Americans and the Law Credits: 3 (3-0-0)
Course Description: Legal history of Asian Pacific Americans examined through case studies.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 330 African American Resistance and Self-Creation Credits: 3 (3-0-0)
Course Description: African American resistance to dehumanization and the creation of a positive image.
Prerequisite: ETST 000 to 99999 - at least 1 course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 332 Contemporary Chicanx Issues Credits: 3 (3-0-0)
Course Description: Current Chicanx issues including conquest, immigration, urbanization, health in context of societal trends.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 352 Indigenous Women, Children, and Tribes Credits: 3 (3-0-0)
Also Offered As: SOWK 352.
Course Description: Historical and contemporary lives of women, children, and tribal communities.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 352 and SOWK 352.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 354 Black Cinema and Media Credits: 3 (3-0-0)
Course Description: African American efforts to depict themselves in films and other media to counter often problematic mainstream depictions.
Prerequisite: None.
Registration Information: Sophomore standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 364 Asian American Social Movements, 1945-Present Credits: 3 (3-0-0)
Also Offered As: HIST 364.
Course Description: Historical relationships between Asian American and social movements for social, economic, and political equity in the U.S. since 1945.
Prerequisite: HIST 151 or HIST 252 or ETST 252.
Registration Information: Completion of 45 credits. Credit not allowed for both ETST 364 and HIST 364.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 365 Global Environmental Justice Movements Credits: 3 (3-0-0)
Course Description: How the world's poor and minorities self-empower to challenge institutional racism and government apathy in order to secure basic environmental goods.
Prerequisite: None.
Registration Information: Sophomore standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 370 Caribbean Identities Credits: 3 (3-0-0)
Course Description: Development of Caribbean identities from the arrival of Amerindian groups to the abolition of slavery in the nineteenth century.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 371 The Modern Caribbean Credits: 3 (3-0-0)
Course Description: Modern political and socio-economic developments in the Caribbean with emphasis on race, ethnicity, and gender.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 377 African Americans in Sports Credits: 3 (3-0-0)
Course Description: Sociocultural and historical dimensions of African Americans in sports.
Prerequisite: None.
Registration Information: Completion of AUCC Category 2 required.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 382 Italian Ethnic Identity, Culture, and Gender Credits: 3 (2-0-1)
Also Offered As: LGEN 382.
Course Description: Different ethnic identities in southern and northern Italy. Historical and contemporary culture and feminism. Enhancement of linguistic skills.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Credit not allowed for both ETST 382 and LGEN 382.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 382A Study Abroad: Race and Ethnicity in the Dominican Republic Credits: 3 (0-0-3)
Course Description: Winter break travel to the Dominican Republic. Lectures and guided tours by local experts. Variable topics dealing with Dominican society, race, and gender issues.
Prerequisite: None.
Registration Information: Sophomore standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 382B Study Abroad: Latinx Creative Expression in Mexico Credits: 3 (0-0-3)
Course Description: Explores Latinx (specifically Chicanx and Mexican) culture, identity and creative expression in Baja California Sur, Mexico. Utilizes theories and concepts of Ethnic Studies and Chicanx Studies.
Prerequisite: CO 150.
Registration Information: Sophomore standing. Offered as Mixed Face-to-Face.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 404 Race Formation in the United States Credits: 3 (3-0-0)
Course Description: Concept of race as a social construct in the shaping of U.S. character, values, and institutions.
Prerequisite: None.
Registration Information: Junior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 405 Ethnicity, Class, and Gender in the U.S. Credits: 3 (3-0-0)
Course Description: Roles of and interconnections among ethnicity, class, and gender for various groups in the United States.
Prerequisite: None.
Registration Information: Junior standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 410 African American Periods and Personalities Credits: 3 (3-0-0)
Course Description: Historical moments, movements, and men and women who have helped shape the African American heritage.
Prerequisite: None.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ETST 411 Black Feminism(s) Credits: 3 (3-0-0)
Course Description: History and trajectory of Black feminist thought from the nineteenth century to the present.
Prerequisite: None.
Registration Information: Junior standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 412 Africa and African Diaspora Credits: 3 (3-0-0)
Course Description: Interdisciplinary investigation of retention, transformation, and creation of culture in plantation economies of Americas.
Prerequisite: None.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ETST 413 Queer Creative Expressions Credits: 3 (3-0-0)
Course Description: Analysis of queer creative expressions within socio-political discourse and cultural works, with an emphasis on critical, queer feminist theory.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 414 Development in Indian Country Credits: 3 (3-0-0)
Also Offered As: ANTH 414.
Course Description: Critical examination of history, public policy, and tribal strategies for economic development and natural resource management in Indian country.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 414 and ANTH 414.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ETST 422 African-American Literature Credits: 3 (3-0-0)
Also Offered As: E 422.
Course Description: African-American literature as a distinct tradition of writing and protest.
Prerequisite: None.
Registration Information: Credit not allowed for both E 422 and ETST 422.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 425 Indigenous Film and Video Credits: 3 (3-0-0)
Course Description: Historical and contemporary analysis of film featuring indigenous peoples.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 430 Latina/o Creative Expression Credits: 3 (3-0-0)
Course Description: Creative expression in literature, art, theatre, music: approach to understanding experiences of various Chicana/o/Latina/o groups in the U.S.
Prerequisite: None.
Registration Information: Junior or senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 432 Latinx Routes to Empowerment Credits: 3 (3-0-0)
Course Description: Critical examination of political and economic strategies used to incorporate Chicanx/Latinx groups into U.S. society.
Prerequisite: ETST 100 or ETST 101 to 499 - at least 6 credits.
Registration Information: Sophomore standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ETST 438 Native American Literature Credits: 3 (3-0-0)
Also Offered As: E 438.
Course Description: Literature of Native Americans emphasized as distinctive tradition in American literature and cultural expression of indigenous peoples.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 438 and E 438.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 441 Indigenous Knowledges Credits: 3 (3-0-0)
Course Description: Develop an understanding of Indigenous world views, by exploring Indigenous knowledge production, knowledge systems, core values, and ways of living. Builds on the foundation that Indigenous peoples have always had their own philosophies, teachings, and consciousness. Explores the rigorous and deep-rooted, Indigenous intellectual traditions and the sharing of information both formalized and localized.
Prerequisite: ETST 234 or ETST 240 or ETST 255.
Registration Information: Sophomore standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 444 Federal Indian Law and Policy Credits: 3 (3-0-0)
Also Offered As: SOC 444.
Course Description: Indian policy processes and their impact on Native lives and culture, particularly Native sovereignty.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 444 and SOC 444.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ETST 454 Chicanx Film and Video Credits: 3 (2-2-0)
Also Offered As: SPCM 454.
Course Description: Emergence of Chicanx cinema from a place of displacement, resistance, and affirmation found in contemporary Chicanx film, video.
Prerequisite: ETST 100 to 499 - at least 3 credits or SPCM 100 to 499 - at least 3 credits.
Registration Information: Sophomore standing. Must register for lecture and laboratory. Credit not allowed for both ETST 454 and SPCM 454.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. May be taken only once. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ETST 487 Internship–Ethnic Studies Credits: 3 (0-0-9)
Course Description: Supervised work experience for Ethnic Studies Majors and Minors.
Prerequisite: ETST 100 with a minimum grade of C and ETST 200 to 495 with a minimum grade of C - at least 15 credits.
Registration Information: Written consent of instructor. Junior standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ETST 492 Seminar Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ETST 493 Ethnic Studies Research Methods and Writing Credits: 3 (3-0-0)
Course Description: Research ethics, methodology, theory, and writing in ethnic studies.
Prerequisite: ETST 100 and ETST 101 to 481 - at least 18 credits.
Registration Information: Senior standing.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ETST 496 Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ETST 501 Ethnic Studies History and Theory Credits: 3 (3-0-0)
Course Description: History and theory of study of racial and ethnic formation, identity, and politics.
Prerequisite: None.
Registration Information: Graduate or senior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 502 Research Methods Credits: 3 (3-0-0)
Course Description: Interdisciplinary ethnic studies research methods.
Prerequisite: None.
Registration Information: Graduate or senior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 503 Contemporary Ethnic Studies Issues Credits: 3 (3-0-0)
Course Description: Contemporary ethnic studies issues in the United States and abroad.
Prerequisite: None.
Registration Information: Graduate or senior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 510 Ethnicity, Race, and Health Disparities in U.S. Credits: 3 (3-0-0)
Course Description: Health status of ethnic/racial populations; cultural dimensions that underlie health and health disparities.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 520 Race and U.S. Social Movements Credits: 3 (3-0-0)
Course Description: Intersections of race, class, gender, and sexuality which structure life chances and mobilize movements for rights, recognition, and resources.
Prerequisite: None.
Registration Information: Graduate or senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 531 Latinx Politics in the U.S. Credits: 3 (3-0-0)
Course Description: Impact of Latinx politics on the U.S. political system by examining Latinx political mobilization patterns and behaviors.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 535 Chicana Feminism: Theory and Form Credits: 3 (3-0-0)
Course Description: Different forms of Chicana feminism as produced by Chicana scholars, poets, artists, and activists, from historical and contemporary accounts.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 540 Race in Latin America Credits: 3 (0-0-3)
Course Description: Examination of race in Latin America and its intersection with ethnicity, class, gender, and sexuality.
Prerequisite: None.
Registration Information: Admission to Ethnic Studies graduate program.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 541 Gender, Violence and Indigenous Peoples Credits: 3 (3-0-0)
Course Description: Multiple forms of violence against indigenous women and children in the Americas, Australia, and New Zealand.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 544 National Identities and Nation Building Credits: 3 (3-0-0)
Also Offered As: POLS 544.
Course Description: How statist conceptions of race and ethnicity have been mobilized in nation-building projects.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 544 and POLS 544.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 545 Immigration and Citizenship in U.S. History Credits: 3 (3-0-0)
Course Description: Comparative survey of immigration and citizenship debates in the U.S. since the 19th century, with a focus on the politics of racial formations.
Prerequisite: None.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 550 Indigenous Law, Policy, and Peoples Credits: 3 (3-0-0)
Course Description: Laws and policies impacting indigenous women, children, families, and communities in North America, New Zealand, and Australia.
Prerequisite: None.
Registration Information: Graduate or senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 555 African American Intellectual Thought Credits: 3 (3-0-0)
Course Description: Historical efforts of Black/African American intellectuals to describe the conditions and circumstances of African descendants in the U.S.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 560 Race, Ethnicity, and Higher Education Credits: 3 (3-0-0)
Course Description: Historical and contemporary experiences of people of color as students, faculty, and staff in higher education in the United States.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 573 Critical Disability Studies Credits: 3 (3-0-0)
Course Description: Critical disability studies focusing on the social and cultural constructions of disability within intersectional frameworks.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 687 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ETST 696 Group Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Ethnic Studies graduate student or written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ETST 698 Research in Ethnicity Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ETST 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Family + Consumer Sci-FACS (FACS)

Courses

FACS 179 Introduction to Family and Consumer Sciences Credits: 2 (2-0-0)
Course Description: Career options in family and consumer sciences; professional leadership responsibilities.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FACS 320 Finance-Personal and Family Credits: 3 (3-0-0)
Course Description: Management of income, expenditures, credit, savings, investment, insurance, taxes, and assets considering legislation and economic conditions.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FACS 479 Colloquium-Family and Consumer Sciences Credits: 2 (0-0-2)
Course Description: Current topics and issues related to professional roles, responsibilities, and opportunities.
Prerequisite: FACS 179, may be taken concurrently.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

FACS 484 Supervised College Teaching Credits: 2 (0-0-2)
Course Description:
Prerequisite: None.
Registration Information: Sophomore standing. Written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted toward graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FACS 487A Internship: Extension Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FACS 487B Internship: Community Service Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FACS 487C Internship: Business Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FACS 494 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FACS 590 Workshop Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FACS 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Finance-FIN (FIN)

Courses

FIN 200 Personal Finance and Investing Credits: 3 (3-0-0)
Course Description: Fundamentals of personal finance including budgeting, tax planning, managing credit, avoiding identity theft, buying insurance, selecting employee benefits, saving, and investing to meet long-term financial goals. Apply a systematic process to evaluate personal financial situation, develop goals, and create a plan to meet those goals.
Prerequisite: MATH 101 or MATH 105 or MATH 117 or MATH 118 or MATH 124 or MATH 125 or MATH 126 or MATH 141 or MATH 155 or MATH 160.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 300 Principles of Finance Credits: 3 (3-0-0)
Course Description: Overview of financial markets and institutions, analysis of securities and investigation of financial management techniques.
Prerequisite: (ACT 205 or ACT 210) and (AREC 202 or ECON 202) and (CIS 200) and (ECON 204) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online. Credit not allowed for both FIN 300 and FIN 305.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 305 Fundamentals of Finance Credits: 3 (3-0-0)
Course Description: Role of finance in management of the firm; role, structure of financial markets and institutions, valuation of basic securities.
Prerequisite: (ACT 205 or ACT 210) and (ECON 204).
Registration Information: Credit not allowed for both FIN 305 and FIN 300. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 309 Fundamentals of Entrepreneurial Finance Credits: 3 (3-0-0)
Course Description: Accounting and finance for entrepreneurs, including forms of business organization, preparation of financial statements, developing a cash budget, managing working capital, measuring cash flow, valuing a company, measuring performance, types and sources of financing at different stages in a company's life cycle.
Prerequisite: MGT 340.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 310 Financial Markets and Institutions Credits: 3 (3-0-0)
Course Description: Analysis of the functions and operations of financial markets and the primary and secondary securities created in those markets.
Prerequisite: ECON 204.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 311 Debt Securities Analysis Credits: 3 (3-0-0)
Course Description: Analysis of corporate, government, and mortgage-based debt securities. Emphasis on securitization of asset-backed obligations.
Prerequisite: (FIN 300) and (FIN 310 or ECON 315) and (FIN 355).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 320 Introduction to Financial Planning Credits: 3 (3-0-0)
Course Description: Personal financial planning including budgeting, tax planning, credit management, investing, retirement, and estate planning.
Prerequisite: ACT 210 and ECON 202.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 342 Risk Management and Insurance Credits: 3 (3-0-0)
Course Description: Management of insurable risks for the individual and business firm.
Prerequisite: FIN 300 or FIN 305.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 355 Principles of Investments Credits: 3 (3-0-0)
Course Description: Modern investment theory with applications in the debt and equity markets, with introduction to portfolio management.
Prerequisite: FIN 300 and FIN 310.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 370 Financial Management-Theory and Application Credits: 3 (3-0-0)
Course Description: Theory and application of financial management to business firms; case problems used for illustration.
Prerequisite: FIN 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 430 Introduction to Financial Modeling Credits: 3 (3-0-0)
Course Description: Financial modeling that integrates conceptual material with spreadsheet-based numerical solutions and simulation techniques.
Prerequisite: FIN 300 and FIN 310.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 440 Estate Planning Credits: 3 (3-0-0)
Course Description: Methods for conservation and transfer of wealth, considering aspects of tax, trusts, wills, probate, advanced directives, and charitable giving.
Prerequisite: ACT 330 and FIN 320.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 442 Employee Benefits and Retirement Planning Credits: 3 (3-0-0)
Course Description: Design, financing, accounting, and taxation for employee benefit and retirement plans.
Prerequisite: FIN 342.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 445 Financial Plan Development Credits: 3 (3-0-0)
Course Description: Analyze client finances and economic conditions, develop and communicate comprehensive financial plan using financial planning professional standards.
Prerequisite: ACT 330 and FIN 320 and FIN 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 455 Advanced Portfolio Management Credits: 3 (3-0-0)
Course Description: Advanced hedging and portfolio management theory and techniques.
Prerequisite: FIN 355.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 470 Derivative Securities Credits: 3 (3-0-0)
Course Description: Futures, options and other derivatives, including their use in hedging, speculation, and arbitrage.
Prerequisite: FIN 355.
Registration Information: Business majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 471 Enterprise Valuation Credits: 3 (3-0-0)
Course Description: Analytical framework for measuring, managing, and applying principles and tools to value enterprises.
Prerequisite: FIN 355 and FIN 370.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 475 International Business Finance Credits: 3 (3-0-0)
Course Description: International financial management emphasizing markets, instruments, hedging techniques, and operating strategies.
Prerequisite: FIN 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 486 Summit Investment Fund Practicum Credits: 3 (0-0-6)
Course Description: An opportunity to gain valuable experience in equity valuation, asset allocation, style analysis and portfolio management as applied to an actual investment portfolio.
Prerequisite: FIN 355.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 487 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FIN 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FIN 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FIN 498 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FIN 524 Financial Statistics Credits: 3 (3-0-0)
Also Offered As: STAT 524.
Course Description: Probability and statistical concepts and quantitative tools used in financial modeling and decision-making.
Prerequisite: MATH 345 and STAT 420.
Registration Information: MATH 345; STAT 420, or Admission to MSBA program with Financial Risk Management specialization. Credit not allowed for both FIN 524 and STAT 524. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 600 Financial Management-Theory and Case Studies Credits: 3 (3-0-0)
Course Description: Financial problems for various types of business organizations.
Prerequisite: FIN 300 or FIN 305.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 601 Financial Management and Markets Credits: 3 (3-0-0)
Course Description: Integrated coverage of financial management, investments, and markets and institutions from the public, private, and nonprofit perspective.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to GSSE program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 602 Options and Futures Credit: 1 (1-0-0)
Course Description: Advanced analysis and pricing of derivative securities, such as futures, forwards and options.
Prerequisite: BUS 641.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 603 Corporate Risk Management Credit: 1 (1-0-0)
Course Description: Survey of topics related to corporate risk management including the role and function of insurance and risk management for business enterprises.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master's program in business. This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 604 Employee Benefits Credit: 1 (1-0-0)
Course Description: Design and financing of employee benefits including health plans, disability, life insurance, long-term care, and retirement plans.
Prerequisite: FIN 603.
Restriction: Must not be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 605 Enterprise Valuation Credits: 3 (3-0-0)
Course Description: Corporate valuation methodologies including dividend discount model, relative valuation using market multiples, free cash flows and options analysis.
Prerequisite: FIN 300.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to M.S. Business Administration, Financial Risk Management specialization. This is a partial-semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 606 Fundamentals of International Finance Credit: 1 (1-0-0)
Course Description: Fundamental principles of international finance and how they relate to business operations and strategies.
Prerequisite: BUS 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 607 Fundamentals of Bond Markets Credit: 1 (1-0-0)
Course Description: Properties of bonds and bond markets, pricing bonds by arbitrage, risk characteristics of bonds.
Prerequisite: BUS 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 608 Fundamentals of Firm Valuation Credit: 1 (1-0-0)
Course Description: Identifies key value drivers for a business and how these can be identified utilizing currently available financial information.
Prerequisite: BUS 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 609 Fundamentals of Personal Finance Credit: 1 (1-0-0)
Course Description: Personal financial planning focusing on TVM, personal financial statements, retirement plans, government sponsored benefits and education planning.
Prerequisite: BUS 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 610 Debt Securities Analysis Credits: 3 (3-0-0)
Course Description: Valuation of corporate, government, and mortgage-backed debt securities and strategies for management of debt security portfolios.
Prerequisite: FIN 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 612 Private Equity and Venture Capital Credit: 1 (1-0-0)
Course Description: The role and function of the private equity market and key players in that market, including crowdfunding, angel investors, and venture capitalists. Application of financial tools and models to value venture investments, evaluate risk and return, and negotiate deals.
Prerequisite: BUS 640.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only. This is a partial semester course. Credit not allowed for both FIN 612 and FIN 669.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 625 Quantitative Methods in Finance Credits: 3 (3-0-0)
Course Description: Review and application of mathematical and analytical techniques used in solving financial problems.
Prerequisite: FIN 300.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 630 Financial Modeling Credits: 3 (3-0-0)
Course Description: Practical applications of financial modeling and computer programming to analyze financial data.
Prerequisite: FIN 524 or STAT 524.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 655 Investments Credits: 3 (3-0-0)
Course Description: Investment analysis and decision making emphasizing equity securities and portfolio management.
Prerequisite: FIN 300.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to M.S. Business Administration, Financial Risk Management specialization. This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 661 Advanced Portfolio Management Credits: 3 (3-0-0)
Course Description: Portfolio management, asset allocation, and asset selection theory and techniques.
Prerequisite: FIN 605 and FIN 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 665 Financial Engineering Credits: 3 (3-0-0)
Course Description: Using futures, options, swaps, and securitized transactions in financial management.
Prerequisite: FIN 610 or FIN 655 or FIN 675.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 669 Financing, Evaluating Sustainable Enterprise Credits: 3 (3-0-0)
Course Description: Theoretical and applied approaches to the funding and evaluation of enterprises.
Prerequisite: (BUS 601) and (FIN 601).
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 670 Risk Management Theory and Application Credits: 3 (3-0-0)
Course Description: Fundamentals of financial risk management using quantitative techniques and models to identify, measure, and manage corporate risk.
Prerequisite: (FIN 524 or STAT 524) and (FIN 655).
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 675 International Finance Credits: 3 (3-0-0)
Course Description: Analysis of the foreign exchange market and international financial markets.
Prerequisite: FIN 300.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 678 Financial Decisions-Theory and Practice Credits: 3 (3-0-0)
Course Description: Analysis of theory of corporate finance with emphasis on underlying assumptions and implications for financial decisions.
Prerequisite: FIN 600.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FIN 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FIN 698 Research Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Fire Emergency Serv Admin-FESA (FESA)

Courses

FESA 310 Fire Service Leadership Credits: 3 (0-0-3)
Course Description: Theory, practice, and application of ethical leadership in public safety; developing personal ethics and leadership skills and abilities.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 330 Industrial Processes and Fire Protection Credits: 3 (0-0-3)
Course Description: Industrial processes and fire protection managed by fire and safety personnel.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Summer (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 331 Structure Influence on Tactics and Strategy Credits: 3 (3-0-0)
Course Description: How construction type, alterations, design and materials influence a building's reaction to fire. Fireground influence on tactics and strategy.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 333 Proposals/Reports in Fire Service Management Credits: 3 (0-0-3)
Course Description: Process of preparing reports and developing a proposal supported by research. Introduction to research techniques, Internet and library use; conventions of documentation.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 334 Orientation to Experiential Learning Credit: 1 (0-0-1)
Course Description: Demonstration of knowledge, skill, and professional experience for the purpose of enhancing documentation and career development skills.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 335 Trends in Fire Science Technologies Credits: 3 (0-0-3)
Course Description: Analytical tools designed to evaluate, align, select, and implement emerging fire science technologies.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 336 Fire Emergency Services Administration Credits: 3 (0-0-3)
Course Description: Fire and emergency service administrative structures and processes. Examination of management and leadership models and applications.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 337 Policy and Public Administration Credits: 3 (3-0-0)
Course Description: Political and legal foundations of fire and emergency services. Public administration concepts, decision making and policy development.
Prerequisite: FESA 334.
Registration Information: Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 338 Essentials of Emergency Management Credits: 3 (3-0-0)
Course Description: Emergency management theory; mitigation, planning, response, and recovery in large-scale incidents. Development/operation of emergency operation centers.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 339 Incident Command Systems Credits: 3 (0-0-3)
Course Description: Theory and application of incident command systems (ICS) to the command and coordination of major emergency operations.
Prerequisite: FESA 334.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 341 Fire Officer I-A Credits: 3 (3-0-0)
Course Description: Fire officer competencies at the supervisory level of performance, as confirmed by NFPA Standard 1021, Level I, 4.1 to 4.4.
Prerequisite: None.
Registration Information: Enrollment in FESA program or written consent of instructor. Offered as an online course only.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 342 Fire Officer I-B Credits: 3 (3-0-0)
Course Description: Fire officer competencies at the supervisory level of performance, as confirmed by NFPA Standard 1021, Level II, 4.5 to 4.7.
Prerequisite: FESA 341 with a minimum grade of C.
Registration Information: Offered as an online course only.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 431 Emergency Medical Services Management Credits: 3 (0-0-3)
Course Description: Emergency medical service models, design implementation, evaluation. Interactions with health care systems, public policy and public health systems.
Prerequisite: FESA 432 and FESA 433.
Registration Information: Offered as an online course only.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 432 Fire and Emergency Services Budgeting Credits: 3 (3-0-0)
Course Description: Application of emergency service budgeting systems with emphasis on revenues, public financial controls, capital funding and performance measures.
Prerequisite: FESA 333 and FESA 336.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 433 Fire and Emergency: Human Resources Credits: 3 (3-0-0)
Course Description: Theory, practice, and models of human resources applied to emergency organizations; workforce development, HR functions, and labor relation.
Prerequisite: FESA 333 and FESA 336.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 434 Training Program Management Credits: 3 (0-0-3)
Course Description: Development of agency training and education programs. Utilization of training and education practices, resources, facilities and technologies.
Prerequisite: FESA 432 and FESA 433.
Registration Information: Offered as an online course only.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 435 Volunteer/Combination Organization Management Credits: 3 (0-0-3)
Course Description: Development and management of fire and emergency service organizations with volunteer and combination resources.
Prerequisite: FESA 432 and FESA 433.
Registration Information: Offered as an online course only.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 436 Fire Protection Through Model Building Codes Credits: 3 (0-0-3)
Course Description: Overview of the most current fire codes that are used across the United States. Discussion of fire inspection methodology and enforcement practices.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 437 Fire and Emergency: Legal Considerations Credits: 3 (0-0-3)
Course Description: Fire Service in relation to the complex legal system of the United States, individual states and local jurisdictions.
Prerequisite: FESA 432 and FESA 433.
Registration Information: Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 438 Prevention Program Management Credits: 3 (3-0-0)
Course Description: Design, implementation, and evaluation of fire and risk prevention programs using education, engineering, and enforcement approaches.
Prerequisite: FESA 432 and FESA 433.
Registration Information: Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 441 Fire Officer II-A Credits: 3 (3-0-0)
Course Description: Fire officer competencies at the supervisory/ managerial level of performance, as confirmed by NFPA Standard 1021, Level II, 5.1 to 5.4.
Prerequisite: FESA 342 with a minimum grade of C.
Registration Information: Offered as an online course only.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 442 Fire Officer II-B Credits: 3 (3-0-0)
Course Description: Fire officer competencies at the supervisory/ managerial level of performance, as confirmed by NFPA Standard 1021, Level II, 5.5 to 5.7.
Prerequisite: FESA 441 with a minimum grade of C.
Registration Information: Offered as an online course only.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 467 Integrated Management Simulation Credits: 3 (0-0-3)
Course Description: Integration management and administrative knowledge and skills in the development of a fire and emergency service management simulation.
Prerequisite: FESA 432 and FESA 433.
Registration Information: Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 492 Seminar Credits: Var[1-3] (0-0-0)
Course Description: Discussion and documentation of professional experience in fire and emergency services.
Prerequisite: None.
Registration Information: Written consent of instructor. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FESA 495 Independent Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to the FESA B.S. program; written consent of instructor. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Fish/Wildlife/Conserv Bio-FW (FW)

Courses

FW 104 Wildlife Ecology and Conservation (GT-SC2) Credits: 3 (3-0-0)
Course Description: Essentials of wildlife ecology as a foundation for understanding issues on the origins, management and conservation of biodiversity.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

FW 111 Basic Outdoor Skills in FWCB Credit: 1 (.5-1-0)
Course Description: Basic outdoor skills for FWCB and outdoor novices. History of wildlife conservation and reasons for declining outdoor participation.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. May be taken up to 3 times for a maximum of 3 credits. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 179 New-to-the-Major Seminar Credit: 1 (0-0-1)
Course Description: Introduces students new to the Fish, Wildlife, and Conservation Biology major to curriculum, faculty, research, key concepts, careers, professional development, and other students.
Prerequisite: None.
Registration Information: This is a partial semester course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 182A Study Abroad--Mexico: Outdoor Skills Credit: 1 (0-0-1)
Course Description: Introduction and development of basic outdoor skills important to fish, wildlife, and conservation biology (FWCB) in environments in Baja California Sur, Mexico (e.g., marine, coastal, tropical, desert). Skills are related to the basic history and philosophies of the FWCB profession. Focus learning through hands-on experience. Does not provide full competence in any skill area.
Prerequisite: None.
Registration Information: Required field trips. FW 111 and FW 182A may be repeated for a maximum of 3 credits for the two courses.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 204 Introduction to Fishery Biology Credits: 3 (2-3-0)
Course Description: Exposure to sampling techniques, agencies, and topics in fishery biology careers.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 260 Principles of Wildlife Management Credits: 3 (3-0-0)
Course Description: Ecology principles applied to conservation and management of fish/wildlife resources. Quantitative methods, socioeconomic factors, population dynamics.
Prerequisite: (MATH 124 or MATH 160) and (BZ 110 or LIFE 103).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 300 Biology and Diversity of Fishes Credits: 2 (2-0-0)
Course Description: Biology and zoology of fishes: anatomy, taxonomy, evolution, physiology, behavior, ecology, zoogeography, and conservation.
Prerequisite: BZ 111 or LIFE 103.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 301 Ichthyology Laboratory Credit: 1 (0-2-0)
Course Description: Anatomy, taxonomy, evolution and ecology of North American freshwater fishes.
Prerequisite: FW 300, may be taken concurrently.
Registration Information: Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 304 Conservation of Marine Megafauna Credits: 3 (3-0-0)
Course Description: The ecology, systematics, behavior and conservation of large marine animals including giant squid, bony fishes, sharks, sea turtles, seabirds, and marine mammals. Examines the relations between ocean dynamics and large marine animals, and provides insights in the roles that marine megafauna species play in ocean ecosystems. Study impacts of human activities, such as bycatch and climate change, and their effect on ocean species.
Prerequisite: BZ 101 or BZ 110 or LIFE 103.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FW 350 Teaching Shooting Responsibility Credits: 4 (3-2-0)
Course Description: Education and instructor certification course to develop knowledge, skills, behavior for teaching about firearms, shooting sports, and associated ethics.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 355 Hunter Education for Instructors. Credits: 2 (0-0-2)
Course Description: Principles of learning and teaching for instructors of state hunter education courses.
Prerequisite: None.
Registration Information: Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FW 370 Design of Fish and Wildlife Projects Credits: 3 (2-2-0)
Course Description: Design, analysis, and evaluation of wildlife projects; lab exercises in design and data analysis; preparation and presentation of project proposals.
Prerequisite: (LIFE 320 or LAND 220 or LIFE 220) and (FW 260 or FW 360) and (NR 220) and (MATH 155 or MATH 160) and (STAT 301 or STAT 307).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 373A Travel Abroad : Wildlife Conservation—Baja California Sur Credits: 3 (0-0-3)
Course Description: Study tour of various overseas ecosystems and natural resources conservation programs; discussions with local ecologists/managers.
Prerequisite: None.
Registration Information: Written consent of instructor. Students need a minimum of a 2.500 GPA per Education Abroad standards. Credit allowed for only one of the following: FW 373A, FW 382, or FW 382A.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 375 Field Wildlife Studies Credits: 3 (1-4-0)
Course Description: Field trips to see wildlife management and habitats and to discuss problems and practices with professional ecologists and resources managers.
Prerequisite: (LIFE 320 or LAND 220 or LIFE 220) and (FW 260).
Registration Information: Must register for lecture and laboratory. Required field trips.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FW 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description: Instruction and practice in laboratory instruction in lower-division departmental courses.
Prerequisite: None.
Registration Information: Written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 400 Conservation of Fish in Aquatic Ecosystems Credits: 3 (2-0-1)
Course Description: Ecological processes that create habitat and biotic template for fish in aquatic ecosystems; human effects; strategies for conserving fishes.
Prerequisite: LIFE 320 and FW 300.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 401 Fishery Science Credits: 3 (2-3-0)
Course Description: Theory, philosophy, and applications for study and management of fishery resources.
Prerequisite: (FW 300) and (STAT 301 or STAT 307 or ERHS 307) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Computer literacy. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

FW 402 Fish Culture Credits: 4 (3-2-0)
Course Description: Principles and practices to produce food, bait, and sport fishes.
Prerequisite: FW 300.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 405 Fish Physiology Credits: 3 (2-3-0)
Course Description: Physiological ecology of fish; functional adaptations and adjustments used to cope with environmental and physiological states.
Prerequisite: BZ 214 or FW 300.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both FW 405 and FW 605.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 430 Waterfowl Ecology and Management Credits: 3 (2-3-0)
Course Description: Apply concepts from life history theory, evolutionary ecology, population ecology, community ecology, and wildlife management to become familiar with the ecology and management of North American waterfowl across their migratory life cycles. Labs and field trips will develop practical field skills in waterfowl biology, conservation, and management in addition to data analysis and computing skills.
Prerequisite: FW 370 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Required field trips. Credit not allowed for both FW 430 and FW 481A1.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 455 Principles of Conservation Biology Credits: 3 (3-0-0)
Course Description: Review of efforts to study and conserve biological diversity, focused on fish and wildlife populations.
Prerequisite: (FW 260 and LIFE 320) and (STAT 301 or STAT 307).
Registration Information: Credit allowed for only one of the following: FW 455, FW 555, or NR 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 465 Managing Human-Wildlife Conflicts Credits: 3 (2-2-0)
Course Description: Methods for resolving conflicts caused by wildlife; integrating animal behavior, population dynamics, economics, and human dimensions into solutions.
Prerequisite: FW 260.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 467 Wildlife Disease Ecology Credits: 3 (2-0-1)
Course Description: Ecological, epidemiological, and evolutionary principles of disease in fish and wildlife populations; contemporary issues in disease ecology.
Prerequisite: LIFE 320.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 468 Wild Bird Management Credits: 3 (2-3-0)
Course Description: Ecology and management of game, pest, and rare bird populations and nongame bird communities.
Prerequisite: FW 260.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 469 Conservation and Management of Large Mammals Credits: 3 (3-0-0)
Course Description: Principles of behavior, ecology, population dynamics, and conservation related to large mammals.
Prerequisite: (BZ 330 and FW 260 and LIFE 320) and (STAT 301 or STAT 307).
Registration Information: Required field trips.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 471 Wildlife Data Collection and Analysis Credits: 4 (2-4-0)
Course Description: Analysis methods used in wildlife management and research; adaptive resource management with emphasis on learning through field and computer labs.
Prerequisite: FW 370 and NR 220.
Registration Information: Must register for lecture and laboratory. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 472 Issues in Animal Conservation and Management Credits: 3 (2-0-1)
Course Description: Current and emerging issues in fish and wildlife conservation and management at the state, national, and global scales.
Prerequisite: (FW 260) and (LIFE 320).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FW 473A Travel Abroad: Conserving Desert/Marine Animals Credits: 3 (0-0-3)
Course Description: Ecology and conservation of animals from desert, marine, intertidal, and shore ecosystems and application to problems of animal conservation in an international setting.
Prerequisite: LIFE 320.
Registration Information: Written consent of instructor. Students need a minimum of a 2.5 GPA per Education Abroad standards. Credit allowed for only one of the following: FW 473A, FW 482, or FW 482A.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 475 Conservation Decision Making Credits: 3 (3-0-0)
Course Description: Structured approaches to conservation and management of vertebrates; articulating objectives, developing management options, and predicting outcomes.
Prerequisite: (MATH 155 or MATH 160) and (STAT 301).
Registration Information: Junior or senior standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 477 Wildlife Habitat Use and Management Credits: 3 (1-3-1)
Course Description: Wildlife habitat evaluation, classification, and improvement; analysis of habitat use patterns; planning and implementation of management plans.
Prerequisite: (FW 260) and (NR 319 or NR 322).
Registration Information: Must register for lecture, lab, and recitation. Credit allowed for only one of the following courses: FW 477, FW 577, or FW 677. Required field trips.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 487 Internship Credits: Var[1-6] (0-0-0)
Course Description: Field experience in fish and wildlife management.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 492 Seminar-Wildlife Biology Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 495A Independent Study: Fishery Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: LIFE 320 or FW 104 or NR 220 or LAND 220 or LIFE 220.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 495B Independent Study: Wildlife Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: LAND 220 or LIFE 320 or FW 104 or NR 220 or LIFE 220.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 496A Group Study: Fishery Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: LAND 220 or LIFE 320 or FW 104 or NR 220 or LIFE 220.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 496B Group Study: Wildlife Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: LAND 220 or LIFE 320 or FW 104 or NR 220 or LIFE 220.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 540 Fisheries Ecology Credits: 3 (2-0-1)
Course Description: Population, community, and ecosystem management for fishes and other aquatic organisms in freshwater habitats.
Prerequisite: None.
Registration Information: One course in fishery science; one course in aquatic ecology. Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 544 Ecotoxicology Credits: 3 (2-0-1)
Course Description: Ecological effects of contaminants on populations, communities, and ecosystems.
Prerequisite: (LIFE 320 or LAND 220 or LIFE 220) and (STAT 301 or STAT 307).
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 551 Design of Fish and Wildlife Studies Credits: 3 (2-0-1)
Course Description: Principles, types of studies, and philosophy of science in design of experimental, observational, and sampling studies for wildlife investigations.
Prerequisite: STAT 301 or STAT 307 or ERHS 307.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FW 552 Applied Sampling for Wildlife/Fish Studies Credits: 3 (2-0-1)
Course Description: Survey sampling theory and techniques, including distance sampling, with emphasis on wildlife and fish studies.
Prerequisite: STAT 301 or STAT 307.
Registration Information: Must register for lecture and recitation. Graduate standing. Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 553 Adaptive Fish and Wildlife Management Credits: 3 (2-2-0)
Course Description: Formal approaches to making management decisions about wildlife and fish populations, using tools of decision analysis.
Prerequisite: (FW 104 or FW 260 or FW 555 or LIFE 320 or NR 300) and (STAT 301 or STAT 307).
Registration Information: Graduate standing. Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 555 Conservation Biology Credits: 3 (2-0-1)
Course Description: Ecological factors in conservation of biological diversity.
Prerequisite: (LIFE 320 or LAND 220 or LIFE 220) and (STAT 307).
Registration Information: Must register for lecture and recitation. Credit allowed for only one of the following: FW 455, FW 555, or NR 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 556 Leopold's Ethic for Wildlife and Land Credits: 3 (0-0-3)
Course Description: Philosophy, art, history, and science of wildlife and land management from writings of Aldo Leopold.
Prerequisite: None.
Registration Information: Bachelor's degree, or any level ecology or wildlife management course, or written consent of instructor. Offered online only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FW 557 Wildlife Habitat Management on Private Land Credits: 3 (0-0-3)
Course Description: Management of cover, food, and water for wildlife and fish in the Great Plains. Emphasis on practices compatible with other uses of private land.
Prerequisite: None.
Registration Information: Bachelor's degree, or any level ecology or wildlife management course, or written consent of instructor. Offered online only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FW 558 Conservation Genetics of Wild Populations Credits: 3 (2-0-1)
Course Description: Examine the background, concepts, and tools required to determine how genetic data can be used to evaluate wild vertebrate species and communities of conservation concern.
Prerequisite: (BZ 350 or LIFE 201A or LIFE 201B) and (LIFE 220 or LIFE 320) and (STAT 301 or STAT 307).
Registration Information: Graduate standing. Written consent of instructor. Must register for lecture and recitation. Offered as an online course only. Admission to a graduate program in Fish, Wildlife, and Conservation Biology.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 561A Advanced Topics: Fishery Biology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 561B Advanced Topics: Wildlife Biology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 561C Advanced Topics: Population Analysis Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 561E Advanced Topics: Vertebrate Management Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 562 Fish and Wildlife Population Dynamics Credits: 3 (2-0-1)
Course Description: Factors that influence population abundance and density, and how they change over time. It blends ecology, evolution, genetics, and mathematical modeling into a unified field. Concentrate on understanding single-species population growth models, including metapopulation concepts, as well as multi-species topics such as predation and competition.
Prerequisite: (MATH 155 or MATH 160) and (LIFE 220 or LIFE 320) and (STAT 301 or STAT 307).
Registration Information: Graduate standing. Must register for lecture and recitation. Written consent of instructor. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 563 Analyses for Managing Wild Populations Credits: 3 (2-0-1)
Course Description: Design of wildlife population studies and the analysis of mark-recapture and occupancy data. Discussion of scientific philosophy, statistical theory, sampling design, and the application of the latest quantitative approaches to the analysis of population data.
Prerequisite: FW 260 and STAT 301.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Must register for lecture and recitation. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FW 564 Science of Managing Human-Wildlife Conflicts Credits: 3 (2-0-1)
Course Description: Human-wildlife conflicts, and in particular, damage caused by wildlife, often termed wildlife damage. Topics such as animal behaviors, population dynamics, public attitudes, economics, and effective strategies in understanding the various types of conflicts and how to manage them.
Prerequisite: BZ 110 or LIFE 102 or LIFE 103 or LIFE 220 or LIFE 320 or FW 100 to 499 - at least 3 credits.
Registration Information: Must register for lecture and recitation. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 567 Wildlife Disease Ecology Credits: 3 (2-0-1)
Course Description: Ecological, epidemiological, and evolutionary principles of disease in fish and wildlife populations; contemporary issues in disease ecology.
Prerequisite: (LIFE 320) and (STAT 301 or STAT 307).
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 568 Sustaining River Ecosystems in Changing World Credits: 3 (3-0-0)
Also Offered As: BZ 568.
Course Description: Applying the concepts and principles of freshwater ecosystem structure and function to develop a multidisciplinary and integrated understanding of the approaches and methods for restoring and sustainably managing these systems in the face of increasing human demands and rapid climate change.
Prerequisite: None.
Registration Information: Senior standing. Credit allowed for only one of the following: BZ 568, BZ 680A2, FW 568, and FW 680A2.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 573 Travel Abroad-Wildlife Ecology/Conservation Credits: 3 (3-0-0)
Course Description: Study tour of various overseas ecosystems and natural resources conservation programs; discussions with local ecologists/managers.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FW 575 Wildlife Habitat Evaluation for Educators Credits: 3 (0-0-3)
Course Description: Teachers or leaders implement wildlife habitat evaluation procedures in classroom or community programs and evaluate performance of students.
Prerequisite: None.
Registration Information: Graduate standing. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FW 576 Wildlife Policy, Administration, and Law Credits: 3 (0-0-3)
Course Description: Evolution of policy affecting wildlife and humans using historical, current, philosophical, legal, and administrative constructs.
Prerequisite: None.
Registration Information: Required: one course in political science; one course in natural resources management. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FW 577 Management of Wildlife Habitat Credits: 3 (2-0-1)
Course Description: Identifying and implementing management techniques for evaluating, classifying , and improving wildlife habitat to sustain and conserve populations.
Prerequisite: (FW 260) and (GR 311 or GR 323 or NR 323 or GR 420 or NR 319 or NR 322 or NR 422 or SOCR 377).
Registration Information: Written consent of instructor. Must register for lecture and recitation. Offered as an online course only. Admission to graduate program in Fish, Wildlife, and Conservation Biology. Credit allowed for only one of the following courses: FW 477, FW 577, or FW 677.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 578 Conservation Decision Analysis Credits: 3 (2-0-1)
Course Description: Identifying decision making processes and adaptive management techniques used in conservation; consideration of objectives, options and outcomes.
Prerequisite: (MATH 155 or MATH 160) and (STAT 301).
Registration Information: Offered as an online course only. Written consent of instructor. Must register for lecture and recitation. Admission to a graduate program in Fish, Wildlife, and Conservation Biology.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 605 Advanced Physiological Ecology of Fishes Credits: 4 (2-3-1)
Course Description: Physiological ecology of fishes; functional adaptations and adjustments used to cope with environmental and physiological states.
Prerequisite: FW 300.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, lab, and recitation. Credit not allowed for both FW 605 and FW 405.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 662 Wildlife Population Dynamics Credits: 3 (1-2-1)
Course Description: Population models; experimental evidence and analysis of theories of population regulation; case studies.
Prerequisite: (FW 260 and STAT 301) and (MATH 155 or MATH 160).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, laboratory and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 663 Sampling & Analysis Vertebrate Populations Credits: 5 (3-3-1)
Course Description: Sampling and analysis of fish and wildlife populations, including survival estimation, capture-recapture sampling, and transect sampling.
Prerequisite: FW 260 and STAT 301.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, lab, and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 673 Hierarchical Modeling in Ecology Credits: 3 (3-0-0)
Also Offered As: STAT 673.
Course Description: Hierarchical ecological modeling using common forms of data in fish and wildlife studies and emphasizing spatial and temporal aspects of analysis.
Prerequisite: ESS 575 or STAT 420.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both FW 673 and STAT 673.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 677 Wildlife Habitat Management Credits: 3 (1-3-1)
Course Description: Habitat models; vegetation manipulation and monitoring for wildlife; extended field trips.
Prerequisite: FW 260.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, lab, and recitation. Credit allowed for only one of the following courses: FW 477, FW 577, or FW 677. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 684 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 692 Seminar: Fish, Wildlife, and Conservation Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 695A Independent Study: Fishery Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 695B Independent Study: Wildlife Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 696 Group Study: Fish, Wildlife, Conservation Biology Credits: Var[1-18] (0-0-0)
Course Description: Group study projects on topics in fish, wildlife, and conservation biology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 698A Research: Fishery Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 698B Research: Wildlife Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 699A Thesis: Fishery Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 699B Thesis: Wildlife Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 798A Research: Fishery Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 798B Research: Wildlife Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 799A Dissertation: Fishery Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 799B Dissertation: Wildlife Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Food Sci+Human Nutrition-FSHN (FSHN)

Courses

FSHN 125 Food and Nutrition in Health Credits: 2 (2-0-0)
Course Description: Nutritional quality and safety of food related to human health.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

FSHN 150 Survey of Human Nutrition Credits: 3 (3-0-0)
Course Description: Basic nutrition principles and concepts; their application to personal health and interactions with societal and environmental issues.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 192 First Year Seminar Credit: 1 (0-0-1)
Course Description: Facilitate a successful transition to college for new incoming students by emphasizing personal growth and identifying campus resources.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 300 Food Principles and Applications Credits: 3 (3-0-0)
Course Description: Application of food preparation theories to modification and evaluation of food products.
Prerequisite: (CHEM 103 or CHEM 107 or CHEM 111) and (FSHN 150).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 301 Food Principles and Applications Laboratory Credits: 2 (0-6-0)
Course Description: Techniques and manipulative skills for preparation and evaluation of standard and modified food products.
Prerequisite: FSHN 300, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

FSHN 350 Human Nutrition Credits: 3 (3-0-0)
Course Description: Metabolism of macro and micronutrients; physiologic basis underlying dietary recommendations for human health. Nutrients, dietary requirements for physical well-being; evaluation of various diets.
Prerequisite: (BMS 300, may be taken concurrently) and (CHEM 245 or CHEM 341).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 360 Nutrition Assessment Credits: 2 (2-0-0)
Course Description: Principles of anthropometric, dietary, and biochemical assessment of nutritional status.
Prerequisite: FSHN 350.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 386A Practicum: Food Service Management Credits: 2 (0-0-4)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 386B Practicum: Gerontology Credits: 3 (0-0-9)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 386C Practicum: School Nutrition Credits: 3 (0-0-9)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 392 Dietetic Practice Seminar Credit: 1 (0-0-1)
Course Description: Pre-professional skills to prepare students for the pursuit of careers in the field of dietetics.
Prerequisite: (CHEM 107 with a minimum grade of B and CHEM 108 with a minimum grade of B or CHEM 111 with a minimum grade of B and CHEM 112 with a minimum grade of B and CHEM 113 with a minimum grade of B) and (LIFE 102 with a minimum grade of B or BZ 111 with a minimum grade of B and BZ 110 with a minimum grade of B) and (BMS 300 with a minimum grade of B and BMS 302 with a minimum grade of B and FSHN 150 with a minimum grade of B and FSHN 300 with a minimum grade of B and FSHN 301 with a minimum grade of B).
Registration Information: 3.000 overall GPA.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 428 Nutrition Teaching and Counseling Techniques Credits: 3 (3-0-0)
Course Description: Objectives, principles, and organization of subject matter for nutrition education and counseling.
Prerequisite: FSHN 350.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 444 Nutrition and Aging Credit: 1 (1-0-0)
Course Description: Effect of aging on nutrient needs and impact of nutrition on successful aging and health in the elderly.
Prerequisite: BZ 101 or BZ 110 or LIFE 102.
Registration Information: Credit not allowed for both FSHN 444 and FSHN 459. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 445 Early Childhood Health, Safety, and Nutrition Credits: 3 (0-0-3)
Also Offered As: HDFS 445.
Course Description: Planning, promoting and maintaining healthy lifestyle and safe learning environment for preschool children.
Prerequisite: HDFS 310.
Registration Information: Completion of 60 credits. Offered as an online course only. Credit not allowed for both FSHN 445 and HDFS 445.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 450 Medical Nutrition Therapy Credits: 5 (4-2-0)
Course Description: Use of nutrition therapy in the treatment of acute conditions and chronic disease states.
Prerequisite: BMS 300 and FSHN 350.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

FSHN 451 Community Nutrition Credits: 3 (3-0-0)
Course Description: Influences on nutritional status, assessment of nutrition problems and needs, planning and evaluation of nutrition intervention programs.
Prerequisite: FSHN 350, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 455 Food Systems: Impact on Health/Food Security Credits: 2 (1-0-1)
Course Description: Conventional and alternative food systems and their impact on nutrition, health, food security, and the environment.
Prerequisite: FSHN 350 or FTEC 447.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 459 Nutrition in the Life Cycle Credits: 3 (3-0-0)
Course Description: Nutritional aspects associated with each phase of human life cycle including pregnancy, infancy, childhood, adolescence, and early and late adulthood.
Prerequisite: FSHN 350.
Registration Information: Credit not allowed for both FSHN 459 and FSHN 444.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 470 Integrative Nutrition and Metabolism Credits: 3 (3-0-0)
Course Description: Influence of nutrition on roles and action of hormones and gene expression on metabolism.
Prerequisite: BC 351 and FSHN 350.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 486A Practicum: Counseling Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

FSHN 486B Practicum: Nutrition Credits: Var[1-3] (0-0-0)
Course Description: Supervised off-campus experience in nutrition.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 486C Practicum: Food Service Management Credits: Var[1-3] (0-0-0)
Course Description: Supervised off-campus experience in food service management.
Prerequisite: RRM 310.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 492 Seminar in Dietetics and Nutrition Credits: 2 (0-0-2)
Course Description: Capstone seminar in nutrition and dietetics.
Prerequisite: None.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 495A Independent Study: Nutrition Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 495B Independent Study: Food Service Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 496A Group Study in Dietetics and Nutrition: Energy, Weight Management Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496B Group Study in Dietetics and Nutrition: Sustainable Food Issues Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496C Group Study in Dietetics and Nutrition: Nutrition and Chronic Disease Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496D Group Study in Dietetics and Nutrition: Nutrition for Athletes Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496E Group Study in Dietetics and Nutrition: Food Safety Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496F Group Study in Dietetics and Nutrition: Service Marketing Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496G Group Study in Dietetics and Nutrition: Food and Consumer Issues Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496H Group Study in Dietetics and Nutrition: Public Health and Policy Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496I Group Study in Dietetics and Nutrition: Special Topics Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 500 Food Systems, Nutrition, and Food Security Credits: 2 (2-0-0)
Course Description: Global and local food systems and their potential influence on nutrition and food security.
Prerequisite: FSHN 350.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 501 Research Methods in Dietetics Credits: 3 (0-0-3)
Course Description: Testing and generating theory. Methods for collecting and analyzing quantitative and qualitative data, critique of research and proposal development.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 503 Issues in Dietetics Practice Credits: 3 (0-0-3)
Course Description: Environment in which foodservice, hospitality, and healthcare organizations operate; impact of change on hospitality and healthcare organizations.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 504 Micronutrients Credits: 3 (0-0-3)
Course Description: Coordination of structure and function related to metabolic needs as a basis for evaluating micronutrient needs in normal or altered metabolic states.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 505 Nutrition and Physical Activity in Aging Credits: 3 (0-0-3)
Course Description: Physiological changes during aging and impacts on health and disease; focus on successful aging with emphasis on physical activity and nutrition.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 506 Nutrition and Human Performance Credits: 3 (0-0-3)
Course Description: Relationship of specific nutrients and optimal nutrition to physical efficiency and performance.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 507 Nutrition Education in the Community Credits: 3 (0-0-3)
Course Description: Principles and practices of teaching individuals and groups to translate nutrition knowledge into action. Emphasis on research and evaluation.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 508 International Nutrition and World Hunger Credits: 3 (0-0-3)
Course Description: Magnitude, causes, and nature of hunger and under-nurturing; programs and policies to alleviate hunger.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 509 Nutrition Counseling and Education Methods Credits: 3 (0-0-3)
Course Description: Application of learning theories and nutrition counseling with individuals and groups in the community and clinical settings.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 510 Pediatric Clinical Nutrition Credits: 3 (0-0-3)
Course Description: Physiological, biochemical and nutritional aspects of disease processes relevant to infants and children up to 18 years of age.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 511 Maternal and Child Nutrition Credits: 3 (0-0-3)
Course Description: Behavioral, physiological and public health issues impacting dietary and nutritional factors that support growth and development.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics; written permission of instructor. Offered as an online course only.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 512 Nutritional Aspects of Oncology Credits: 3 (0-0-3)
Course Description: Relationships between nutrition and cancer including the role of nutrition in specific cancers, cancer prevention and patient management.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 520 Advanced Medical Nutrition Therapy Credits: 3 (3-0-0)
Course Description: Role of nutrition in etiology and treatment of selected disorders.
Prerequisite: FSHN 550 or FSHN 551.
Registration Information: FSHN 550 or FSHN 551 or admission to GP-IDEA program in Dietetics. Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 525 Nutrition Education Theories and Practice Credits: 2 (2-0-0)
Course Description: Examination of current theories, skills, and models used in nutrition education programs as preparation for research and practice.
Prerequisite: FSHN 350.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 530 Principles of Nutrition Science & Metabolism Credits: 3 (3-0-0)
Course Description: Science of nutrition, including the ingestion and digestion of food, the absorption, transport, and metabolism of macro and micronutrients, energy balance and bodyweight regulation, and relationships to health and risk of disease. Structure, functional roles, and metabolic regulation of carbohydrates, lipids, and proteins during conditions of fasting, feeding, and exercise. The role of vitamins and minerals in cellular and whole body homeostasis.
Prerequisite: BMS 300 or CHEM 245 or LIFE 102.
Registration Information: Graduate standing. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 531 Diet, Nutrition, and Chronic Disease Credits: 3 (2-0-1)
Course Description: Principles related to the role of diet and nutrition in obesity, digestive health, type 2 diabetes, cardiovascular disease, and cancer with a focus on current evidence and best practices for prevention.
Prerequisite: FSHN 530.
Registration Information: Graduate standing. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 532 Emerging Issues in Nutrition Credits: 3 (2-0-1)
Course Description: Principles related to emerging areas of nutrition and their role in health promotion. Focus is on current research related to micronutrients and supplements, sports nutrition, food safety and technology, food systems, nutrition and aging, and nutrigenomics.
Prerequisite: FSHN 530.
Registration Information: Graduate standing. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 540 Nutrigenomics and Advanced Lipid Metabolism Credits: 3 (0-0-3)
Course Description: How nutrients regulate gene expressions (nutrigenetics) and how genotype influences an individual's nutrient requirements (nutrigenomics).
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in Dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 550 Advanced Nutritional Science I Credits: 3 (3-0-0)
Course Description: Protein, vitamin, mineral metabolism; human studies, animal models.
Prerequisite: (BC 351 or BC 403) and (FSHN 350).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 551 Advanced Nutritional Science II Credits: 3 (3-0-0)
Course Description: Carbohydrate, lipid, energy metabolism; human studies, animal models.
Prerequisite: (BC 351 or BC 403) and (FSHN 350).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 586 Practicum-Advanced Clinical Nutrition Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 587A Internship: Clinical Dietetics Credits: 6 (0-18-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 587B Internship: Community Dietetics Credits: 6 (0-18-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 587C Internship: Food Service Management Credits: 6 (0-18-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 590 Workshop Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 600 Responsible Conduct of Research Credit: 1 (1-0-0)
Course Description: Responsible conduct of research (RCR) including ethical frameworks, publication practices, human and animal research and data management. Case studies and professional codes of conduct will be used to explore conduct of ethical research in humans and animals and how to avoid and manage research misconduct.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Credit not allowed for both FSHN 580A2 and FSHN 600.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 620 Community Nutrition Planning and Evaluation Credits: 3 (2-0-1)
Course Description: Community nutrition assessment; nutrition program planning and evaluation, nutrition policy analysis.
Prerequisite: FSHN 350.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 628 Advanced Nutrition Counseling Techniques Credits: 2 (2-0-0)
Course Description: Principles, strategies and techniques for interviewing, assessing and providing nutrition counseling in community settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 630 Integrative Exercise and Nutrition Metabolism Credits: 3 (3-0-0)
Also Offered As: HES 630.
Course Description: Advances in integrative human metabolism under conditions of changing energy flux.
Prerequisite: HES 610 and FSHN 551.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both FSHN 630 and HES 630.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 640 Selected Topics in Nutritional Epidemiology Credits: 2 (2-0-0)
Course Description: Overview of topics in nutritional epidemiology; study design, interpretation of findings, linkage of data to action.
Prerequisite: (FSHN 350) and (STAT 301 or STAT 307 or ERHS 307).
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 650A Recent Developments in Human Nutrition: Protein, Vitamins, and Minerals Credits: 2 (2-0-0)
Course Description: Appraisal of literature on human nutritional status.
Prerequisite: FSHN 550.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 650B Recent Developments in Human Nutrition: Carbohydrates, Lipids, and Energy Credits: 2 (2-0-0)
Course Description: Appraisal of literature on human nutritional status.
Prerequisite: FSHN 551.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 650C Recent Developments in Human Nutrition: Genomic, Proteomics, and Metabolomics Credits: 2 (2-0-0)
Course Description: Appraisal of literature on human nutritional status.
Prerequisite: FSHN 551.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 660 Women's Issues in Lifecycle Nutrition Credits: 2 (2-0-0)
Course Description: Current nutritional issues related to selected stages of the lifecycle compared to normal adult nutritional needs.
Prerequisite: FSHN 459.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 661 International Nutrition Credits: 2 (2-0-0)
Course Description: Roles of technological programs and international agencies in meeting nutritional needs.
Prerequisite: FSHN 350.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 675 Regulation of Energy Intake Credits: 3 (3-0-0)
Course Description: Central and peripheral mechanisms controlling energy intake with emphasis on humans. Current theories, experimental approaches, and new research.
Prerequisite: FSHN 350 and PSY 454.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 686A Practicum: Counseling Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: FSHN 520.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

FSHN 686B Practicum: Nutrition Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 686C Practicum: Food Services Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 692 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 695A Independent Study: Food Science Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 695B Independent Study: Nutrition Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 695C Independent Study: Food Service Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 696A Group Study: Food Science Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 696B Group Study: Nutrition Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 696C Group Study: Dietetics Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 696D Group Study: Exercise and Nutrition Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 698A Research: Dietetics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the GP-IDEA program in Dietetics. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 698B Research: Nutrition Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 698C Research: Food Service Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 699B Thesis: Nutrition Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 699C Thesis: Food Service Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 700 Cellular Nutrition Credits: 2 (2-0-0)
Course Description: Essential nutrient requirements of cells and organs.
Prerequisite: FSHN 550 and FSHN 551 or BC 403 and BMS 501.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 750 Nutritional Basis of Chronic Disease Credits: 2 (2-0-0)
Course Description: Role of nutrition in the pathogenesis and prevention of specific chronic diseases.
Prerequisite: FSHN 550 and FSHN 551.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 792 Seminar-Research Topics in Nutrition Credit: 1 (0-0-1)
Course Description: Ph.D. seminar in literature review.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 796 Group Study Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 799 Dissertation-Nutrition Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Food Technology-FTEC (FTEC)

Courses

FTEC 110 Food-From Farm to Table Credits: 3 (3-0-0)
Course Description: Commercial food processing, related to preservation and enhancing of food quality, safety, and value.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

FTEC 210 Science of Food Fermentation Credits: 3 (2-2-0)
Course Description: Science, history, culture, gastronomy, safety, health, and nutrition aspects of fermented foods and beverages.
Prerequisite: (CHEM 107 or CHEM 111) and (LIFE 102 or BZ 111 and BZ 110).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

FTEC 350 Fermentation Microbiology Credits: 2 (2-0-0)
Course Description: Integration of fermentation science, microbiology, and chemistry.
Prerequisite: BC 351, may be taken concurrently and MIP 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 351 Fermentation Microbiology Laboratory Credits: 2 (0-4-0)
Course Description: Introduction to fermentation microbiological practices with relevance to production, quality control, and food safety in the food and beverage industry.
Prerequisite: (FTEC 210) and (LIFE 205, may be taken concurrently or MIP 300).
Restriction: Must be a: Undergraduate.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

FTEC 360 Brewing Processes Credits: 4 (3-0-1)
Course Description: Influence of raw material selection, malting, mashing, boiling, and fermentation on quality of beverages.
Prerequisite: CHEM 245 and FTEC 210, may be taken concurrently.
Registration Information: Must register for lecture and recitation. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 375 Introduction to Fermentation Unit Operations Credits: 4 (3-0-1)
Course Description: Principles related to processes and equipment design in fermented food and beverage industries. Survey of unit operations.
Prerequisite: (FTEC 360) and (PH 121 or PH 141).
Registration Information: Must register for lecture and recitation. Required field trips. Credit not allowed for both FTEC 375 and FTEC 480A2.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 400 Food Safety Credits: 3 (3-0-0)
Course Description: Safety of human food emphasizing safe production, processing, marketing, preparation, consumption, and regulations.
Prerequisite: CHEM 107 or CHEM 111.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

FTEC 422 Brewing Science I Credits: 4 (3-3-0)
Course Description: Assessment, quantification, and control of various aspects of commercial beer production.
Prerequisite: FTEC 360.
Registration Information: Must register for lecture and laboratory. Required field trips. 21 years of age.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

FTEC 430 Sensory Evaluation of Fermented Products Credits: 2 (1-2-0)
Course Description: Application of sensory evaluation techniques to the study of fermented foods.
Prerequisite: FSHN 301 or FTEC 210.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

FTEC 440 Packaging Technology Credits: 2 (2-0-0)
Course Description: Science, technology, and management of packaging.
Prerequisite: FTEC 360.
Registration Information: Required field trips.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 447 Food Chemistry Credits: 2 (2-0-0)
Also Offered As: ANEQ 447.
Course Description: Chemistry of food constituents as related to food quality and stability.
Prerequisite: CHEM 241 or CHEM 245 or CHEM 345.
Registration Information: Credit not allowed for both ANEQ 447 and FTEC 447.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 460 Brewing Science II Credits: 4 (3-3-0)
Course Description: Applications of scientific and technical aspects of malting, brewing, fermenting, finishing, packaging, and evaluating of fermented beverages.
Prerequisite: FTEC 422.
Registration Information: Must register for lecture and laboratory. Required field trips. 21 years of age.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

FTEC 465 Food Production Operations Credits: 3 (3-0-0)
Course Description: Production, operation, and management techniques used in the food industry at company, local and international levels.
Prerequisite: FTEC 210.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 478 Phytochemicals and Probiotics for Health Credits: 2 (2-0-0)
Course Description: Examination of phytochemistry and probiotic organisms important in human health.
Prerequisite: BC 351.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 487 Internship Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FTEC 492 Seminar: Fermentation Science and Food Safety Credits: 2 (1-0-1)
Course Description: Capstone seminar in fermentation science and food safety.
Prerequisite: None.
Registration Information: Senior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FTEC 496A Group Study Fermentation Science: Current Issues Credit: 1 (0-0-1)
Course Description:
Prerequisite: FSHN 350 or FTEC 360.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 496B Group Study Fermentation Science: Functional Foods in Health Credit: 1 (0-0-1)
Course Description:
Prerequisite: FSHN 350 or FTEC 360.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 570 Food Product Development Credits: 2 (2-0-0)
Course Description: Food product concepts, feasibility, and evaluation.
Prerequisite: FTEC 447.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 572 Food Biotechnology Credits: 2 (2-0-0)
Course Description: Interrelationships among microorganisms, food processing methods, advances in biotechnology and food quality, spoilage, shelf-life and safety.
Prerequisite: MIP 334.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 574 Current Issues in Food Safety Credits: 2 (2-0-0)
Course Description: Current food safety issues from field to table; microbiological, consumer, processing, and agricultural issues.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 576 Cereal Science Credits: 2 (2-0-0)
Course Description: Chemistry and functionality of cereal grain components and their importance in human nutrition.
Prerequisite: FTEC 447.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 578 Phytochemicals and Probiotics for Health Credits: 3 (2-0-1)
Also Offered As: HORT 578.
Course Description: Examination of phytochemicals and probiotic organisms important in human health.
Prerequisite: BC 351.
Registration Information: Senior standing. Must register for lecture and recitation. Credit not allowed for both FTEC 578 and HORT 578.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FTEC 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FTEC 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Forest & Rangeland Stewrdshp-F (F)

Courses

F 224 Wildland Fire Measurements Credit: 1 (0-2-0)
Course Description: Wildland fire control and use measurements: fuels, weather, topography, fire behavior, and fire ecology.
Prerequisite: None.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

F 230 Forestry Field Measurements Credits: 2 (0-4-0)
Course Description: Develop field skills using maps, compasses, and aerial photos; photo interpretation; tree and stand measurements; stand volume and value estimates.
Prerequisite: None.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

F 310 Forest and Rangeland Ecogeography Credits: 3 (2-2-0)
Also Offered As: RS 310.
Course Description: Distribution of wildland plant communities and identification of important grasses, forbs, shrubs, and trees common in North America.
Prerequisite: BZ 101 or BZ 104 or BZ 110 or BZ 120 or LIFE 102.
Registration Information: Must have concurrent registration in F 312. Must register for lecture and laboratory. Credit not allowed for both F 310 and RS 310.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

F 311 Forest Ecology Credits: 3 (3-0-0)
Course Description: Relationships of ecological concepts to the dynamics of forest ecosystems.
Prerequisite: LIFE 320 or LAND 220 or LIFE 220.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

F 312 Dendrology Lab Credit: 1 (0-2-0)
Course Description: Identification of characteristic trees common to North American forests.
Prerequisite: None.
Registration Information: Must have concurrent registration in F 310.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

F 321 Forest Biometry Credits: 3 (2-2-0)
Course Description: Measurement and estimation of timber in logs, trees, and stands. Sampling with varying probabilities.
Prerequisite: (NR 220 and F 230) and (STAT 201 or STAT 301) and (MATH 141 or MATH 155).
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

F 322 Economics of the Forest Environment Credits: 3 (3-0-0)
Course Description: Economic principles and techniques applied to forested environments.
Prerequisite: AREC 202 or ECON 202 or ECON 240 or AREC 240.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

F 324 Fire Effects and Adaptations Credits: 3 (3-0-0)
Course Description: Introduction to fire ecology including fire history, ecosystem effects, and organism responses.
Prerequisite: LIFE 320 or LAND 220 or LIFE 220.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

F 325 Silviculture Credits: 3 (3-0-0)
Course Description: Principles of silviculture and their application to major forest types of United States.
Prerequisite: F 230 and F 311 and NR 220.
Registration Information: Credit not allowed for both F 325 and NR 326.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

F 326 Wildland Fire Behavior and Management Credits: 3 (3-0-0)
Course Description: Physical and managerial principles influencing fire, how fires shape our forests and approaches used to manage wildland fire.
Prerequisite: LAND 220 or LIFE 220 or LIFE 320.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

F 330 Timber Harvesting and the Environment Credits: 3 (2-2-0)
Course Description: Principles of timber harvesting and effects of logging on the environment.
Prerequisite: F 230 or F 321.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

F 331 Wood Products in Society Credits: 3 (2-2-0)
Course Description: Role of wood products in society; spectrum of wood products; some field trips.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

F 421 Forest Stand Management Credits: 4 (3-3-0)
Course Description: Forest management plan preparation: forest condition and health assessment; evaluation of silvicultural treatments; implementation and monitoring.
Prerequisite: F 230 and F 321 and F 322 and F 325.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

F 422 Quantitative Methods in Forest Management Credits: 3 (2-2-0)
Course Description: Design and analysis of optimization and nonoptimization models in forest managerial operations.
Prerequisite: F 321 and F 322.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

F 425 Advanced Wildland Fire Behavior and Management Credits: 3 (3-0-0)
Course Description: Advanced strategies, tools, and techniques for wildland fire management: prediction, prevention, suppression, and use for resource benefit.
Prerequisite: F 326 and NR 319.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

F 430 Forestry Field Practices Credits: 3 (1-4-0)
Course Description: Forestry field course, S212 saw certification, collect stand inventory data, develop and implant stand prescription, and harvest and process trees.
Prerequisite: F 330 and F 421.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

F 466 Urban and Community Forestry Credits: 3 (3-0-0)
Also Offered As: HORT 466.
Course Description: Policies and management of publicly and privately owned community forests in urbanized areas.
Prerequisite: F 310 or RS 310 or HORT 221.
Registration Information: Credit not allowed for both F 466 and HORT 466.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

F 487 Professional Forestry Internship Credits: Var[3-12] (0-0-0)
Course Description: Professional-level field experience with forestry organization.
Prerequisite: None.
Registration Information: Written consent of department chair.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

F 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

F 510 Ecophysiology of Trees Credits: 3 (2-3-0)
Course Description: Environmental factors affecting physiology of woody plants; emphasis on water relations in trees and importance of water in physiological processes.
Prerequisite: BZ 440.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

F 520 Advanced Quantitative Methods in Forestry I Credits: 3 (3-0-0)
Course Description: Design and analysis of optimization models in forest management operations: linear, goal, and dynamic programming.
Prerequisite: F 322 and MATH 160.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

F 521 Advanced Quantitative Methods in Forestry II Credits: 3 (2-2-0)
Course Description: Analysis of forest inventory information; dynamic and stochastic models oriented to decision making and research in forestry.
Prerequisite: F 520.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

F 522 Advanced Forest Economics Credits: 3 (3-0-0)
Course Description: Analysis of forestry issues: financial maturity, management intensity, federal policy, taxation, natural environments, and silviculture.
Prerequisite: ECON 306.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

F 524 Forest Fire Meteorology and Behavior Credits: 3 (2-2-0)
Course Description: Effects of atmospheric processes on wild and prescribed fires; interrelationships of weather, fuels, and topography on forest and range fires.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

F 525 Silvicultural Practices Credits: 4 (3-0-1)
Course Description: Comprehensive coverage of silvicultural practices as applied in US forestry.
Prerequisite: F 311.
Registration Information: Must register for lecture and recitation. Credit not allowed for both F 525 and F 526.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

F 526 Multiple Resources Silviculture Credits: 3 (3-0-0)
Course Description: Concepts and techniques of silviculture and their application to forest ecology to meet a wide range of desired conditions and resource objectives. Develops knowledge of ecological applications directed at the management of forests with multiple considerations, including wildlife, recreation, forest health, and timber production.
Prerequisite: F 311 or LIFE 320 or NR 565 or NR 578.
Registration Information: Offered as an online course only. Credit allowed for only one of the following: F 525, F 526, or F 581A3.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

F 540 Fuels, Vegetation, and Fire Management Credits: 3 (2-3-0)
Course Description: Develop, test and display the impact of alternative fuels and vegetation treatments on vegetation development, fuels and fire behavior.
Prerequisite: None.
Registration Information: Admission to the Continuing Education in Fuels Management program through the Office of Conference Services.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

F 571 Applied Forest Ecology Credits: 2 (2-0-0)
Course Description: Concepts and theory of stand dynamics in relation to advanced ecological concepts within the Rocky Mountain Region and Intermountain West and applications of these concepts to natural disturbance-based management.
Prerequisite: (LAND 220 or LIFE 220 or LIFE 320) and (F 311).
Restriction: Must be a: Graduate.
Registration Information: Bachelor's degree required. Offered as an online course only.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

F 572 Advanced Silviculture Practices Credits: 3 (3-0-0)
Course Description: Application of forest ecology principles and silvicultural techniques to meet a wide range of desired conditions and resource objectives.
Prerequisite: F 325.
Restriction: Must be a: Graduate.
Registration Information: Bachelor's degree required. Offered as an online course only.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

F 574 Climate Adaptive Forest Management Credit: 1 (1-0-0)
Course Description: Application of climate science and adaptive silviculture strategies to real-world forest management scenarios.
Prerequisite: F 325.
Restriction: Must be a: Graduate.
Registration Information: Bachelor's degree required. This is a partial semester course. Offered as an online course only.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

F 575 Monitoring for Advanced Silviculture Credits: 2 (2-0-0)
Course Description: Best practices and principles for evaluating forest management effectiveness at various scales across the landscape.
Prerequisite: F 230 and F 421.
Restriction: Must be a: Graduate.
Registration Information: Bachelor's degree required. Offered as an online course only.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

F 576 Advanced Silviculture Capstone Credits: 3 (3-0-0)
Course Description: Application of ecological principles, climate change science, and regional silvicultural principles to the management of a local forest stand.
Prerequisite: (F 572) and (F 325).
Restriction: Must be a: Graduate.
Registration Information: Bachelor's degree required. Offered as an online course only.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

F 592 Advanced Silviculture Seminar Credit: 1 (0-0-1)
Course Description: Forestry professionals and faculty present different aspects of advanced silviculture skills to prepare students for the rigor of online, graduate-level courses and to create a plan and portfolio for their final project at the culmination of the certificate.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Bachelor's degree required. This is a partial semester course. Offered as an online course only.
Term Offered: Fall (odd years).
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

F 593 Seminar-Fire Science Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

F 610 Advanced Forest Ecology Credits: 3 (1-0-2)
Course Description: Patterns of tree mortality and their consequences for ecological communities, disturbance regimes, and ecosystem processes. The literature included is diverse ranging from ecophysiology to dendroecology to climate science, and the goal is to integrate this diverse literature to understand the ecological consequences of climate variability on forest ecosystems of the southern Rocky Mountains and globally.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: At least one undergraduate or graduate course in ecology. Must register for lecture and recitation. Required field trips. Credit not allowed for both F 610 and F 680A1.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

F 624 Fire Ecology Credits: 3 (3-0-0)
Course Description: Fire in forest and range ecosystems; principles and techniques for evaluating fire effects on vegetation, soils, watersheds, and wildlife.
Prerequisite: ECOL 505 or F 310 or F 311 or LIFE 320 or NR 565 or NR 578 or RS 300 or RS 310 or RS 452.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

F 625 Ecology of Forest Production Credits: 3 (3-0-0)
Also Offered As: ESS 625.
Course Description: Develops student expertise in understanding carbon and nutrient flows in forests.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have completed one 300-level course in ECOL. Credit not allowed for both F 625 and ESS 625. Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

F 693 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

F 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

F 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

F 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

F 721 Forest Policy Credits: 3 (3-0-0)
Course Description: Policies and institutions affecting management of forest lands in U.S.
Prerequisite: NR 567.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

F 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

F 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

General English,Any Level-GEAL (GEAL)

Courses

GEAL 8400 English as a Second Language - General English Language Skills Workshop CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Through writing assignments, daily homework, class discussions, presentation skills practice, and the use of technology (such as Microsoft Word, Prezi, PowerPoint, and the Internet), learners will create one integrated-skills project to practice: researching and presenting information on topics from the Everyday English and Cultural Issues courses.
Prerequisite: None.
Restrictions: Must major/minor in: INTO General English. Must be a: Self Improvement.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

GEAL 8410 English as a Second Language – General English Everyday English CEUs: 7.5 (7.5-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Students will learn the vocabulary and grammar needed to communicate, orally or in writing, in common, everyday situations.
Prerequisite: None.
Restrictions: Must major/minor in: INTO General English. Must be a: Self Improvement.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

GEAL 8420 English as a Second Language – General English Cultural Issues CEUs: 7.5 (7.5-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers.Through reading and listening passages, students will learn the vocabulary and grammar needed to discuss and write about various cultural topics from around the world.
Prerequisite: None.
Restrictions: Must major/minor in: INTO General English. Must be a: Self Improvement.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

GEAL 8430 English as a Second Language – Special Academic English Listening and Speaking CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Students will improve listening comprehension using texts; practice communicating with increasing fluency and accuracy about ideas from course themes.
Prerequisite: None.
Restrictions: Must major/minor in: INTO General English. Must be a: Self Improvement.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

GEAL 8432 English as a Second Language – Special Academic English Reading and Writing CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Students will improve reading comprehension using texts; complete well-developed and organized writing tasks about ideas from course themes.
Prerequisite: None.
Restrictions: Must major/minor in: INTO General English. Must be a: Self Improvement.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

GEAL 8433 English as a Second Language – Special Academic English Grammar CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Students will focus on grammatical structures present in reading and listening texts; incorporate learned grammatical structures in writing and speaking tasks.
Prerequisite: None.
Restrictions: Must major/minor in: INTO General English. Must be a: Self Improvement.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

GEAL 8435 English as a Second Language – Special Non-Core English Skills Workshop CEUs: 3 (0-0-3)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Students will practice academic skills, vocabulary, learning strategies, communication and technology skills.
Prerequisite: None.
Restrictions: Must major/minor in: INTO General English. Must be a: Self Improvement.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

Geography-GR (GR)

Courses

GR 100 Introduction to Geography (GT-SS2) Credits: 3 (3-0-0)
Course Description: Major geographic themes applied to selected regions; physical environment, human-land relationships, regional analysis.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Geography (GT-SS2).

GR 102 Geography of Europe and the Americas (GT-SS2) Credits: 3 (3-0-0)
Course Description: Examines the physical and human geographies of Europe, including the former Soviet Union, and the Americas from the Southern Cone to Canada. Focus is on the content of these geographies, why they exist, and their current significance; supported by extensive map analysis.
Prerequisite: None.
Registration Information: Credit not allowed for both GR 102 and GR 180A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Geography (GT-SS2).

GR 210 Physical Geography Credits: 3 (3-0-0)
Also Offered As: ESS 210.
Course Description: Energy, mass budget, and human impacts on atmosphere, hydrosphere, and continental land surfaces.
Prerequisite: None.
Registration Information: Credit not allowed for both GR 210 and ESS 210.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 213 Climate Migrants Credits: 3 (3-0-0)
Course Description: Explore the various drivers of migration, emphasizing climate and others including biogeographic, political, economic, and social factors.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GR 220 Mapping, Cartography, and Spatial Thinking Credits: 3 (2-2-0)
Course Description: Spatial thinking is the science and art of making maps that play a key role in enabling geographers to visualize space and spatial patterns, as well as, convey spatial information to others. Introduction to the science of spatial thinking, including collecting spatial information and making maps, modern geographic information sciences (GIS) that have evolved from cartography, and spatial analysis techniques that are fundamental to Geography.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 303 Mountain Geography Credits: 3 (3-0-0)
Course Description: The physical and human dimensions of mountains. Examples from mountains around the world with case studies from Colorado.
Prerequisite: GR 100 to 499 - at least 3 credits.
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GR 304 Sustainable Watersheds Credits: 3 (3-0-0)
Also Offered As: WR 304.
Course Description: Effects of climate, land use, and water use on the sustainability of water quantity and quality.
Prerequisite: None.
Registration Information: Completion of the AUCC 1B Quantitative Reasoning requirement. Credit not allowed for both GR 304 and WR 304.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A.

GR 305 Geography of Global Health Credits: 3 (3-0-0)
Course Description: Study, research and practice of global health using an ecological approach that integrates health with spatial thinking. Focuses on a common set of issues which transcends boundaries, both domestic and international, and a set of actions to address the geographic burden of disease. Key principles and concepts, history of global health transitions, common and emerging health issues.
Prerequisite: ANTH 200 or GR 100 or INST 200.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 311 GIS for Social Scientists Credits: 3 (1-4-0)
Course Description: Applications of GIS techniques useful to the social sciences. Mapping techniques and GIS toolkits are practiced in lab.
Prerequisite: GR 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

GR 315 Quantitative Geographical Methods Credits: 3 (3-0-0)
Course Description: Methods to collect, analyze, display, and model geographic data.
Prerequisite: GR 100.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 320 Cultural Geography Credits: 3 (3-0-0)
Course Description: Geographic analysis of cultural phenomena, elements emphasizing human-land relationships and spatial patterns of agriculture, cities, language, religion.
Prerequisite: GR 100.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

GR 323 Remote Sensing and Image Interpretation Credits: 3 (2-2-0)
Also Offered As: NR 323.
Course Description: Remote sensing systems and applications; characteristics of photographic, scanner and radar images; imagery interpretations.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: GR 323, GR 503, NR 323, NR 503.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GR 330 Urban Geography Credits: 3 (3-0-0)
Course Description: Spatial distribution of urban areas and the geographic similarities and contrasts that exist between and within them.
Prerequisite: GR 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

GR 331 Geography of Farming Systems Credits: 3 (3-0-0)
Course Description: Geographic analysis of farming systems worldwide and by region; their development over time, human-land relationships, and spatial patterns.
Prerequisite: GR 100.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 333 Glaciers and Climate Change Credits: 3 (3-0-0)
Course Description: Glacier mass balance, dynamics, past fluctuations, and glaciers' relation to climate change.
Prerequisite: GR 100 or GR 210 or GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150.
Registration Information: Credit allowed for only one of the following: GEOL 381A2, GR 333 and GR 381A2.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GR 345 Geography of Hazards Credits: 3 (3-0-0)
Course Description: Causes, effects, distributional patterns, and human adjustments to environmental hazards.
Prerequisite: GR 210.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 348 Biogeography Credits: 3 (3-0-0)
Course Description: Species distribution of plants and animals in relation to earth history and environments, evolution, and ecology.
Prerequisite: GR 000 to 99999 - at least 3 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GR 400 History of Theory-Anthropology and Geography Credits: 3 (3-0-0)
Also Offered As: ANTH 400.
Course Description: Anthropological/Geographical theory from its beginnings with Aristotle through recent developments into the 20th century.
Prerequisite: (ANTH 100 or ANTH 200) and (ANTH 120 and ANTH 121 and ANTH 140 or GR 100).
Registration Information: Junior or senior standing. Sections may be offered: Online. Credit not allowed for both ANTH 400 and GR 400.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GR 410 Climate Change: Science, Policy, Implications Credits: 3 (3-0-0)
Course Description: Implications and consequences for earth systems including the cryosphere, hydrosphere, biosphere, and human systems.
Prerequisite: GR 100 to 499 - at least 3 credits.
Registration Information: Junior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GR 415 The Geography of Commodities Credits: 3 (3-0-0)
Course Description: Social relations, international trade, and environmental impacts surrounding the production, transportation, exchange, and consumption of commodities.
Prerequisite: GR 100.
Registration Information: Junior standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

GR 420 Spatial Analysis with GIS Credits: 4 (3-2-0)
Course Description: Theory, application of geographic information systems for spatial analysis; conceptual basis of GIS, nature and use of geographic data, case studies.
Prerequisite: GR 000 to 99999 - at least 3 credits.
Registration Information: Credit not allowed for both GR 420 and NR 322.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GR 430 Land Change Science and Remote Sensing Credits: 3 (3-0-0)
Course Description: Local case studies and global cases of land-use/land-cover changes in rural, peri-urban, and urban areas.
Prerequisite: GR 100.
Registration Information: Junior standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 431 Land Change Science Lab Credit: 1 (0-3-0)
Course Description: Utilize advanced remote sensing techniques and satellite images, air photos, and ancillary data to investigate land-use and land-cover changes.
Prerequisite: GR 323 or NR 323 or GR 503 or NR 503.
Registration Information: Must have concurrent registration in GR 430.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 440 Political Geography Credits: 3 (3-0-0)
Also Offered As: POLS 440.
Course Description: Examines the meaning of political space; states and nations; competition for territory, including methods and justifications; the structure of political space focusing on states; geopolitics; and the state in an era of globalization. Concepts are illustrated by real-world situations.
Prerequisite: GR 100 or POLS 101.
Registration Information: Sophomore standing. Sections may be offered: Online or Mixed Face-to-Face. Credit not allowed for both GR 440 and POLS 440.
Grade Mode: Traditional.
Special Course Fee: No.

GR 448 Forest Biogeography and Climate Change Credits: 3 (3-0-0)
Course Description: Forest adaptation and conservation in relation to global change with a focus on climate change.
Prerequisite: ESS 211 or ESS 311 or F 311 or GR 100 or GR 210 or ESS 210 or GR 303 or GR 348 or GR 410.
Registration Information: Junior standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 487 Internship Credits: Var[1-9] (0-0-0)
Course Description: Academic-based work experience with selected organizations or agencies. Supervised application of principles of geography.
Prerequisite: GR 100 to 499 - at least 9 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

GR 493 Capstone Seminar Credit: 1 (0-0-1)
Course Description: Exploration of the linkages among the human and physical geography sub-fields, geographic techniques, and other natural and social sciences as well as how professional geographers approach issues.
Prerequisite: None.
Registration Information: Junior standing. Concurrent registration in one of the following AUCC Category 4A courses for the Major in Geography: GR 303, GR 410, GR 415, or GR 430.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GR 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

GR 503 Remote Sensing and Image Analysis Credits: 4 (3-3-0)
Also Offered As: NR 503.
Course Description: Interpretation and analysis of photographic, multispectral scanner, and radar data; sensor systems; applications to resource management.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: GR 323, GR 503, NR 323, or NR 503.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GR 548 Biogeography Credits: 3 (3-0-0)
Course Description: Species distribution of plants and animals in relation to earth history and environments, evolution, and ecology.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate Standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 592 Special Topics in Geography Credits: 3 (0-0-3)
Course Description: Recent papers from the literature will be used to foster discussion among participants.
Prerequisite: None.
Registration Information: Graduate standing.
Grade Mode: Traditional.
Special Course Fee: No.

Geosciences-GEOL (GEOL)

Courses

GEOL 110 Introduction to Geology-Parks and Monuments (GT-SC2) Credits: 3 (3-0-0)
Course Description: Understanding the physical processes, natural hazards, earth materials, and natural resources of planet Earth, and the relationship of humans to this planet. Outstanding examples of natural features from national and local parks and monuments, using narrated high-resolution (including aerial) video.
Prerequisite: None.
Registration Information: This is a partial semester course. Offered as an online course only. Credit allowed for only one of the following: GEOL 110, GEOL 120, GEOL 122, GEOL 124, or GEOL 150.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

GEOL 120 Exploring Earth - Physical Geology (GT-SC2) Credits: 3 (3-0-0)
Course Description: Develops scientific understanding through introduction to earth processes, materials, resources, and hazards.
Prerequisite: None.
Registration Information: Credit allowed for only one of the following: GEOL 110, GEOL 120, GEOL 122, GEOL 124, or GEOL 150.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

GEOL 121 Introductory Geology Laboratory (GT-SC1) Credit: 1 (0-2-0)
Course Description: Laboratory applications of introductory geology.
Prerequisite: GEOL 110, may be taken concurrently or GEOL 120, may be taken concurrently or GEOL 122, may be taken concurrently or GEOL 124, may be taken concurrently.
Registration Information: Required field trips. Credit not allowed for both GEOL 121 and GEOL 150.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

GEOL 122 The Blue Planet - Geology of Our Environment (GT-SC2) Credits: 3 (3-0-0)
Course Description: Develops scientific understanding through introduction to geological processes, natural hazards, earth resources, and their impacts on society.
Prerequisite: None.
Registration Information: Credit allowed for only one of the following: GEOL 110, GEOL 120, GEOL 122, GEOL 124, or GEOL 150.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

GEOL 124 Geology of Natural Resources (GT-SC2) Credits: 3 (3-0-0)
Course Description: Develops scientific understanding through introduction to the origin, use and environmental impact of geological resources extracted from the Earth.
Prerequisite: None.
Registration Information: Credit allowed for only one of the following: GEOL 110, GEOL 120, GEOL 122, GEOL 124, GEOL 150.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

GEOL 150 Physical Geology for Scientists and Engineers Credits: 4 (3-3-0)
Course Description: Earth materials, structures, and surface processes. Geologic analysis using field data, topographic and geologic maps, and aerial photos.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: GEOL 110, GEOL 120, GEOL 122, GEOL 124, GEOL 150. Credit not allowed for both GEOL 121 and GEOL 150. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A.

GEOL 154 Historical and Analytical Geology Credits: 4 (3-3-0)
Course Description: Physical and biological history of Earth with introduction to laboratory, computer, and field techniques.
Prerequisite: GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

GEOL 192 New Student Seminar--Exploring Geosciences Credit: 1 (0-0-1)
Course Description: Geosciences as a field of study; exploration of the major and career paths; strategies for academic success and beyond.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Freshman and sophomore geology majors only. This is a partial semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 201 Field Geology of the Colorado Front Range Credit: 1 (0-2-0)
Course Description: Geology of the Rocky Mountain Front Range taught primarily through field trips and field exercises, emphasizing hands-on experiences. Learn to make basic field observations and measurements on a variety of rock types and surficial features.
Prerequisite: GEOL 121 or GEOL 150.
Registration Information: Freshman, sophomore or junior standing only. Geology majors or minors only. This is a partial semester course. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 232 Mineralogy Credits: 3 (2-3-0)
Course Description: Crystal structures, crystal chemistry, rock-forming and economically important minerals, crystal growth and defects, physical properties of minerals.
Prerequisite: (CHEM 111, may be taken concurrently) and (GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150) and (MATH 124 or MATH 155 or MATH 160 or MATH 161 or MATH 255).
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 250 The Solid Earth Credits: 3 (2-2-0)
Course Description: Structure, flow, and composition of the deep Earth; introduction to geophysics; tests of plate tectonic theory.
Prerequisite: (GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150) and (MATH 124) and (MATH 125 or MATH 155 or MATH 160 or MATH 161 or MATH 255).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 332 Optical Mineralogy Credits: 2 (1-2-0)
Course Description: Fundamental light optics in crystalline substances; optical indicatrix; isotropic, uniaxial, and biaxial substances; common minerals in thin section.
Prerequisite: GEOL 232, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 342 Paleontology Credits: 3 (2-3-0)
Course Description: Description of invertebrates, vertebrates, and plants and their distribution in earth history.
Prerequisite: GEOL 154.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 344 Stratigraphy and Sedimentology Credits: 4 (3-3-0)
Course Description: Description, genesis, correlation, and age of sediments, sedimentary rocks and layered rock sequences.
Prerequisite: GEOL 154 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

GEOL 364 Igneous and Metamorphic Petrology Credits: 4 (3-3-0)
Course Description: Identification, classification, geochemistry, petrogenesis of igneous and metamorphic rocks; textural interpretation of hand samples and thin sections.
Prerequisite: GEOL 232 with a minimum grade of C-.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 366 Sedimentary Petrology and Geochemistry Credits: 4 (3-3-0)
Course Description: Composition, identification, and classification of sedimentary rocks; geochemical processes affecting sedimentary rocks and surficial deposits.
Prerequisite: CHEM 113 and GEOL 154 and GEOL 364.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 372 Structural Geology Credits: 4 (3-3-0)
Course Description: Stress and strain in rocks, geometry of deformed rocks, and tectonic principles.
Prerequisite: (GEOL 154, may be taken concurrently) and (MATH 125 or MATH 155 or MATH 160 or MATH 161 or MATH 255) and (PH 121, may be taken concurrently or PH 141, may be taken concurrently).
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

GEOL 376 Geologic Field Methods Credits: 3 (1-4-0)
Course Description: Scientific, surveying, and mapping methods used in geologic field studies; proposal, map, and report preparation.
Prerequisite: GEOL 344 and GEOL 372, may be taken concurrently.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description: Instruction and practice in laboratory instruction in lower-division departmental courses.
Prerequisite: None.
Registration Information: Written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 401 Geology of the Rocky Mountain Region Credit: 1 (0-3-0)
Course Description: Field course; geology of the local Rocky Mountain region.
Prerequisite: GEOL 154.
Registration Information: May be taken up to 3 times for credit. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 424 Modern Gas and Oil Credits: 3 (3-0-0)
Also Offered As: CIVE 424.
Course Description: Introduction to opportunities and challenges of modern gas and oil development, including synergies with other energy sources.
Prerequisite: None.
Registration Information: Junior standing or above; completion of AUCC category 3A. Credit not allowed for both GEOL 424 and CIVE 424.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 436 Geology Summer Field Course Credits: 6 (0-18-0)
Course Description: Geologic mapping, measuring sections, interpreting geologic history in Colorado. Required comprehensive reports, geologic maps, and cross sections.
Prerequisite: GEOL 364 and GEOL 376.
Registration Information: Required field trips.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 442 Applied Geophysics Credits: 4 (3-2-0)
Course Description: Geophysical exploration methods emphasizing hydrocarbon and mineral exploration, hydrogeology, and engineering applications.
Prerequisite: GEOL 372 and MATH 161 and PH 142.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 446 Environmental Geology Credits: 3 (3-0-0)
Course Description: Geology applied to environmental problems.
Prerequisite: (CHEM 111) and (GEOL 110 or GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150) and (MATH 155 or MATH 160) and (PH 121 or PH 141).
Registration Information: Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 447 Mineral Deposits Credits: 3 (2-3-0)
Course Description: Occurrence, origin, and exploration of economic metallic mineral deposits.
Prerequisite: GEOL 366, may be taken concurrently and GEOL 372.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 452 Hydrogeology Credits: 4 (3-3-0)
Course Description: Interaction of water and geologic materials; surface and groundwater; quantitative analysis and geologic effects on quality and flow of groundwater.
Prerequisite: (GEOL 110 or GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150 or GR 210) and (MATH 161 or MATH 255) and (PH 121 or PH 141).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 454 Geomorphology Credits: 4 (3-3-0)
Course Description: Origin of landforms; morphology and processes.
Prerequisite: (GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150 or GR 210) and (STAT 301 or STAT 307 or STAT 315).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 492 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 494A Independent Study: Environmental/Engineering Geology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 494B Independent Study: Geomorphology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 494C Independent Study: Mineralogy/Petrology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 494D Independent Study: Geoscience Field Studies Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 494E Independent Study: Paleontology/Stratigraphy Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 494F Independent Study: Sedimentology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 494G Independent Study: Structural Geology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 494I Independent Study: Geophysics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 498 Research Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 530 Advanced Petrology Credits: 3 (2-2-0)
Course Description: Igneous and metamorphic processes and products explored through thermodynamics, phase equilibria, and textural analysis.
Prerequisite: GEOL 364.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 535 Microtectonics Credits: 3 (2-2-0)
Course Description: Focuses on microstructural features, processes, mechanisms, and measurements. Structurally interesting rocks especially on the microscale, development of structural fabrics and reactivation, analysis of fault rocks and kinematic indicators especially in fault and shear zones, stress measurement through microstructural indicators, shock deformation/metamorphism in impact structures, chemical changes with deformation, deformation mechanisms, and isotopic investigation of deformation.
Prerequisite: GEOL 332 and GEOL 372.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both GEOL 535 and GEOL 580A3.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 540 Petrophysics and Well Log Interpretation Credits: 3 (3-0-0)
Course Description: Petrophysics and well log interpretation as it relates to hydrocarbon exploration and production. Wireline logs, calculating rock and fluid properties from log measurements, and recognizing zones of potential hydrocarbons. Map and calculate volumes of hydrocarbons in the subsurface using the analysis of petrophysical properties from wireline well logs.
Prerequisite: GEOL 344 and GEOL 366 and PH 142.
Registration Information: Senior or graduate standing in Geosciences, Engineering, or Physics. Credit not allowed for both GEOL 540 and GEOL 581A4.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 541 Geostatistics Credits: 2 (2-0-0)
Course Description: Geostatistics for earth science applications. Aquifer and reservoir heterogeneity, spatial data analysis, variogram modeling, spatial estimation, kriging, and geostatistical simulation.
Prerequisite: (GEOL 150) and (MATH 161 or MATH 255) and (STAT 301 or STAT 315).
Registration Information: Credit not allowed for both GEOL 541 and GEOL 581A5.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 543 Carbonate Sedimentology Credits: 2 (1-3-0)
Course Description: Recognition of carbonate grains, cement types, and carbonate depositional environments, and their response to sea-level changes.
Prerequisite: GEOL 344.
Registration Information: Junior standing.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 545 Shale Sedimentology Credits: 2 (2-0-0)
Course Description: Recognize and interpret mud and mudstone facies and their depositional environments, as well as reconstructing their diagenetic history. Observe stacking patterns and reconstruct sea-level fluctuations from mudstone/shale successions and their impact on the 3D distribution of mudstones/shales.
Prerequisite: GEOL 344.
Registration Information: Junior standing. Credit not allowed for both GEOL 545 and GEOL 580A6.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 546 Sedimentary Basin Analysis Credits: 4 (3-3-0)
Course Description: Sedimentologic data base, correlation, mapping, facies models, classification, and evolution of sedimentary basins. Applications to petroleum exploration.
Prerequisite: GEOL 344.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 547 Ore Deposit Geochemistry Credits: 3 (3-0-0)
Course Description: Geochemical techniques applied to the geology, exploration, and environmental analysis of ore deposits.
Prerequisite: GEOL 447.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 551 Groundwater Modeling Credits: 3 (3-0-0)
Course Description: Groundwater modeling from a geologic perspective. Conceptual models and computer modeling of groundwater flow and solute transport.
Prerequisite: CIVE 423 or GEOL 452.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 552 Advanced Topics in Hydrogeology Credits: Var[2-3] (0-0-0)
Course Description: Current literature, new techniques, legislative and political developments in hydrogeology, and appropriate case histories.
Prerequisite: GEOL 452.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 553 Use of Tracers in Hydrogeology Credits: 3 (3-0-0)
Course Description: Use of environmental and applied tracers in hydrogeology to understand groundwater flow and transport properties. Environmental tracers are used to determine groundwater age and recharge rates, ground/water surface water interactions and to estimate the average temperature when the groundwater was recharged. Applied tracers are used to determine flow and transport processes in porous media to understand controls on solute transport, especially related to contaminant movement.
Prerequisite: CIVE 423 or GEOL 452.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 562 Statistical Data Analysis in Earth Resources Credits: 3 (3-0-0)
Course Description: Statistical parameters, sequential data, map analysis, and multivariate data.
Prerequisite: STAT 340 and STAT 350.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 565 Petroleum Geochemistry and Geology Credits: 3 (3-0-0)
Course Description: Geochemistry and geology of hydrocarbon generation, migration, and accumulation. Applications to hydrocarbon exploration.
Prerequisite: GEOL 366 and GEOL 372.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 567 Sedimentary Geochemistry Credits: 3 (3-0-0)
Course Description: Geochemical processes affecting sedimentary rocks and other surficial materials.
Prerequisite: GEOL 366.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 570 Plate Tectonics Credits: 3 (3-0-0)
Course Description: Examination of the historical development of plate tectonic theory and its application to understanding geological processes.
Prerequisite: GEOL 364 and GEOL 372 and PH 142.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 572 Advanced Structural Geology Credits: 4 (3-3-0)
Course Description: Rheology, deformation mechanisms, structural associations and advanced methods of structural analysis.
Prerequisite: GEOL 436.
Registration Information: Must register for lecture and laboratory. Required field trips. Graduate standing can substitute for prerequisite course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 574 Geodynamics Credits: 3 (3-0-0)
Course Description: Continuum mechanics applied to understanding of deformation within the earth. Stress and strain as tensors, with application to various geological settings; plate flexure and isostasy; steady state and time dependent heat conduction in a geological context; fluid mechanics of the earth.
Prerequisite: GEOL 250 and MATH 261 and PH 141.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 575 Subsurface Geophysical Mapping Credits: 4 (3-2-0)
Course Description: Advanced techniques for creating subsurface geological maps based on seismic reflection and well log data.
Prerequisite: GEOL 344 and GEOL 372 and MATH 161 and PH 142.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 576 Exploration Seismology Credits: 3 (3-0-0)
Course Description: Seismic exploration methods, including theory, data acquisition, and data processing.
Prerequisite: GEOL 344 and GEOL 372 and MATH 161 and PH 142.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 578 Global Seismology Credits: 4 (3-2-0)
Course Description: Quantitative introduction to seismology; basics of seismic data analysis; fundamentals of wave propagation; earthquakes; structure of the Earth.
Prerequisite: PH 142 and MATH 261.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 579 Solid Earth Inverse Methods and Practices Credits: 3 (3-0-0)
Course Description: Inverse and parameter estimation theory and applications in the earth sciences in the context of Frequentist and Bayesian approaches to estimating and interpreting data-driven models. Review of linear algebra, statistical, and other mathematical underpinnings, and of basic MATLAB programming. Linear and nonlinear inverse problems. Nonuniqueness, ill-posedness, rank-deficiency. Regularization methods for geophysical problems.
Prerequisite: (MATH 161 or MATH 255) and (MATH 229) and (STAT 301 or STAT 315).
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 601 Professional Development for Geoscientists Credit: 1 (0-0-1)
Course Description: The conduct of science, role of scientific publications, publication process, proposal writing, responsible conduct of research, and professional ethics.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 652 Fluvial Geomorphology Credits: 3 (3-0-0)
Course Description: Geomorphology of channels, slopes, and drainage systems.
Prerequisite: GEOL 120.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

GEOL 662 Field Geomorphology Credits: 2 (1-2-0)
Course Description: Field-based geomorphologic analysis of landscape forms and processes. Apply appropriate field techniques to address relevant research hypotheses related to advanced subject matter in geomorphology. Analyze and interpret field-based data, orally present findings in a symposium setting, and discuss and critically evaluate relevant literature.
Prerequisite: GEOL 454.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. This is a partial semester course. Required field trips. Credit not allowed for both GEOL 662 and GEOL 680A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 684 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 692 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Global Environment Sustain-GES (GES)

Courses

GES 101 Foundations of Environmental Sustainability Credits: 3 (3-0-0)
Course Description: Concepts, foundations, and metrics of global environmental sustainability applied to global challenges.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GES 120 Water Sustainability in the Western US Credits: 3 (3-0-0)
Course Description: Water and the sustainability of its use in the West. Historical perspectives on the development of water resources in the West. Exploration of the issues involved in meeting the needs for water by people, agriculture and wildlife. Impacts of important human and natural influences on the use and sustainability of water supplies in the West.
Prerequisite: None.
Registration Information: Credit not allowed for both GES 120 and GES 180A4.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GES 130 Introduction to Sustainability Engagement Credit: 1 (1-0-0)
Course Description: Introduction to sustainability engagement via experiential learning.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of instructor. Enrolled in Eco-leaders Peer Education Program.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

GES 135 Applied Community Sustainability Credits: 3 (3-0-0)
Course Description: Engaging with communities on real projects, teams of students develop workable solutions to problems related to food security, green infrastructure, urban wildlife conservation, and other sustainability topics. This course will be fully integrated with a writing course providing a complementary emphasis on values, ethics, meaning, critical thinking, writing, and speaking.
Prerequisite: None.
Registration Information: Written consent of instructor. Must register for special section of CO 150 or CO 300. Credit not allowed for both GES 135 and GES 180A3.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

GES 141 Introduction to Sustainable Energy Credits: 3 (3-0-0)
Course Description: Fossil, nuclear, and renewable energy sources. Energy conversion, distribution, and storage. Energy and the environment. Energy economics and policy.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GES 192 Global Environmental Sustainability Seminar Credits: 3 (0-0-0)
Course Description: Critical interconnections of global environmental sustainability, the environment, economics, and society.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GES 330A Sustainability in Practice: Project Credits: 2 (1-0-1)
Course Description: Engages students in real-world sustainability applications and empowers them to design and execute their own program or research project. A) Project. B) Service Learning.
Prerequisite: GES 101 or GES 130.
Registration Information: Credit not allowed for both GES 330A and GES 330B.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

GES 330B Sustainability in Practice: Service Learning Credits: 3 (1-0-2)
Course Description: Engages students in real-world sustainability applications and empowers them to design and execute their own program or research project. A) Project. B) Service Learning.
Prerequisite: GES 101 or GES 130.
Registration Information: Credit not allowed for both GES 330A and GES 330B.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

GES 441 Analysis of Sustainable Energy Solutions Credits: 3 (3-0-0)
Course Description: Methods of evaluating sustainable energy technologies, including life cycle assessment, energy return on investment, technoeconomic analysis, and political ecology.
Prerequisite: GES 141.
Registration Information: Sophomore standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GES 450 Global Sustainability and Health Credits: 3 (3-0-0)
Course Description: Impact of anthropogenic environmental change on human, animal and environmental health.
Prerequisite: GES 101.
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GES 460 Law and Sustainability Credits: 3 (3-0-0)
Course Description: Introduction to the domestic and international laws that influence and interact with the implementation of sustainability in the U.S. and abroad.
Prerequisite: GES 101.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GES 465 Sustainable Strategies for E-Waste Management Credits: 3 (3-0-0)
Also Offered As: MSE 465.
Course Description: Trans-disciplinary overview of the electronics industry, with an emphasis on sources and impacts of e-waste on human & natural systems. Systems approaches to mitigating environmental and social impacts of electronics--from product design, materials and manufacture to use, re-use, recycle and disposal. Apply learnings in trans-disciplinary project teams to evaluate opportunities for improving the sustainability of the industry and its products.
Prerequisite: None.
Registration Information: Junior standing. Sections may be offered: Online. Credit allowed for only one of the following: GES 465, GES 481A1, MSE 465, or MSE 481A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GES 470 Applications of Environmental Sustainability Credits: 3 (3-0-0)
Course Description: Integration of the dimensions of global environmental sustainability--environment, society, and economy--through case studies and team project.
Prerequisite: GES 101.
Registration Information: Must have completed 12 credits of GES interdisciplinary minor; junior or senior standing. Sections may be offered: Online. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GES 520 Issues in Global Environmental Sustainability Credits: 3 (3-0-0)
Course Description: Analysis of the different major dimensions/definitions of sustainability in current issues involving environmental, social and economic systems.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GES 542 Biobased Fuels, Energy, and Chemicals Credits: 3 (3-0-0)
Course Description: Science and engineering aspects of biobased fuel, energy, and chemical production, including plant biology, thermochemical conversion, biomass deconstruction, fermentation, and biofuel properties. Aspects of sustainable production and economics will be discussed.
Prerequisite: None.
Registration Information: Junior standing. Required field trips. Credit allowed for only one of the following: AGRI 601, ENGR 601, or GES 542.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Graduate School-GRAD (GRAD)

Courses

GRAD 510 Fundamentals of High Performance Computing Credits: 3 (2-2-0)
Course Description: UNIX; networks; scalar, vector, and parallel architectures; performance programming.
Prerequisite: None.
Registration Information: Graduate standing. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GRAD 511 High Performance Computing and Visualization Credits: 3 (2-2-0)
Course Description: Iterative methods for linear systems; Monte Carlo methods; visualization and image processing.
Prerequisite: GRAD 510.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GRAD 544 Ethical Conduct of Research Credit: 1 (1-0-0)
Course Description: Principles and practice of ethical conduct of research.
Prerequisite: None.
Registration Information: Graduate standing. This is a partial semester course.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

GRAD 550 STEM Communication Credit: 1 (1-0-0)
Course Description: Review and practice of key communication principles for Science, Technology, Engineering, and Mathematics (STEM) professionals.
Prerequisite: None.
Registration Information: Graduate standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GRAD 592 Water Resources Seminar Credit: 1 (0-0-1)
Course Description: Interdisciplinary seminar emphasizing issues important to water resources community. Content relates to a preselected theme each semester.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

GRAD 596 Group Study-Graduate Education Credits: Var[1-3] (0-0-0)
Course Description: Preparation for graduate education.
Prerequisite: None.
Registration Information: Graduate School approval.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

GRAD 792 Seminar on College Teaching Credits: 2 (0-0-2)
Course Description: Role of college teacher emphasizing applied principles and practices derived from empirical research and collective experience of teaching professors.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Health + Exercise Science-HES (HES)

Courses

HES 100A Beginning Physical Education: Aerobic Exercise Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HES 100J Beginning Physical Education: Volleyball Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100M Beginning Physical Education: Basketball Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100N Beginning Physical Education: Racquetball Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100O Beginning Physical Education: Weight Training Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 102C Physical Education Activities: Special Activities Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HES 102F Physical Education Activities: Conditioning and Fitness Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 102G Physical Education Activities: Athletics Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HES 120 Introduction to Health and Exercise Science Credit: 1 (1-0-0)
Course Description: Health and Exercise Science major, career options, campus resources, tools for academic success, various health-related topics.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 145 Health and Wellness Credits: 3 (3-0-0)
Course Description: Personal health behaviors and personal choice in response to wellness.
Prerequisite: None.
Registration Information: Credit not allowed for both HES 145 and HES 143. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 207 Anatomical Kinesiology Credits: 3 (2-2-0)
Course Description: Anatomical, physiological, and mechanical fundamentals of human movement.
Prerequisite: MATH 125, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 232 Techniques of Teaching Group Exercise Credit: 1 (0-2-0)
Course Description: Learn practical skills for the instruction of various group fitness activities. Emphasis is on physiological principles related to group fitness, as well as choreography, safety, and modifications for diverse populations and current trends.
Prerequisite: HES 207.
Registration Information: Credit allowed for only one of the following: HES 232, HES 232B, or HES 332H.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 232A Techniques of Teaching Physical Activity: Weight Training Credit: 1 (0-2-0)
Course Description: Practical and theoretical aspects of teaching individual sports with special emphasis on materials, teaching techniques, and analyzing skills.
Prerequisite: None.
Registration Information: Credit not allowed for both HES 232A and HES 332F.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 240 First Aid and Emergency Care Credits: 2 (1-2-0)
Course Description: Principles, applied techniques emphasizing emergency rescue and care. Meets requirements for Red Cross Advanced First Aid and Emergency Care Credential.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 303 Biomechanics and Neurophysiology Credits: 3 (3-0-0)
Course Description: Study and elementary analysis of human motion based on anatomical, neurophysiological, and mechanical principles.
Prerequisite: HES 207.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 307 Biomechanical Principles of Human Movement Credits: 4 (3-2-0)
Course Description: Study and elementary analysis of human motion based on anatomical and mechanical principles.
Prerequisite: (HES 207 or BMS 301) and (PH 121 or PH 141).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 309 Methods of Coaching Credits: 2 (2-0-0)
Course Description: Preparation to coach in an interscholastic athletic situation.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 319 Neuromuscular Aspects of Human Movement Credits: 4 (3-2-0)
Course Description: Neuromuscular anatomy and physiology of human movement. Applied/integrated topics: aging, muscle fatigue, training, force control, and neuromuscular disease.
Prerequisite: BMS 300 and HES 207.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 340 Exercise Prescription Credits: 3 (2-2-0)
Course Description: Theory and practice of exercise prescription for healthy individuals, cardiac patients, and other special populations according to the American College of Sports Medicine (ACSM) guidelines. Includes the practice of proper lifting and spotting techniques, manipulation of training variables, and design of safe, effective, and efficient individual workout programs.
Prerequisite: BMS 300 with a minimum grade of C and FSHN 150 with a minimum grade of C and HES 145 with a minimum grade of C and HES 207 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 345 Population Health and Disease Prevention Credits: 3 (3-0-0)
Course Description: Causes of disease throughout the lifespan and interventions designed to prevent disease.
Prerequisite: HES 145.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 354 Theory of Health Behavior Credits: 3 (3-0-0)
Course Description: Health behavior (HB) theories and their application to health promotion (HP) programs. Multi-level factors that interactively impact human HBs, theoretical foundations for these factors, and the relationship between HBs & selected health outcomes. Discuss application of HB theories, and examine HP programs that have applied these theories in different settings and high risk populations.
Prerequisite: HES 145 or PSY 100.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 355 Integration of Health Behaviors Credits: 3 (3-0-0)
Course Description: Designed to guide students in applying their knowledge of health behavior change to individuals with various health challenges. Explores a variety of health topics including understanding stress and coping and managing stress, behavioral factors in chronic disease, and behavioral health.
Prerequisite: HES 340 and HES 354.
Registration Information: Completion of 60 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 379 Psychology and Sport Credits: 3 (3-0-0)
Course Description: Psychological and social implications involved in teaching physical education and coaching athletics.
Prerequisite: PSY 100 and HES 145 with a minimum grade of C and HES 207 with a minimum grade of C and BMS 300 with a minimum grade of C.
Registration Information: Must have taken the following courses and maintained a minimum GPA of 2.500 in them: HES 145; HES 207; BMS 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 386 Practicum–Adult Fitness Credits: 2 (1-2-0)
Course Description: Adult fitness.
Prerequisite: HES 232 and HES 340 with a minimum grade of C.
Registration Information: Must have earned a cumulative 2.750 GPA in: BMS 300, FSHN 150, HES 145, and HES 207. Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 403 Physiology of Exercise Credits: 4 (3-2-0)
Course Description: Effects of exercise on tissues, organs, and systems of the body.
Prerequisite: BMS 300 or BMS 360.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 410 Bioethics: Concepts and Controversies Credits: 3 (2-0-1)
Course Description: Origins of bioethics and analysis of cases/controversies in contemporary bioethics.
Prerequisite: PHIL 205.
Registration Information: PHIL 205 or 7 credits of AUCC-science category 3A.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 420 Electrocardiography and Exercise Management Credits: 3 (2-2-0)
Course Description: Interpretation of 12-lead ECG tracings, administering exercise tests, and prescribing exercise program for healthy individuals and special populations.
Prerequisite: BMS 300.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 434 Physical Activity Throughout the Lifespan Credits: 3 (3-0-0)
Course Description: Impact of physical activity on biology and physiology of human development and aging processes.
Prerequisite: BMS 300 or HDFS 201.
Registration Information: Junior standing. Sections may be offered: Online. Credit not allowed for both HES 434 and HES 444.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 444 Successful Aging: Role of Physical Activity Credits: 2 (2-0-0)
Course Description: Biology and physiology of healthy aging and impact of disease and physical activity on aging processes.
Prerequisite: LIFE 102 or BZ 110.
Registration Information: Sections may be offered: Online. Credit not allowed for both HES 434 and HES 444.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 455 Health Promotion Programming Credits: 3 (3-0-0)
Course Description: Investigation of established health promotion programs with special emphasis on design, implementation, and evaluation of programming models.
Prerequisite: HES 355 and HES 386 and HES 403.
Registration Information: Senior standing. Credit not allowed for both HES 455 and HES 456. A student taking HES 355 and HES 386 in Spring, taking HES 486 in the Summer and HES 487 in the Fall may request instructor approval to take HES 355 concurrently with HES 455.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 476 Exercise and Chronic Disease Credits: 3 (3-0-0)
Course Description: Interaction of physical activity with pathophysiology and treatment of chronic diseases and conditions.
Prerequisite: BC 351 and FSHN 350 and HES 403.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 478A Sports Medicine Capstone: Seminar Credits: 3 (0-0-3)
Course Description: Integration and reflection on health and exercise science disciplinary knowledge.
Prerequisite: (HES 307 or HES 319) and (HES 340 and HES 403).
Registration Information: Senior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 478B Sports Medicine Capstone: Research Credits: 3 (0-6-0)
Course Description: A capstone experience that provides an opportunity to be involved with research in health and exercise science.
Prerequisite: (HES 307 or HES 319) and (HES 340 and HES 403).
Registration Information: Senior standing. Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 478C Sports Medicine Capstone: Teaching Credits: 3 (0-6-0)
Course Description: A capstone course that provides an opportunity to be involved with instruction of a course in Health and Exercise Science.
Prerequisite: (HES 307 or HES 319) and (HES 340 and HES 403).
Registration Information: Senior Standing. Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 478D Sports Medicine Capstone: Service Learning Credits: 3 (0-6-0)
Course Description: A capstone experience that provides an opportunity to be involved with a service-learning project in the community that applies knowledge of Health and Exercise Science.
Prerequisite: (HES 307 or HES 319) and (HES 340 and HES 403).
Registration Information: Senior Standing. Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 484 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 10 credits allowed in course. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 486 Practicum–Wellness Program Management Credits: 3 (1-4-0)
Course Description:
Prerequisite: HES 386.
Registration Information: Junior standing. Must register for lecture and laboratory. Credit not allowed for both HES 486 and HES 486B.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 487 Internship Credits: 12 (0-0-36)
Course Description: Practical application of knowledge, skills, and leadership in a professional situation.
Prerequisite: None.
Registration Information: Senior standing. Consent of department.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 492 Health and Exercise Science Seminar Credits: 3 (0-0-3)
Course Description: Integration and reflection on health and exercise science disciplinary knowledge.
Prerequisite: HES 307 and HES 319 and HES 340 and HES 403.
Registration Information: Senior standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 495A Independent Study: Health Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 495B Independent Study: Biomechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 495C Independent Study: Exercise Science Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 495D Independent Study: Neuromuscular Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 495E Independent Study: Honors Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 496A Group Study: Health Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 496B Group Study: Athletics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 496C Group Study: Biomechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 496D Group Study: Exercise Science Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 496E Group Study: Neuromuscular Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 520 Advanced Exercise Testing and Prescription Credits: 3 (2-2-0)
Course Description: Theory and practice of exercise testing and prescription in apparently healthy and diseased populations.
Prerequisite: HES 403.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 530 Clinical Biomechanics Credits: 3 (3-0-0)
Course Description: Effect of external loads on internal tissues; concern for injury, injury prevention, and rehabilitation.
Prerequisite: BMS 301 and HES 307.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 531 Muscle and Joint Mechanics Credits: 3 (3-0-0)
Course Description: Integrate muscle, tendon, and location of bone attachment into a comprehensive understanding of human movement at the single- and multi-joint level.
Prerequisite: BMS 301 and HES 307.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HES 545 Evolutionary Basis for Health and Fitness Credits: 3 (3-0-0)
Course Description: Evolutionary basis for human health and fitness based upon dietary and exercise patterns for pre-agricultural humans.
Prerequisite: HES 403 and FSHN 350.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 556 Wellness and Health Promotion Concepts Credits: 3 (3-0-0)
Course Description: Discussion of theory and application of health promotion in various settings.
Prerequisite: None.
Registration Information: Credit not allowed for both HES 556 and PBHL 550.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 600 Research Design in Health/Exercise Science Credits: 3 (3-0-0)
Course Description: The research process including design, implementation, proposal synthesis and statistical considerations applied to health and exercise science.
Prerequisite: STAT 100 to 481 - at least 1 course.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 602 Advanced Physiology of Exercise Credits: 3 (3-0-0)
Course Description: Integrative exercise physiology covering metabolism, cardiovascular physiology, pulmonary physiology, and neuromuscular physiology in humans.
Prerequisite: HES 403.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 603 Advanced Topics in Exercise Physiology Credits: 3 (3-0-0)
Course Description: Advanced principles of theoretical and applied exercise physiology at molecular, cellular, and systemic levels.
Prerequisite: HES 403.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 610 Exercise Bioenergetics Credits: 3 (3-0-0)
Course Description: Biology of energy transfer reactions related to human locomotion and exercise performance in both healthy individuals and disease states.
Prerequisite: HES 403.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 619 Advanced Neural Control of Movement Credits: 3 (3-0-0)
Course Description: Neuroanatomical, neurophysiological, and applied topics on the control of force and human movement.
Prerequisite: BMS 300 and BMS 301 and HES 403.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HES 630 Integrative Exercise and Nutrition Metabolism Credits: 3 (3-0-0)
Also Offered As: FSHN 630.
Course Description: Advances in integrative human metabolism under conditions of changing energy flux.
Prerequisite: FSHN 551 and HES 610.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both FSHN 630 and HES 630.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 645 Epidemiology of Health and Physical Activity Credits: 3 (3-0-0)
Course Description: Foundation in chronic disease epidemiology that will enable students to evaluate the current epidemiologic literature.
Prerequisite: HES 600.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 650 Health Promotion Programming Credits: 3 (3-0-0)
Course Description: Development of skills in health promotion program design, implementation and evaluation.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 656 Comprehensive Stress Management Credits: 3 (3-0-0)
Course Description: Relationship between stress and illness emphasizing methods to impact its detrimental effects.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 686A Practicum: Adult Fitness-Human Performance Clinical/ Research Laboratory Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Current CPR certification.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 686B Practicum: Wellness Management Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Current CPR certification.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 686C Practicum: Youth Fitness and Skill Development Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Current CPR certification.
Terms Offered: Fall, Spring, Summer.
Grade Modes: Instructor Option, Traditional.
Special Course Fee: No.

HES 686D Practicum: Health and Exercise Science Research Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Current CPR certification.
Terms Offered: Fall, Spring, Summer.
Grade Modes: Instructor Option, Traditional.
Special Course Fee: No.

HES 686E Practicum: Applied Health and Exercise Science Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Current CPR certification.
Terms Offered: Fall, Spring, Summer.
Grade Modes: Instructor Option, Traditional.
Special Course Fee: No.

HES 687 Internship Credits: Var[3-9] (0-0-0)
Course Description: Practical application of knowledge and skills in a professional situation.
Prerequisite: HES 686A to 686E - at least 1 course.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 692 Seminar Credit: 1 (0-0-1)
Course Description: Consideration of graduate education in health and exercise science.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 693 Seminar Credit: 1 (0-0-1)
Course Description: Current topics and issues in health and exercise science.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 2 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 695A Independent Study: Health Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 695B Independent Study: Exercise Science Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 695C Independent Study: Biomechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 695D Independent Study: Neuromuscular Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional, Undergraduate.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 696A Group Study: Health Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 696B Group Study: Exercise and Nutrition Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 696C Group Study: Exercise Science Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 696D Group Study: Biomechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 696E Group Study: Neuromuscular Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 698 Research Credits: Var[1-18] (0-0-0)
Course Description: Non-thesis research in health and exercise science.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 700 Professional Skills in Bioenergetics Credits: 3 (2-0-1)
Course Description: Grant writing, authorship, peer review process, responsible conduct of science, research ethics, professional conduct, career opportunities.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to doctoral program, or admission to M.S. program and written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 704A Advanced Topics in Bioenergetics: Movement Credits: 3 (3-0-0)
Course Description: Advanced topics in physiology, biochemistry, biomechanics, and neural control exploring pathogenesis and treatment of chronic disease.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Maximum of 6 credits allowed in course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 704B Advanced Topics in Bioenergetics: Physiology Credits: 3 (3-0-0)
Course Description: Advanced topics in physiology, biochemistry, biomechanics, and neural control exploring pathogenesis and treatment of chronic disease.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Maximum of 6 credits allowed in course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 710 Exercise in Disease Prevention Credits: 3 (3-0-0)
Course Description: Role of exercise/physical activity in the prevention, pathophysiology and treatment of chronic diseases.
Prerequisite: HES 403 and HES 520.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HES 735 Human Cardiovascular Control Credits: 3 (2-0-1)
Course Description: Dynamics of cardiovascular control in human health and disease.
Prerequisite: HES 403.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HES 784 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 786 Practicum Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 793 Bioenergetics Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HES 795 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 796 Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 798 Research Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Health and Human Sciences-AHS (AHS)

Courses

AHS 487 Internship in Human Services Credits: Var[3-9] (0-0-0)
Course Description: Application of skills learned in interdisciplinary program or major to a variety of human service settings.
Prerequisite: HDFS 201.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AHS 490 Workshop Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AHS 692 Seminar Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AHS 695 Independent Study Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

History-HIST (HIST)

Courses

HIST 100 Western Civilization, Pre-Modern (GT-HI1) Credits: 3 (3-0-0)
Course Description: Historical development of Western civilization from antiquity to the early modern era (c. 1600 C.E.)
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 101 Western Civilization, Modern (GT-HI1) Credits: 3 (3-0-0)
Course Description: Historical development of Western civilization from c. 1600 C.E. to the contemporary era.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 115 The Islamic World: Late Antiquity to 1500 Credits: 3 (3-0-0)
Course Description: Religion, society, and culture in the Islamic world from late antiquity to the Ottoman conquest of Constantinople and the Reconquista in Spain.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D.

HIST 116 The Islamic World Since 1500 Credits: 3 (3-0-0)
Course Description: Religion, society, and culture in the Islamic world since 1500.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D.

HIST 120 Asian Civilizations I (GT-HI1) Credits: 3 (3-0-0)
Course Description: Major traditional intellectual and cultural patterns of Asia during the formative years.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 121 Asian Civilizations II (GT-HI1) Credits: 3 (3-0-0)
Course Description: Transformation of major intellectual and cultural patterns and the process of globalization in Asia.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 150 U.S. History to 1876 (GT-HI1) Credits: 3 (3-0-0)
Course Description: Major issues and themes in the development of the United States from the colonial period through reconstruction.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 151 U.S. History Since 1876 (GT-HI1) Credits: 3 (3-0-0)
Course Description: Major issues and themes in the historical development of the United States since Reconstruction.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 170 World History, Ancient-1500 (GT-HI1) Credits: 3 (3-0-0)
Course Description: Historical developments and interactions of world societies from the ancient to modern periods.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 171 World History, 1500-Present (GT-HI1) Credits: 3 (3-0-0)
Course Description: Historical developments and interactions of world societies from 1500 to the present.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 201 Seminar – Approaches to History Credits: 3 (0-0-3)
Course Description: Introduces students to professional historical skills including research methods, citation, and writing via intensive investigation of a historical time period or theme. Topic varies by instructor.
Prerequisite: None.
Registration Information: Seniors not allowed.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D.

HIST 250 African American History (GT-HI1) Credits: 3 (3-0-0)
Also Offered As: ETST 250.
Course Description: Slavery, emancipation, labor, political, socioeconomic, and cultural history of African Americans since colonial times.
Prerequisite: None.
Registration Information: Credit not allowed for both HIST 250 and ETST 250.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 252 Asian American History (GT-HI1) Credits: 3 (3-0-0)
Also Offered As: ETST 252.
Course Description: Asian American historical experience in the United States from 1850s to the present time.
Prerequisite: None.
Registration Information: Sections may be offered: Online. Credit not allowed for both ETST 252 and HIST 252.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 255 Native American History (GT-HI1) Credits: 3 (3-0-0)
Also Offered As: ETST 255.
Course Description: History of Native American peoples in the United States to the present, including origin stories.
Prerequisite: None.
Registration Information: Credit not allowed for both HIST 255 and ETST 255.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 300 Ancient Greece to 323 B.C.E. Credits: 3 (3-0-0)
Course Description: From the Bronze Age to the death of Alexander the Great, emphasizing political, social, intellectual, and cultural developments.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 301 Roman Republic Credits: 3 (3-0-0)
Course Description: Roman history from the monarchy to the fall of the republic; special emphasis on political, cultural, and social history.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 302 Roman Empire Credits: 3 (3-0-0)
Course Description: Roman history from the principate of Augustus to the reign of Constantine; special emphasis on political, intellectual, cultural, and social history.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 303 Hellenistic World: Alexander to Cleopatra Credits: 3 (3-0-0)
Course Description: From Alexander the Great to Cleopatra VII, emphasizing intellectual, social, military, political, and cultural developments.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 304 Women in Ancient Greece and Rome Credits: 3 (3-0-0)
Course Description: Comparative study of roles of women and gender in Ancient Greece and Rome.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 308 Ancient Christianity to 500 A.D. Credits: 3 (3-0-0)
Course Description: Growth of Christian Church from 1st to 5th century; emphasis on its role in Roman Empire; development of ecclesiastical institutions and literature.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 309 Medieval Christianity, 500-1500 Credits: 3 (3-0-0)
Course Description: Christian Church in Eastern and Western Christendom emphasizing its role in medieval society, relationship with the state, and its institutions.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 310 Medieval Europe Credits: 3 (3-0-0)
Course Description: Political, legal, socioeconomic development of Europe from 300-1500 emphasizing emergence of major states.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 311 Medieval England Credits: 3 (3-0-0)
Course Description: Political, social, and intellectual development of England from Romans to end of Middle Ages.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 312 Women in Medieval Europe Credits: 3 (3-0-0)
Course Description: Women in the European Middle Ages; political, social, economic, religious, and cultural developments.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 315 Tudor Stuart England, 1485-1689 Credits: 3 (3-0-0)
Course Description: Political, economic, and social history of England from 1485-1689 emphasizing religious movements, revolution, and constitutional development.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 317 Renaissance and Reformation Europe Credits: 3 (3-0-0)
Course Description: Development of European society during Renaissance and Reformation eras; religion, society, and the rise of nation-states.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 318 The Age of the Enlightenment Credits: 3 (3-0-0)
Course Description: Development of European society from settlement of religious wars to French Revolution emphasizing political, economic, and intellectual trends.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 319 Early Modern France, 1500-1789 Credits: 3 (3-0-0)
Course Description: Political, social, economic, religious, and cultural developments in France (16th-18th centuries) emphasizing formation of the absolutist state.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 320 Women and Gender in Europe, 1450-1789 Credits: 3 (3-0-0)
Course Description: Women and gender in western Europe (15th-18th centuries); political, social, economic, religious, and cultural developments.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 321 Industrial Society in Europe, 1600-1871 Credits: 3 (3-0-0)
Course Description: Causes and consequences of European industrialization and its impact on European Societies between 1600 and 1871.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 322 Industrial Society in Europe, 1871-1989 Credits: 3 (3-0-0)
Course Description: Causes and consequences of industrialization and its impact on European societies between 1871 and 1989.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 323 Russia Before 1700 Credits: 3 (3-0-0)
Course Description: Russia's political predecessors; contacts with Byzantium, Western Europe, and the Mongol Empire, and resulting cultural, religious, and social change.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 324 Imperial Russia Credits: 3 (3-0-0)
Course Description: Tsarist Russia from its beginnings to the November 1917 Revolution; emphasis on modern period.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 325 Ireland: Culture, Politics, Society and Nation Credits: 3 (3-0-0)
Course Description: Creation of modern Ireland from the 18th century to the present, with brief opening overview of the Celtic and Medieval periods.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 328 Modern Europe, 1815-1914 Credits: 3 (3-0-0)
Course Description: Europe in 19th century emphasizing growth of liberalism, nationalism, and industrialism.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 329 Europe in Crisis, 1914-1941 Credits: 3 (3-0-0)
Course Description: Political, social, economic developments since 1914; consequences of world wars, Great Depression, spread of totalitarianism, decline of imperialism.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 330 Eastern Europe Since 1918 Credits: 3 (3-0-0)
Course Description: Breakup of Austrian, German, Russian, Turkish Empires; successor states between wars; communist revolutions and character of East European socialist regimes.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 331 The Soviet Union Credits: 3 (3-0-0)
Course Description: Formation of Soviet system in 1918 to its demise in 1991 emphasizing emergence of an advanced socialist state.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 332 Germany Since World War I Credits: 3 (3-0-0)
Course Description: German history, culture, and everyday life from 1914 to present.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 333 Contemporary Europe Credits: 3 (3-0-0)
Course Description: Political, economic, social, and cultural history of major European nations since World War II.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 334 European Culture in the 20th Century Credits: 3 (3-0-0)
Course Description: Cultural developments since World War I emphasizing science, art, clash of ideologies, existentialism, youth culture, and environmental issues.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 335 Britain in the 20th Century Credits: 3 (3-0-0)
Course Description: Political, economic, and social developments emphasizing role of Britain in world affairs and internal changes that led to welfare state.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 336 Germany from Napoleon to WWI Credits: 3 (3-0-0)
Course Description: Modern Germany from the late eighteenth to the early twentieth centuries.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 338 The Holocaust in Historical Perspective Credits: 3 (3-0-0)
Course Description: Comprehensive introduction to the Holocaust as a defining event of modern Jewish, European and world history. Strong emphasis on historical context, including the evolution of modern antisemitism and the rise of fascism. While the course will focus on Hitler's singular war against European Jewry, it also examines Nazi campaigns against other targeted populations, including the disabled, Roma/Sinti, homosexuals, communists, Jehovah's Witnesses, and others.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 339 World War II in Europe Credits: 3 (3-0-0)
Course Description: WWII in Europe (1939-1945): military strategy, tactics; political and diplomatic events; economic and social impacts; ethnic and gender consequences.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 340 Colonial North America, 1492-1800 Credits: 3 (3-0-0)
Course Description: New World encounters between Native Americans, Europeans, and Africans, and the colonial societies they built.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 341 Eighteenth Century America Credits: 3 (3-0-0)
Course Description: Politics, culture, and society in Colonial British America and the new United States, 1700-1815.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 344 Antebellum America Credits: 3 (3-0-0)
Course Description: National growth, 1800 to 1860, emphasizing political, social, and economic developments.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 345 Civil War Era Credits: 3 (3-0-0)
Course Description: U.S. history between 1848 and 1865 emphasizing causes and results of the Civil War.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 346 Reconstruction and the New South Credits: 3 (3-0-0)
Course Description: Reconstruction Era, 1865-1877, and the South to present with emphasis on purposes and results of Reconstruction.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 347 United States, 1876-1917 Credits: 3 (3-0-0)
Course Description: Victorian way of life; rise of industry; reform movements; imperialism; World War I.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 348 United States, 1917-1945 Credits: 3 (3-0-0)
Course Description: World War I, the 1920s, the Great Depression, and World War II.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 349 United States Since 1945 Credits: 3 (3-0-0)
Course Description: History of the United States during the post-World War II era, including the Cold War, foreign and domestic affairs from the Truman era to the present.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits. Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 350 United States Foreign Relations Since 1914 Credits: 3 (3-0-0)
Course Description: Main problems in U.S. foreign relations in the 20th century; especially causes and consequences of the two world wars, Great Depression and the Cold War.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 351 American West to 1900 Credits: 3 (3-0-0)
Course Description: Social, political, economic, environmental developments and intercultural relations in trans-Mississippi West to 1900.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 352 American West Since 1900 Credits: 3 (3-0-0)
Course Description: Social, political, economic, environmental developments and intercultural relationships in trans-Mississippi West since 1900.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 353 U.S.-Mexico Borderlands Credits: 3 (3-0-0)
Course Description: Borderlands, northern Mexico, southwestern U.S.; intercultural relationships among Indian, Spanish, Mexican, U.S. cultures.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 354 American Architectural History Credits: 3 (3-0-0)
Course Description: Broad historical interpretation of the North American built environment from 1500 to present.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 355 American Environmental History Credits: 3 (3-0-0)
Course Description: Interaction of humans and nature in American history with emphasis on relationships between environmental, social, and cultural change.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 356 American Cultural and Intellectual History Credits: 3 (3-0-0)
Course Description: Role of American cultural and intellectual developments in American society and the world.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 357 The American Military Experience Credits: 3 (3-0-0)
Also Offered As: MLSC 357.
Course Description: Role of the armed forces in American society; development of military traditions, institutions, and practices.
Prerequisite: HIST 100 or HIST 101 or HIST 115 or HIST 120 or HIST 121 or HIST 150 or HIST 151 or HIST 170 or HIST 171.
Registration Information: Completion of 45 credits. Credit not allowed for both MLSC 357 and HIST 357.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Traditional.
Special Course Fee: No.

HIST 358 American Women's History to 1800 Credits: 3 (3-0-0)
Course Description: History of Indian, African, and European women in North America from early colonial contact through the American Revolution and into Early Republic.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 359 American Women's History Since 1800 Credits: 3 (3-0-0)
Course Description: Social, cultural, economic, and political history of women in the United States since 1800.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 360 United States Immigration History Credits: 3 (3-0-0)
Course Description: Central themes of U.S. immigration from perspective of major immigrant groups and within context of U.S. immigration policy.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 361 American Indians in the Age of Conquest Credits: 3 (3-0-0)
Course Description: American Indian history from pre-contact to the era of Indian removal (1840s) focused on the impact of colonization.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 362 American Indian Renaissance in Modern America Credits: 3 (3-0-0)
Course Description: American Indian history from the reservation era to the present with a focus on cultural and political renewal.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 363 Colorado History Credits: 3 (3-0-0)
Course Description: History of Colorado from pre-history to present.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 364 Asian American Social Movements, 1945-Present Credits: 3 (3-0-0)
Also Offered As: ETST 364.
Course Description: Historical relationships between Asian Americans and social movements for social, economic, and political equity in the U.S. since 1945.
Prerequisite: HIST 151 or HIST 252 or ETST 252.
Registration Information: Completion of 45 credits. Credit not allowed for both HIST 364 and ETST 364.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 365 American West Field Study Credits: 3 (2-3-0)
Course Description: Explore western U.S. history through primary sources and field trips to sites in Colorado and the West. Topic varies by semester and instructor.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Required field trips. Students may take course only once for credit toward degree completion.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 366 African-American History to 1865 Credits: 3 (3-0-0)
Course Description: African-American history from the colonial era to the end of the Civil War.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 367 African-American History Since 1865 Credits: 3 (3-0-0)
Course Description: African-American history from the end of the Civil War to the late twentieth century.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 368 The American South Credits: 3 (3-0-0)
Course Description: The American South, 1607 to the present; plantation system, slave culture, secession, Civil War, Reconstruction, Jim Crow, Civil Rights, and the modern South.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 369 History of Sexuality in America Credits: 3 (3-0-0)
Course Description: History of sexuality in North America and the United States from the pre-colonial period to the present.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 370 United States History Through Film Credits: 3 (3-0-0)
Course Description: Examining American history through the medium of film with an emphasis on changing depictions of critical events and people. Strong emphasis on historical context, including how changing social, political, cultural, and environmental ideas and practices shaped the production and consumption of film.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 371 Civil Rights in America Credits: 3 (3-0-0)
Course Description: A survey of the various civil rights movements in American history, including the efforts of African Americans, women, Chicanos, Native Americans, and the LGBTQ community to gain equality.
Prerequisite: HIST 100 to 499X - at least 3 credits.
Registration Information: Completion of 30 credits.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 379 Economic History of the United States Credits: 3 (3-0-0)
Also Offered As: ECON 379.
Course Description: Economic analysis of growth and welfare from beginning of industrialization to present.
Prerequisite: ECON 101 or ECON 202 or AREC 202.
Registration Information: Any 2 courses in American history; Completion of 45 credits. Credit not allowed for both HIST 379 and ECON 379.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 382B Study Abroad: The Normandy Campaign Credit: 1 (0-0-1)
Course Description: Study abroad experience focused on understanding WWII in Europe, specifically the Normandy Campaign and its implications for the western front.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits. Written consent of instructor.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 382C Study Abroad - South Korea: Cinema, Culture, and History Credits: 3 (0-0-3)
Also Offered As: SPCM 382C.
Course Description: A survey of post-1945 South Korean cinema from Golden Age classics of the 1950s and 1960s to the rise of new blockbuster hits and art-house films throughout the contemporary period. Cinematic texts are examined within various historical, sociopolitical, and cultural contexts of postcolonial South Korea, with attention to the issues of Japanese colonialism, national division, civil war, U.S. neocolonialism, military dictatorships, the democratic movement, and globalization.
Prerequisite: None.
Registration Information: Sophomore standing. Required field trips. Credit not allowed for both HIST 382C and SPCM 382C.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 382D Study Abroad: History, Community, and Environment in Mexico Credits: 3 (0-0-3)
Course Description: Explores history, identity, community, and human relationships to the environment in Baja California Sur, Mexico. Employs theories and tools of Public History and Environmental History.
Prerequisite: CO 150.
Registration Information: Sophomore standing. Offered as Mixed Face-to-Face.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 410 Colonial Latin America Credits: 3 (3-0-0)
Course Description: Spanish and Portuguese America from pre-Columbian times through independence (c. 1825).
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 411 Latin America Since Independence Credits: 3 (3-0-0)
Course Description: Major trends in the social, cultural, political, and economic evolution of Spanish America and Brazil since independence.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 412 Mexico Credits: 3 (3-0-0)
Course Description: Social, economic, and political development of Mexican people from pre-Columbian times to present.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits. Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 414 Revolutions in Latin America Credits: 3 (3-0-0)
Course Description: Historical and theoretical issues arising from revolutionary episodes in Latin America, with emphasis on 20th century case studies.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 420 Africa: Precolonial States and Empires Credits: 3 (3-0-0)
Course Description: Origins of societal and political development in Africa before 1800; technology, the environment, human migrations, and trade.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 421 Africa: Colonialism to Independence Credits: 3 (3-0-0)
Course Description: Africa from abolition of the slave trade to independence, focusing on economic, social, and political change under colonialism.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 422 Modern Africa Credits: 3 (3-0-0)
Course Description: Colonial roots of modern Africa focusing on the period since 1935. Case studies of social and political change in Africa since World War II.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 423 South African History Credits: 3 (3-0-0)
Course Description: South African history from human origins to the end of Apartheid.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 424 East African History Credits: 3 (3-0-0)
Course Description: Overview of East African history from human origins to modern times, focusing on Kenya, Tanzania, and Uganda.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 430 Ancient Near East Credits: 3 (3-0-0)
Course Description: Neolithic period to 500 B.C.E. emphasizing political, social, intellectual, and cultural developments.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 431 Ancient Israel Credits: 3 (3-0-0)
Course Description: Ancient Israel and the Near Eastern world of the Hebrew Bible/Old Testament.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 432 Sacred History in the Bible and the Qur'an Credits: 3 (3-0-0)
Course Description: Conceptions of sacred history in the Biblical and Qur'anic traditions, emphasizing pre-modern historiography and exegesis.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 433 Muhammad and the Origins of Islam Credits: 3 (3-0-0)
Course Description: Emergence of Islam and growth of the Islamic community from time of Muhammad to decline of the Arab Caliphate.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 435 Jihad and Reform in Islamic History Credits: 3 (3-0-0)
Course Description: Jihad and reform in classical and modern Islamic thought and practice.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 436 The Land of Israel-Past and Present Credits: 3 (3-0-0)
Course Description: Diverse physical geography, rich material culture, and complex history of the land of Israel--ancient, medieval, and modern.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits. Credit not allowed for both HIST 436 and HIST 436A.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 438 The Modern Middle East Credits: 3 (3-0-0)
Course Description: Historical developments in the Middle East in the 19th and 20th centuries.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 439 Environmental History of the Middle East Credits: 3 (3-0-0)
Course Description: Explores the social, political, and ecological consequences of past human interactions with the environment in the Middle East and North Africa.
Prerequisite: HIST 100 to 499X - at least 3 credits.
Registration Information: Completion of 45 credits. Credit not allowed for both HIST 381A2 and HIST 439.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 440 Modern South Asia: Colonialism and Nationalism Credits: 3 (3-0-0)
Course Description: Major political, social, economic, and cultural developments in South Asia from the 17th century to the present.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 441 South Asia Since Independence Credits: 3 (3-0-0)
Course Description: Major political, social, economic, and cultural developments in South Asia after independence.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 450 Ancient China Credits: 3 (3-0-0)
Course Description: Development of civilizations in China from Neolithic times to 200 B.C.E.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 451 Medieval China and Central Asia Credits: 3 (3-0-0)
Course Description: Historical developments in China and Central Asia from 200 B.C.E. to 1300 C.E.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 452 China in the Modern World, 1600-Present Credits: 3 (3-0-0)
Course Description: Historical developments in China since 1600.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 455 Tokugawa and Modern Japan, 1600-Present Credits: 3 (3-0-0)
Course Description: Historical developments in Japan since 1600.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 456 East Asia in the Age of Empire, 1800-Present Credits: 3 (3-0-0)
Course Description: Rise of modern imperialism in East Asia, both from without (the "West") and from within (Japan), 1800-present.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 460 Slavery in the Americas Credits: 3 (3-0-0)
Course Description: Slave labor; Atlantic world economy; African contributions to American culture; gender and racial dynamics; emancipation movements.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 461 Rise and Fall of British Empire 1600-1947 Credits: 3 (3-0-0)
Course Description: Beginnings of globalization; its origins in the spread of the British Empire; major causes of expansion, forms of control, long-term effects.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 463 Science and Technology in Modern History Credits: 3 (3-0-0)
Course Description: Impact of science and technology on industry, agriculture, medicine, education, etc. Issues in science and technology policy.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 464 Pacific Wars: Philippines-WWII Credits: 3 (3-0-0)
Course Description: Diplomatic, ideological, political, cultural, and military aspects of war in the Pacific from the Philippines war through WWII.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 465 Pacific Wars: Korea and Vietnam Credits: 3 (3-0-0)
Course Description: Diplomatic, ideological, political, cultural, and military aspects of war in the Pacific from the war in Korea through the war in Vietnam.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 466 U.S.-China Relations Since 1800 Credits: 3 (3-0-0)
Course Description: United States-China relations as represented in travel narratives, memoirs, journalistic and diplomatic writing, biography, and autobiography.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 467 Modern Jewish History Credits: 3 (3-0-0)
Course Description: Political, social, cultural, and economic dimensions of modern Jewish history from both a regional and global perspective.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 469 The Crusades Credits: 3 (3-0-0)
Course Description: The Crusades, emphasizing religion, politics, and warfare in Western Europe, Byzantium, the Near East, and the Mongol world empire, c. 1050-1300.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 470 World Environmental History, 1500-Present Credits: 3 (3-0-0)
Course Description: World environmental history since 1500, emphasizing the dynamic interaction of nature, culture, and human activity.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 471 History of Antarctica, 1800-Present Credits: 3 (3-0-0)
Course Description: History of Antarctica from discovery in the early nineteenth century to the present.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 472A Study Abroad: WWII in Europe - The Normandy Campaign Credits: 3 (0-0-3)
Course Description: Focuses on understanding World War II in Europe, specifically the Normandy Campaign and its implications for the western front. The class travels to England, crosses the English Channel, tours the D-Day invasion beaches along the French coast, and then travels to Paris. Also, visit cultural sites in both London and Paris.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits. Written consent of instructor. Credit not allowed for both HIST 382A and HIST 472A.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 475 History in the Digital Age Credits: 3 (3-0-0)
Course Description: Examine recent works of digital history and explore the critical issues and technologies used in digital history.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 476 History of America's National Parks Credits: 3 (3-0-0)
Course Description: The national park system and its development from concept to design to implementation.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 477 Teaching History Credits: 3 (3-0-0)
Course Description: Teaching history, emphasizing teaching historical literacy, research, and writing at the middle and high school levels.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 478 Heritage Resource Management Credits: 3 (3-0-0)
Also Offered As: ANTH 478.
Course Description: Cultural resource laws and policy; practices commonly employed in the management and preservation of these diverse resources.
Prerequisite: None.
Restriction: .
Registration Information: Junior or senior standing. Credit not allowed for both HIST 478 and ANTH 478.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 479 Practice of Public History Credits: 3 (3-0-0)
Course Description: Public history methods and career paths into interpretation, museums, archives, historic preservation, oral history, and other fields.
Prerequisite: HIST 100 to 499XX - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Assisting the instructor in teaching introductory history courses; relevant readings and discussions.
Prerequisite: None.
Registration Information: Completion of 45 credits. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HIST 487 Internship Credits: Var[1-3] (0-0-0)
Course Description: Application of historical methods in museums, libraries, and at historic sites.
Prerequisite: None.
Registration Information: Completion of 45 credits. A maximum of 10 combined credits for all 384 and 484 courses are counted toward graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 492 Capstone Seminar Credits: 3 (0-0-3)
Course Description: Seminar involving critical reading, writing, research, and discussion. Topics vary by instructor.
Prerequisite: None.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing; history majors only. To count toward the major, the course must be completed with a grade of C or better.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 497 Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 501 Historical Method: Historiography Credits: 3 (0-0-3)
Course Description: Historiographical skills and methods, emphasis on research, writing, and interpretation.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 502 Historical Method: Archives Credits: 3 (0-0-3)
Course Description: Historiographical skills and methods; emphasis on fundamentals of archival science.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 503 Historical Method: Preservation Credits: 3 (0-0-3)
Course Description: Historiographical skills and methods; emphasis on theory and practice of historic preservation.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 504 Historical Method: Museums Credits: 3 (0-0-3)
Course Description: Historiographical skills and methods; emphasis on philosophy and practices of history museums.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 505 Historical Method - Digital History Credits: 3 (3-0-0)
Course Description: Historiographical skills and methods; emphasis on theory and practice of digital history.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Credit not allowed for both HIST 505 and HIST 580A1.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 511 Reading Seminar: U.S. to 1877 Credits: 3 (0-0-3)
Course Description: Readings on United States history to 1877.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 512 Reading Seminar: U.S. Since 1877 Credits: 3 (0-0-3)
Course Description: Readings on United States history since 1877.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 515 Records Management Credits: 3 (3-0-0)
Course Description: Basic records management techniques and concepts such as retention, vital records, disaster planning, and electronic records.
Prerequisite: HIST 501.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 520 Reading Seminar-Europe to 1815 Credits: 3 (0-0-3)
Course Description: Readings on European history to 1815.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 521 Reading Seminar-Europe Since 1815 Credits: 3 (0-0-3)
Course Description: Readings on European history since 1815.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 530 Reading Seminar: Africa Credits: 3 (0-0-3)
Course Description: Readings on major historiographical issues in African history.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 531 Reading Seminar: Latin America Credits: 3 (0-0-3)
Course Description: Readings on major historiographical issues in Latin American history.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 532 Reading Seminar: Middle East Credits: 3 (0-0-3)
Course Description: Readings on major historiographical issues in Middle East history.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 533 Reading Seminar: East Asia Credits: 3 (0-0-3)
Course Description: Readings on major historiographical issues in East Asian history.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 534 Reading Seminar: South Asia Credits: 3 (0-0-3)
Course Description: Major historiographical issues in South Asian history.
Prerequisite: HIST 501.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 539 Reading Seminar--World Environmental History Credits: 3 (0-0-3)
Course Description: Major works in the field of world environmental history and the major historiographical debates.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 540 Material Culture Credits: 3 (0-0-3)
Course Description: Social, cultural, economic, and political developments in history as interpreted through artifacts.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 586 Practicum Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 587 Internship Credits: Var[1-6] (0-0-0)
Course Description: Work-oriented instruction involving implementation of classroom and laboratory experiences coordinated by a faculty member.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 611 Research Seminar: United States Credits: 3 (0-0-3)
Course Description: Research in United States history.
Prerequisite: HIST 501.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 621 Research Seminar: Europe Credits: 3 (0-0-3)
Course Description: Research in European history.
Prerequisite: HIST 501.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 640 Research Seminar: State and Local History Credits: 3 (0-0-3)
Course Description: Research in and interpretation of state and local history within the broader context of United States history.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: Discussions and readings to enhance teaching proficiency.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: HIST 501.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 697 Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: HIST 501.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Honors Program-HONR (HONR)

Courses

HONR 192 Honors First Year Seminar Credits: 4 (3-0-1)
Course Description: Humanistic and scientific studies; emphasis on literate activities, written communication; student development and transition to university life.
Prerequisite: None.
Registration Information: Participation in University Honors Program. Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Traditional.
Special Course Fee: No.

HONR 193 Honors Seminar Credits: 3 (0-0-3)
Course Description: Humanistic and scientific studies with emphasis on rigorous literate activities, especially written communication.
Prerequisite: HONR 192.
Registration Information: Participation in University Honors Program.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Intermediate Writing 1A.

HONR 195 Honors Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Participation in University Honors Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HONR 197 General Honors Colloquium Credits: Var[1-4] (0-0-0)
Course Description: Students from all major fields meet in small groups to focus on a problem of concern to all.
Prerequisite: None.
Registration Information: Freshmen and sophomore standing only. Participation in University Honors Program.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HONR 292A Honors Seminar: Knowing in the Sciences Credits: 3 (0-0-3)
Course Description: Exploration of science as a way of knowing. What counts as scientific knowledge; methods employed to gain or affirm scientific knowledge; values attributed to scientific knowledge; and ethical and aesthetic implications of what one gains and does with the acquisition of knowledge. Integrates history and philosophy of science with content of, and approaches used, in a scientific discipline in discussions.
Prerequisite: HONR 192 and HONR 193.
Restriction: Must be a: Undergraduate.
Registration Information: Participation in the Honors Program required. If Track 1, HONR 192; HONR 193. If Track 2, then successful completion of a minimum of 30 hours of coursework is required. Credit allowed for only one of the following: HONR 280A1, HONR 292, HONR 292A, HONR 292B, HONR 292C, or HONR 293.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A.

HONR 292B Honors Seminar: Knowing in Arts and Humanities (GT-AH2) Credits: 3 (0-0-3)
Course Description: Knowledge systems and the human experience. Ways of knowing in the arts and humanities.
Prerequisite: HONR 192 and HONR 193.
Registration Information: Participation in University Honors Program. If Track 1, HONR 192; HONR 193. If Track 2, 30 or more college credits after graduation from high school. Credit allowed for only one of the following: HONR 280A1, HONR 292, HONR 292A, HONR 292B, HONR 292C, or HONR 293.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

HONR 292C Honors Seminar: Knowing Across Cultures (GT-SS3) Credits: 3 (0-0-3)
Course Description: Identities, social contexts, global relations, and knowledge systems. Ways of knowing across cultures.
Prerequisite: HONR 192 and HONR 193.
Registration Information: Participation in University Honors Program. If Track 1, HONR 192; HONR 193. If Track 2, 30 or more college credits after graduation from high school. Credit allowed for only one of the following: HONR 280A1, HONR 292, HONR 292A, HONR 292B, HONR 292C, or HONR 293.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

HONR 384 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Participation in University Honors Program. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HONR 392 Honors Seminar Credits: 3 (0-0-3)
Course Description: Various topics in humanistic and scientific studies.
Prerequisite: HONR 193.
Registration Information: Participation in University Honors Program.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B.

HONR 397 General Honors Colloquium Credits: Var[1-4] (0-0-0)
Course Description: Students from all major fields meet in small groups to focus on a problem of concern to all.
Prerequisite: None.
Registration Information: Qualified junior and senior standing only. Participation in University Honors Program.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HONR 399 Pre-thesis Credit: 1 (0-0-1)
Course Description: Preparation for Honors senior thesis.
Prerequisite: None.
Registration Information: Participation in University Honors Program.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HONR 492 Honors Senior Seminar Credits: 3 (0-0-3)
Course Description: Variable topics on humanistic and scientific studies.
Prerequisite: HONR 392.
Registration Information: Participation in University Honors Program.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C.

HONR 495 Independent Study Credits: Var[1-5] (0-0-0)
Course Description: Individual projects developed by the student and the major adviser at the upper-division level but which transcends basic course content.
Prerequisite: None.
Registration Information: Participation in University Honors Program.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HONR 498 Honors Undergraduate Research Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Junior.
Registration Information: Junior standing. Participation in University Honors Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HONR 499 Senior Honors Thesis Credits: 3 (0-0-3)
Course Description:
Prerequisite: HONR 399.
Registration Information: Participation in University Honors Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Horticulture-HORT (HORT)

Courses

HORT 100 Horticultural Science Credits: 4 (3-2-0)
Course Description: Principles of plant science and related disciplines as the base and context for the introduction of horticultural practices.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Required field trips. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A.

HORT 171 Environmental Issues in Agriculture (GT-SS3) Credits: 3 (2-0-1)
Also Offered As: SOCR 171.
Course Description: Historical development of agriculture, environmental consequences of modern food production and other cultural approaches to agriculture.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Credit not allowed for both HORT 171 and SOCR 171.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

HORT 221 Landscape Plants Credits: 4 (2-4-0)
Course Description: Identification, landscape features, cultural requirements, and landscape use of coniferous and deciduous trees and shrubs, vines, and evergreens.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Required field trips.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

HORT 231 Landscape Graphics Studio Credits: 4 (2-4-0)
Course Description: Mechanical and freehand graphic techniques for landscape design. Use of pencil, ink, and colored markers. Plan, sectional, and perspective views.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HORT 232 Principles of Landscape Design Credits: 4 (2-4-0)
Course Description: Basic concepts in the art and process of landscape design.
Prerequisite: HORT 231.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

HORT 260 Plant Propagation Credits: 4 (3-2-0)
Course Description: Theories, principles, and techniques of sexual and asexual propagation.
Prerequisite: BZ 120, may be taken concurrently or HORT 100, may be taken concurrently or LIFE 103, may be taken concurrently.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

HORT 270 Fundamentals of Horticultural Therapy Credits: 2 (2-0-0)
Course Description: Theory and practice of horticultural therapy in health care and human services; applications, settings, and professional career topics.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 277 Introduction to Enology Credit: 1 (1-0-0)
Course Description: Methods/criteria to evaluate, compare, and describe aroma and flavor characteristics in sound commercial wines; identification of common wine defects.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 310 Greenhouse Management Credits: 4 (3-2-0)
Course Description: Design and use of enclosed structures to manipulate controlled environments, effects on growth as applied to crops, production, and marketing costs.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

HORT 321 Nursery Production and Management Credits: 4 (3-2-0)
Course Description: Nursery industry organization, management, equipment, field and container production, storage, shipping, marketing, and business management practices.
Prerequisite: BZ 120 or HORT 100 or LIFE 103.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

HORT 322 Herbaceous Plants Credits: 3 (2-2-0)
Course Description: Identification, landscape features, cultural requirements, and uses of ornamental annual, perennial, and bulb plants.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online. Required field trips.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

HORT 328 Interior Plantscaping Credits: 3 (2-2-0)
Course Description: Interior plant culture, plant identification, interiorscape design and concepts for running an interior plantscaping business.
Prerequisite: BZ 120 or HORT 100.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 330 Computers for Landscape Design Credits: 2 (1-2-0)
Course Description: Applications and techniques of computer software utilized in small-scale landscape design-build.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 331 Landscape Design Credits: 2 (2-0-0)
Course Description: Fundamentals of landscape design theory and plant composition as presented in simple problems.
Prerequisite: None.
Registration Information: For non-design majors only.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HORT 335 Landscape Structures Credits: 4 (2-4-0)
Course Description: Design and construction methods for structures commonly used in residential landscaping. Preparation of construction documents.
Prerequisite: CON 131 and HORT 232.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 336 Landscape Grading and Drainage Studio Credits: 4 (2-4-0)
Course Description: Basic design principles for grading, drainage, and earth forms for small-scale projects.
Prerequisite: (HORT 221 and HORT 322 and HORT 335) and (MATH 118).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HORT 341 Turfgrass Management Credits: 3 (2-2-0)
Course Description: Principles and practices of turfgrass propagation and maintenance.
Prerequisite: HORT 100, may be taken concurrently.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 344 Organic Greenhouse Production Credit: 1 (1-0-0)
Course Description: Fundamentals of greenhouse production using organic production methods.
Prerequisite: HORT 310.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

HORT 345 Diagnosis and Treatment in Organic Fields Credits: 2 (0-4-0)
Also Offered As: SOCR 345.
Course Description: Field experience in diagnosis of pest and nutrient problems on organic farms and development of treatment recommendations.
Prerequisite: (BSPM 302 or BSPM 308 or BSPM 361) and (HORT 100 or SOCR 100) and (SOCR 240).
Registration Information: Credit not allowed for both HORT 345 and SOCR 345. Required field trips.
Term Offered: Summer (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

HORT 367 Landscape Irrigation Credits: 3 (2-2-0)
Course Description: Practical design of sprinkler and trickle irrigation systems for commercial and residential landscapes.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: HORT 367, HORT 368, LAND 368.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 368 Landscape Irrigation and Water Conservation Credits: 3 (2-2-0)
Also Offered As: LAND 368.
Course Description: Practical approaches and methods of irrigation, water conservation, and water management in the designed landscape.
Prerequisite: HORT 100 or LAND 110.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: HORT 367, HORT 368, LAND 368.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 370 Landscape Irrigation Credit: 1 (1-0-0)
Course Description: Necessary skills to design and manage irrigation systems used in the landscape industry.
Prerequisite: HORT 100, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 377 Horticultural Methods for Therapy Programs Credit: 1 (1-0-0)
Course Description: Horticultural methods for health care and human service settings, including indoor and outdoor growing techniques, management and plant selection.
Prerequisite: HORT 100 or HORT 270.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 382 Origins of Agriculture in the Andes of Peru Credits: 3 (0-0-3)
Course Description: Study abroad experience focused on understanding the agricultural, biological, cultural, and geographical diversity of the Andes region of Peru.
Prerequisite: HORT 100 or BZ 120 or LIFE 103.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 401 Medicinal and Value-Added Uses of Plants Credits: 3 (3-0-0)
Course Description: Chemical, biochemical and ethnobotanical perspective on the medicinal and value-added uses of plants.
Prerequisite: BZ 120 or HORT 100 or LIFE 103.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 410 Postharvest Biology and Technology Credits: 3 (3-0-0)
Course Description: Storage and quality maintenance of harvested fruits and vegetables.
Prerequisite: (BZ 120 or HORT 100 or LIFE 103) and (BZ 440).
Registration Information: Offered as an online course only. Credit not allowed for both HORT 410 and HORT 481A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 412 Floriculture Crops Credits: 4 (3-0-1)
Course Description: Commercial production and marketing of bedding plants, potted container crops, and cut flowers.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Required field trips. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 421 Horticultural Therapy Techniques Credits: 2 (2-0-0)
Course Description: Clinical skills in horticultural therapy; communication, safety, leadership, therapeutic relationships, adaptation of tools and activities.
Prerequisite: HORT 270.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 423 Horticultural Therapy Programming Credits: 2 (2-0-0)
Course Description: Methods for individual treatment planning, intervention, documentation, and reporting within therapy, social, and vocational HT programs.
Prerequisite: HORT 421.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 424 Topics in Organic Agriculture Credits: 3 (3-0-0)
Also Offered As: SOCR 424.
Course Description: Examination of issues specific to organic food production systems and marketing.
Prerequisite: (AREC 202 or ECON 202) and (SOCR 240 and AREC 328) and (HORT 100 or SOCR 100) and (HORT 171 or SOCR 171).
Registration Information: Credit not allowed for both HORT 424 and SOCR 424.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 425 Horticultural Therapy Management Credits: 3 (2-0-1)
Course Description: Horticultural therapy program and site design, proposals, funding, marketing, management, and evaluation.
Prerequisite: HORT 423.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 431 Planting Design Studio Credits: 4 (2-4-0)
Course Description: Functional and aesthetic values of plant materials; their creative use in landscape design.
Prerequisite: HORT 221 and HORT 336 and HORT 322.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HORT 432 Intensive Landscape Design Studio Credits: 5 (2-6-0)
Course Description: Site planning and design for landscape projects of a limited scale. Problems of increasing complexity. Emphasis on real sites and clients.
Prerequisite: HORT 487 and HORT 431.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 441 Turfgrass Science Credits: 3 (3-0-0)
Course Description: Examination of turfgrass management practices from a scientific perspective; discussion of advanced turfgrass management technologies.
Prerequisite: BZ 120 or HORT 100 or SOCR 240.
Registration Information: Required field trips. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 451 Vegetable Crop Management Credits: 3 (2-0-1)
Course Description: Physiological, environmental, and cultural aspects of vegetable crop production, including conventional and certified organic approaches.
Prerequisite: BZ 120 or BZ 440 or HORT 100 or LIFE 103 or SOCR 100.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online. Credit allowed for only one of the following: HORT 450A, HORT 451, or HORT 480A2. Credit allowed for only one of the following: HORT 450B, HORT 451, or HORT 480A2.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 452 Viticulture-Grape Production Credit: 1 (1-0-0)
Course Description: Grape production in temperate zone climates.
Prerequisite: BZ 120 or HORT 100 or LIFE 103 or SOCR 100.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 453 Principles of Fruit Crop Management Credits: 3 (2-0-1)
Course Description: Understanding the fundamentals of fruit tree biology is essential to making sound orchard management and business decisions in the tree fruit industry. Explore the basics of tree and small fruit production, including site, cultivar and rootstock selection, cropping trends and cultural practices such as planting, pruning, training, irrigation, nutrition, harvesting, and postharvest handling and technology of specific temperate fruit crops.
Prerequisite: BZ 120 or BZ 440 or HORT 100 or LIFE 103 or SOCR 100.
Registration Information: Sections may be offered: Online. Credit not allowed for both HORT 450C and HORT 453. Credit not allowed for both HORT 450D and HORT 453.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 454 Horticulture Crop Production and Management Credits: 2 (2-0-0)
Course Description: Production and management of horticulture crops.
Prerequisite: HORT 310 or HORT 451 or HORT 453.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 460 Plant Breeding Credits: 3 (2-0-1)
Also Offered As: SOCR 460.
Course Description: Theory and practice of plant breeding using principles of genetics and related sciences.
Prerequisite: BZ 350, may be taken concurrently or LIFE 201A, may be taken concurrently or SOCR 330, may be taken concurrently.
Registration Information: Must register for lecture and recitation. Credit not allowed for both HORT 460 and SOCR 460.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 461 Plant Breeding Laboratory Credit: 1 (0-2-0)
Also Offered As: SOCR 461.
Course Description: Techniques and procedures used in public and commercial plant breeding programs.
Prerequisite: HORT 460, may be taken concurrently or SOCR 460, may be taken concurrently.
Registration Information: Credit not allowed for both HORT 461 and SOCR 461.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 462 Viticulture Practices in Grape Production Credits: 3 (3-0-0)
Course Description: Biology of grape vines and cultural practices including planning, training, pest control, pruning, and harvesting; special emphasis on Colorado.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 464A Arboriculture Credits: 3 (2-2-0)
Course Description: Practices used by arborists and landscape managers to plant, appraise and maintain landscape trees.
Prerequisite: HORT 100 and SOCR 240.
Registration Information: Sections may be offered: Online. Credit not allowed for both HORT 464A and HORT 464B. Required field trips.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HORT 465 Landscape Estimating Credits: 3 (2-2-0)
Course Description: Landscape construction estimating and bidding, contract documentation and other business practices relevant to landscape design-build and contracting.
Prerequisite: (MATH 117) and (MATH 118) and (MATH 124 or MATH 125 or MATH 141 or MATH 155) and (HORT 221).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HORT 466 Urban and Community Forestry Credits: 3 (3-0-0)
Also Offered As: F 466.
Course Description: Policies and management of publicly and privately owned community forests in urbanized areas.
Prerequisite: F 310 or RS 310 or HORT 221.
Registration Information: Credit not allowed for both HORT 466 and F 466.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 476 Environmental Plant Stress Physiology Credits: 3 (3-0-0)
Course Description: Plant growth, development and physiology, major sources of stress in plants, global issues in environment and plant stress.
Prerequisite: BZ 440.
Registration Information: Credit not allowed for both HORT 476 and HORT 576. Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 477 Enology-History and Winemaking Credits: 3 (3-0-0)
Course Description: History and development of the wine industry; mechanics of various processes and factors affecting wine quality and consumer acceptance.
Prerequisite: CHEM 107, may be taken concurrently and CHEM 108, may be taken concurrently or CHEM 111, may be taken concurrently and CHEM 112, may be taken concurrently.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 479 Professional Landscape Practices Credits: 2 (2-0-0)
Course Description: Business skills involved in a successful career in the green industry.
Prerequisite: HORT 100 and HORT 465.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 486A Practicum: Floriculture Credits: 2 (0-4-0)
Course Description: Directed experience in applications of floriculture technique. Fall: pest, energy, and production. Spring: production and experimentation.
Prerequisite: HORT 310.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 486B Practicum: General Credits: Var[1-6] (0-0-0)
Course Description: Directed experiences in applications of horticulture techniques and procedures.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 487 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 511 Green Roof Culture Credits: 2 (2-0-0)
Course Description: Understand the relevance of green roofs in North America, especially the process, from concept to project completion and maintenance.
Prerequisite: HORT 100 to 199 - at least 3 credits.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 515 Urban Horticulture Credits: 3 (3-0-0)
Also Offered As: AGRI 515.
Course Description: Investigate and evaluate the techniques of incorporating food production systems in the urban and peri-urban environment.
Prerequisite: HORT 451 or HORT 453.
Registration Information: Credit not allowed for both AGRI 515 and HORT 515. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 521 Horticulture and Human Health and Well-Being Credits: 3 (3-0-0)
Course Description: Impact of principles and practices of horticulture on human health and well-being.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Bachelor's degree required. Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 522 Horticulture and Human Health Issues Credits: 3 (3-0-0)
Course Description: Horticulture is an essential instrument of public health, but often professionals in these fields view themselves as opponents. Examine issues arising in the production of foods for human consumption that human health professionals often encounter. Overcome the barriers that divide horticulture and human health professionals.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 523 Screening Crops for Human Health Traits Credits: 3 (3-0-0)
Course Description: Principle and methods of screening food crops for traits related to human health.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Written consent of instructor. Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 524 Food Pharmacology, Horticulture, and Health Credits: 3 (3-0-0)
Course Description: Application of the principles of pharmacology to the production of food combinations that promote human health. Horticultural food crops are emphasized.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Written consent of instructor. Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 571 Soil-Plant-Water Relations/Water Stress Credits: 3 (3-0-0)
Course Description: Movement of water in the soil-plant-atmosphere continuum. Instrumentation for measuring plant-water relations. Plant responses to drought and salinity.
Prerequisite: BZ 440.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 575 Plant Germplasm Conservation Credits: 2 (2-0-0)
Course Description: Principles, concepts, and methodology for collection, conservation, and utilization of plant genetic resources.
Prerequisite: HORT 460 or SOCR 460.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 576 Advanced Environmental Plant Stress Physiology Credits: 4 (3-0-1)
Course Description: Advanced aspects of plant growth, development and physiology, major sources of stress in plants, global issues in environment and plant stress.
Prerequisite: BZ 440.
Registration Information: Must register for lecture and recitation. Credit not allowed for both HORT 576 and HORT 476.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 578 Phytochemicals and Probiotics for Health Credits: 3 (2-0-1)
Also Offered As: FTEC 578.
Course Description: Examination of phytochemicals and probiotic organisms important in human health.
Prerequisite: BC 351.
Registration Information: Senior standing. Must register for lecture and recitation. Credit not allowed for both FTEC 578 and HORT 578.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 579 Mass Spectrometry Omics-Methods and Analysis Credits: 3 (3-0-0)
Course Description: A survey of experimental designs and workflows to generate, computationally process and analyze metabolite and protein data using mass spectrometry. Course format includes lecture, computer homework assignments with real data, literature review, and student presentations.
Prerequisite: BC 351.
Registration Information: Senior standing. Credit not allowed for both HORT 579 and HORT 581A3.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 588 Supervised Extension Practices Credits: Var[1-18] (0-0-0)
Course Description: Field experiences in extension practices in horticulture.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 601 Topics in Root and Rhizosphere Biology Credits: 2 (1-0-1)
Course Description: In-depth overview of the biology of roots and the rhizosphere processes related to roots.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: One course in plant physiology; one course in biochemistry. Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 675 Plant Stress Physiology Credits: 3 (3-0-0)
Course Description: Research concepts based on physiological, biochemical, and molecular mechanisms controlling environmental stresses in plants.
Prerequisite: BZ 440.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 792 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Hospitality Management-RRM (RRM)

Courses

RRM 101 Hospitality Industry Credits: 3 (3-0-0)
Course Description: Food service, lodging, and tourism industries; exploration of various industry segments and career opportunities.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 200 Hotel Operations Credits: 3 (3-0-0)
Course Description: Front office and room management as related to resorts and hotels. Computer application, financial controls, employee and guest relations.
Prerequisite: RRM 101.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 310 Food Service Systems-Operations Credits: 3 (3-0-0)
Course Description: Technical operations: menu planning, evaluation, recipe standardization, forecasting, food cost, sanitation, hospital food distribution systems.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 311 Food Service Systems-Production and Purchasing Credits: 3 (3-0-0)
Course Description: Quantity food production principles, purchasing specifications, market channels.
Prerequisite: RRM 310.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 312 Hospitality Human Resource Management Credits: 3 (2-0-1)
Course Description: Principles and practices of employee management in the hospitality industry including employment process, training, legal aspects, performance.
Prerequisite: RRM 310.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 330 Alcohol Beverage Control and Management Credits: 2 (2-0-0)
Course Description: Classification, production, and service of controlled beverages; management of facilities and people; safe service training; financial controls.
Prerequisite: CHEM 103, may be taken concurrently or CHEM 107, may be taken concurrently or CHEM 111, may be taken concurrently.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

RRM 340 Restaurant Operations Credits: 5 (0-10-0)
Course Description: Principles, practices, philosophies, systems for daily operation of casual or fine dining restaurant; focus on developing solutions to problems.
Prerequisite: RRM 101, may be taken concurrently.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 345 Food, Beverage, and Labor Cost Control Credits: 3 (3-0-0)
Course Description: Cost control for food, beverage, and labor in the hospitality industry.
Prerequisite: ACT 205.
Registration Information: Sophomore standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 350 Hospitality Marketing Credits: 3 (3-0-0)
Course Description: Operations marketing, including consumer behaviors, marketing strategies, and marketing plans in the hospitality industry.
Prerequisite: RRM 101.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 386 Practicum Credits: 3 (0-0-9)
Course Description: Practicum in Hospitality Management.
Prerequisite: RRM 101.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

RRM 400 Food and Society Credits: 3 (2-0-1)
Course Description: Exploration of the influence of food, dining, and nutrition on cultural aspects of the human experience.
Prerequisite: SOC 100 or PSY 100.
Registration Information: Completion of AUCC 3D and AUCC 3E requirements. Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 410 Food Safety Management Credits: 2 (2-0-0)
Course Description: Management and practical applications of safe food service including sanitation, food borne illness, worker hygiene, proper food temperatures and handling, hazard analysis critical control points, local/state/federal health rules and regulations. ServSafe® Manager Certification.
Prerequisite: (CHEM 103 or CHEM 107 or CHEM 111) and (RRM 310).
Registration Information: Junior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 415 Catering Techniques and Culinary Arts Credits: 3 (0-6-0)
Course Description: Management of advanced techniques in culinary technique; catering of food and beverages for special functions.
Prerequisite: RRM 311.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

RRM 450 Leadership in the Hospitality Industry Credits: 3 (3-0-0)
Course Description: Exploration of leadership skills, their relationship to ethics through self-analysis, and leading change in the hospitality industry.
Prerequisite: RRM 310 and MGT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 460 Event and Conference Planning Credits: 3 (2-0-1)
Course Description: Overview of event planning and management. Explores key concepts critical to the success of any event and current trends in the industry.
Prerequisite: NRRT 270 or RRM 101.
Registration Information: Junior standing. Must register for lecture and recitation. Required field trips. Credit not allowed for both RRM 460 and NRRT 460.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

RRM 487 Internship in Hospitality Management Credits: 5 (0-0-25)
Course Description: Supervised off-campus experience in food and beverage, lodging, or event planning focusing on management tasks and responsibilities.
Prerequisite: RRM 101 and RRM 310, may be taken concurrently.
Registration Information: Sophomore standing. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

RRM 492 Seminar on Hospitality Management Credits: 3 (0-0-3)
Course Description: Applying and synthesizing service knowledge and management functions; project discussions, benchmark presentations, execution of a capstone project.
Prerequisite: MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

RRM 500 Understanding Food Credits: 3 (3-0-0)
Course Description: Role of food in the creation of identity, as a driver of technology, and the prominent role food plays in the media.
Prerequisite: RRM 400.
Registration Information: RRM 400 or admission to GPIdea program in Dietetics. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 510 Foodservice Management Credits: 2 (1-0-1)
Course Description: Analysis of a wide variety of foodservice operations, including procurement, forecasting, operational design, and menu planning.
Prerequisite: NRRT 442 or NRRT 471.
Registration Information: Must register for lecture and recitation. This is a partial semester course. Offered as Mixed Face-to-Face only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 520 Lodging Management Credits: 2 (1-0-1)
Course Description: Operating standards and practices essential to the profitability of a hotel, lodging, and accommodation enterprise.
Prerequisite: NRRT 442 or NRRT 471.
Registration Information: Must register for lecture and recitation. This is a partial-semester course. Offered as Mixed Face-to-Face only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 686 Practicum-Food Service Management Credit: 1 (0-4-0)
Course Description: Food production, menu planning, nutritional analysis and food costing.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Human Development and Family Studies-HDFS (HDFS)

Courses

HDFS 101 Individual and Family Development (GT-SS3) Credits: 3 (3-0-0)
Course Description: Principles of life-span human development in the context of the family. Theory and research on the influence of family systems on individuals.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).

HDFS 201 Perspectives in Gerontology Credits: 3 (3-0-0)
Course Description: Multidisciplinary perspectives on a variety of issues in human aging; exploration of careers in gerontology; service-learning with older adults; emphasis on applied gerontology.
Prerequisite: HDFS 101 or PSY 100 or SOC 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 217 Creative Experiences for Children Credits: 3 (2-0-1)
Course Description: Theories of play and creativity provide the foundation for examining the role of art, music, and literature in early childhood development. Exploration of creative techniques appropriate for young children and how these techniques enhance the child's self-expression, creativity, and development in educational, medical, and therapeutic settings.
Prerequisite: HDFS 101 or PSY 100.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 277 Introductory Seminar in HDFS Credit: 1 (1-0-0)
Course Description: Introduction to human development and family studies field, major and concentration requirements, resources, and career exploration. An inclusive environment to develop and practice the necessary skills to transition to the major and academic expectations of the department and college.
Prerequisite: CO 150, may be taken concurrently or HONR 193, may be taken concurrently.
Registration Information: Human Development and Family Studies or Early Childhood Education majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 286 Practicum-Professional Skills Credits: 3 (1-6-0)
Course Description: Observational and applied experience with children, adolescents, adults, or families. Exploration of professional skills and opportunities.
Prerequisite: HDFS 101.
Registration Information: Must have completed 30 credits; required background check through CBI, FBI; major in Human Development and Family Studies or Early Childhood Education only. Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 302 Marriage and Family Relationships Credits: 3 (3-0-0)
Course Description: Preparation for and adjustment to marital and family relationships throughout the life cycle.
Prerequisite: HDFS 101 or SOC 100.
Registration Information: Completion of 30 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 310 Infant and Child Development in Context Credits: 3 (3-0-0)
Course Description: Physical, cognitive, and socioemotional development from conception through middle childhood in context of family, relationships, and culture.
Prerequisite: HDFS 101 or PSY 100.
Registration Information: Completion of 30 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 311 Adolescent/Early Adult Development in Context Credits: 3 (3-0-0)
Course Description: Physical, cognitive, and socioemotional development of adolescents and young adults in context of family, relationships, and culture.
Prerequisite: HDFS 101 or PSY 100.
Registration Information: Completion of 30 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 312 Adult Development-Middle Age and Aging Credits: 3 (3-0-0)
Course Description: Developmental issues and processes pertaining to middle and later adulthood. Contexts in which adult development and aging occur are emphasized.
Prerequisite: HDFS 101 or PSY 100.
Registration Information: Completion of 30 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 315 Disability across the Lifespan and Culture Credits: 3 (3-0-0)
Course Description: Use of interdisciplinary perspective to understand individuals who have disabling conditions relevant to careers in health, educational, rehabilitation, and human service professions. Causes, outcomes, and intervention of commonly occurring disabilities and health conditions (e.g., congenital disabilities, diabetes, spinal cord injuries).
Prerequisite: HDFS 101.
Registration Information: Sophomore standing. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 317 Special Needs in Early Childhood Credits: 3 (3-0-0)
Course Description: Atypical development in early childhood and recommended practices for fostering development of young children (birth through grade 3) with special needs. Includes recommended practices for assessment, intervention, adapted instruction and materials, and inclusive environments to facilitate children's attainment of educational goals.
Prerequisite: HDFS 310 or PSY 260.
Registration Information: Sophomore standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 318 Infancy and Toddlerhood Credits: 3 (3-0-0)
Course Description: Physical, cognitive, language, and socio-emotional development from pre-birth through 36 months, with an emphasis on applied settings.
Prerequisite: HDFS 310 or PSY 260.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 320 Cognitive and Language Development Credits: 3 (3-0-0)
Course Description: Cognitive and language development from birth to adulthood; including biological, social, and cultural influences.
Prerequisite: HDFS 310.
Registration Information: Completion of 30 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 332 Death, Dying, and Grief Credits: 3 (3-0-0)
Course Description: Developmental processes of death and dying related to the dying individuals and their families and for human service agencies.
Prerequisite: HDFS 101 or PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 334 Family and Parenthood Across the Life Cycle Credits: 3 (3-0-0)
Course Description: Parenthood as a developmental process and in the context of family relationships throughout the life cycle.
Prerequisite: HDFS 101 or PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 350 Applied Research Methods Credits: 3 (2-2-0)
Course Description: Interpret, apply, and write about research findings in human development.
Prerequisite: (HDFS 101 or PSY 100) and (STAT 201 or STAT 301).
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 375 Lifespan Intervention and Prevention Science Credits: 3 (3-0-0)
Course Description: Intervention and prevention approaches and skills to improve the health, mental health, and well-being of families and individuals across the lifespan.
Prerequisite: HDFS 310 and HDFS 311.
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 402 Couple and Family Studies Credits: 3 (3-0-0)
Course Description: Theory and research concerning couple and family processes; social contexts in which couples and families change over time.
Prerequisite: HDFS 334.
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 403 Families in the Legal Environment Credits: 3 (3-0-0)
Course Description: The intersection of individuals, children, families and the legal system, including the balance between the right to privacy and government intervention, and social disparities in the legal system. Topics include: establishing the legal parent relationship, adoption, the rights of children and parents, marriage, divorce, dependency and neglect, family violence, disability and estate planning, juvenile delinquency, legalities of gender, and landlord/tenant and housing policy.
Prerequisite: None.
Registration Information: Completion of 60 credits. Sections may be offered: Online. Required field trips.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 404 Child Life Theory and Practice Credits: 3 (3-0-0)
Course Description: Theories and skills related to effective child life practice in hospitals.
Prerequisite: HDFS 310 or PSY 260.
Registration Information: Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 410 Promoting Early Socioemotional Development Credits: 3 (3-0-0)
Course Description: Social and emotional development in children ages 3-8: atypical and typical development, developmental theories and models, risk and protective factors, evidence-based programs, and empirically validated teaching strategies for preventing challenging behaviors and fostering adaptive social skills and emotion regulation.
Prerequisite: HDFS 310 and HDFS 334.
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 411 Developmental Transitions in Adolescence Credits: 3 (3-0-0)
Course Description: Examination of biological, socio-emotional, cognitive, and behavioral changes during adolescence.
Prerequisite: HDFS 311 and HDFS 334.
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 412 Mental and Physical Health in Adulthood Credits: 3 (3-0-0)
Course Description: Mental and physical health of adults, contextual factors of development, and implications for prevention, intervention, and public health planning.
Prerequisite: HDFS 312 and HDFS 375.
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 434 Risk and Resilience Across the Lifespan Credits: 3 (3-0-0)
Course Description: Why some individuals are at high risk for poor developmental outcomes, and why certain individuals fare well despite such risks or adversities. Strong developmental emphasis because resilience is viewed as a process, the results of which may not be manifest for years. There is an ecological emphasis because protective and vulnerability factors often reside in families, schools, neighborhoods.
Prerequisite: HDFS 375.
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 439 Administration of Early Childhood Programs Credits: 3 (3-0-0)
Course Description: Center administration related to program development and operations, budgeting, state regulations and licensing, and personnel issues.
Prerequisite: HDFS 310.
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 445 Early Childhood Health, Safety, and Nutrition Credits: 3 (0-0-3)
Also Offered As: FSHN 445.
Course Description: Planning, promoting and maintaining healthy lifestyle and safe learning environment for preschool children.
Prerequisite: HDFS 310.
Registration Information: Completion of 60 credits. Offered as an online course only. Credit not allowed for both FSHN 445 and HDFS 445.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 470A Campus Connections–Mentoring At-Risk Youth: Youth Mentor Credits: 3 (0-4-2)
Course Description: Service-learning course engaging students as mentors with local at-risk youth.
Prerequisite: None.
Registration Information: Written consent of instructor. Must register for laboratory and recitation. Students must complete an application and a required background check through CBI, FBI. Course may be taken for a maximum of 9 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

HDFS 470B Campus Connections–Mentoring At-Risk Youth: Mentor Coach Credits: 3 (0-4-2)
Course Description: Serve as mentor coach in a service-learning course engaging students as mentors with local at-risk youth.
Prerequisite: HDFS 470 or HDFS 470A.
Registration Information: Written consent of instructor. Must register for laboratory and recitation. Students must complete an application and a required background check through CBI, FBI. Course may be taken for a maximum of 9 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

HDFS 470C Campus Connections–Mentoring At-Risk Youth: Program Administration Credits: 3 (0-4-2)
Course Description: Provide administrative support to a service-learning program for local at-risk youth.
Prerequisite: None.
Registration Information: Written consent of instructor. Must register for laboratory and recitation. Students must complete an application and a required background check through CBI, FBI. Course may be taken for a maximum of 9 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 475 Entrepreneurs and Leaders in Human Services Credits: 3 (3-0-0)
Course Description: Skills and knowledge about leadership and entrepreneurship in areas pertinent to human development and family studies, as human services, non-profits, and other enterprises related to helping individuals, couples, and families.
Prerequisite: HDFS 375.
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 477 HDFS Professional Preparation Credit: 1 (1-0-0)
Course Description: Exploration of professionalism, workplace issues, leadership and communication skills, goal setting, self-management, and building a professional identity in person, writing, and online. Completion of steps to secure an internship.
Prerequisite: HDFS 350, may be taken concurrently.
Registration Information: Completion of 60 credits. Human Development and Family Studies majors only. Sections may be offered: Online. Credit not allowed for both HDFS 477 and HDFS 478.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 478 HDFS Professional Development Credit: 1 (1-0-0)
Course Description: Exploration of professionalism, workplace issues, leadership and communication skills, goal setting, self-management, and building a professional identity in person, writing, and online. Understand the skills and attributes required to become a successful HDFS professional.
Prerequisite: HDFS 350, may be taken concurrently.
Registration Information: Completion of 60 credits. Written consent of instructor. Human Development and Family Studies majors only. Sections may be offered: Online. Credit not allowed for both HDFS 477 and HDFS 478.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HDFS 488A Internship: Human Development and Family Studies Credits: Var[5-8] (0-0-0)
Course Description: Provides an opportunity to integrate HDFS classroom knowledge into real-world experiences. Students complete between 200-320 hours (5-8 credits) at an internship site established and approved by the HDFS Department. Weekly meetings with internship site supervisors foster the development of professional skills and feedback to enhance students' performance, conduct, ethics, and communication skills for the workplace.
Prerequisite: HDFS 477.
Registration Information: Completion of 60 credits. Background check required. Human Development and Family Studies majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 488B Internship: Early Childhood Credits: Var[5-8] (0-0-0)
Course Description: Provides an opportunity to integrate HDFS classroom knowledge into real-world experiences. Students complete between 200-320 hours (5-8 credits) at an internship site established and approved by the HDFS Department. Weekly meetings with internship site supervisors foster the development of professional skills and feedback to enhance students' performance, conduct, ethics, and communication skills for the workplace.
Prerequisite: HDFS 477.
Registration Information: Completion of 60 credits. Background check required. Human Development and Family Studies majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 488C Internship: Pre-Health Credits: Var[5-8] (0-0-0)
Course Description: Provides an opportunity to integrate HDFS classroom knowledge into real-world experiences. Students complete between 200-320 hours (5-8 credits) at an internship site established and approved by the HDFS Department. Weekly meetings with internship site supervisors foster the development of professional skills and feedback to enhance students' performance, conduct, ethics, and communication skills for the workplace.
Prerequisite: HDFS 477.
Registration Information: Completion of 60 credits. Background check required. Human Development and Family Studies majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 488D Internship: Prevention/Intervention Science Credits: Var[5-8] (0-0-0)
Course Description: Provides an opportunity to integrate HDFS classroom knowledge into real-world experiences. Students complete between 200-320 hours (5-8 credits) at an internship site established and approved by the HDFS Department. Weekly meetings with internship site supervisors foster the development of professional skills and feedback to enhance students' performance, conduct, ethics, and communication skills for the workplace.
Prerequisite: HDFS 477.
Registration Information: Completion of 60 credits. Background check required. Human Development and Family Studies majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 488E Internship: Leadership/Entrepreneurship Credits: Var[5-8] (0-0-0)
Course Description: Provides an opportunity to integrate HDFS classroom knowledge into real-world experiences. Students complete between 200-320 hours (5-8 credits) at an internship site established and approved by the HDFS Department. Weekly meetings with internship site supervisors foster the development of professional skills and feedback to enhance students' performance, conduct, ethics, and communication skills for the workplace.
Prerequisite: HDFS 477.
Registration Information: Completion of 60 credits. Background check required. Human Development and Family Studies majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 492 Seminar-Program Proposal Development Credits: 3 (0-0-3)
Course Description: Research, development, and oral presentations of program proposals from a family systems and development perspective.
Prerequisite: (HDFS 350) and (HDFS 477, may be taken concurrently or EDUC 400).
Registration Information: Major in Human Development and Family Studies or Early Childhood Education; completion of 90 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 493 Specialized Seminar Credits: 3 (0-0-3)
Course Description: Advanced study of theory, research, and application in a specialized area.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 495A Independent Study: Human Development Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 495B Independent Study: Family Studies Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 495C Independent Study: Early Childhood Education Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 497A Group Study: Peer Advising Credits: Var[1-3] (0-0-0)
Course Description: Serve as an active member of the Peer Advising Team by providing assistance to undergraduate students and support to the HDFS advisors to enhance the services provided by the HDFS Undergraduate Advising Office.
Prerequisite: HDFS 277.
Registration Information: Written consent of department required.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HDFS 497B Group Study: Undergraduate Outreach and Leadership Credits: Var[1-3] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Registration Information: Written consent of department required. A maximum of 3 credits may count toward a student's concentration. Course may be repeated up to nine times for elective credit.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HDFS 497C Group Study: Student Respect/Wellness Education Credits: Var[1-3] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Registration Information: Written consent of department required. A maximum of 3 credits may count toward a student's concentration. Course may be repeated up to nine times for elective credit.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HDFS 497D Group Study: Asian/Pacific American Cultural Center Credits: Var[1-3] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Registration Information: Written consent of department required. A maximum of 3 credits may count toward a student's concentration. Course may be repeated up to nine times for elective credit.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HDFS 497E Group Study: Rites of Passage Mentoring Program Credit: 1 (0-0-1)
Course Description: Peer mentoring, assisting with a retreat for incoming first year students, attending seminars/community building forums, community service involvement, providing academic resource information, and leadership development. The goal of this course is to improve the academic performance and retention rate of African American first-year and transfer students.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 497F Group Study: Honors Human Development Credits: Var[1-3] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Registration Information: Written consent of department required. A maximum of 3 credits may count toward a student's concentration. Course may be repeated up to nine times for elective credit.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 497G Group Study: Human Development Credits: Var[1-3] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Registration Information: Written consent of department required. A maximum of 3 credits may count toward a student's concentration. Course may be repeated up to nine times for elective credit.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HDFS 498A Research: Human Development Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 498B Research: Family Studies Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 499 Thesis Credits: Var[1-6] (0-0-0)
Course Description: Independent research project presented to a faculty committee.
Prerequisite: None.
Registration Information: Written consent of department chair.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 500 Issues in Human Development & Family Studies Credits: 3 (2-3-0)
Course Description: A selected, broad issue in human development and family studies emphasizing principles of research.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 501 Readings in the Discipline Credit: 1 (1-0-0)
Course Description: Research in human development and family studies content areas; skills in writing an extended literature review.
Prerequisite: None.
Registration Information: Admission to HDFS master's program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 505 Human Development for Helping Professionals Credits: 3 (3-0-0)
Course Description: An advanced overview of lifespan development, focusing on wellness promotion and developmental influences on case conceptualization and treatment.
Prerequisite: None.
Registration Information: Graduate standing or written consent of instructor. This is a partial semester course. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 520 Family Therapy Practice: Treatment Planning Credits: 3 (1-2-1)
Course Description: Integration of family/couple therapy theories and practice related to treatment planning and internal family systems therapy.
Prerequisite: None.
Registration Information: Admission to the Marriage and Family Therapy Program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

HDFS 521 Family Therapy Practice: Common Factors Credits: 3 (1-2-1)
Course Description: Application of common factors - e.g., therapeutic alliance - in family and couple therapy.
Prerequisite: None.
Registration Information: Admission to the Marriage and Family Therapy Program. Must register for lecture, laboratory, and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

HDFS 524 Family Theory Credits: 3 (3-0-0)
Course Description: Major theories and conceptual frameworks for family analysis.
Prerequisite: HDFS 100 to 481 - at least 1 course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 534 Marriage and Family Therapy Credits: 3 (3-0-0)
Course Description: Theories and techniques.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Admission to Marriage and Family Therapy Program or permission of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 549 Research Methods I Credits: 3 (3-0-0)
Course Description: Introduction to empirical research, data analysis, and interpretation in Human Development and Family Sciences.
Prerequisite: None.
Registration Information: Required: 3 credits of STAT; 3 credits of upper division behavioral sciences.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 550 Research Methods II Credits: 3 (3-0-0)
Course Description: Research strategies and ethical considerations.
Prerequisite: HDFS 549.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 590A Workshop: Human Development Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 590B Workshop: Family Studies Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 592 Grant Writing-Human Services and Research Credits: 3 (1-0-2)
Course Description: Writing grant proposals that support client services or for research.
Prerequisite: STAT 201.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 593 Seminar–Human Services Leadership Credit: 1 (0-0-1)
Course Description: Investigates issues relevant to human development and family studies, such as human services, non-profits, and other enterprises related to helping individuals, couples, and families.
Prerequisite: None.
Registration Information: Junior standing. Admission in a graduate program at Colorado State University or consent of instructor. Must have concurrent registration in HDFS 475. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 607 Prevention Science Across the Lifespan Credits: 3 (2-0-1)
Course Description: Theory, methods, interventions, and standards of evidence in preventing mental, emotional, and behavioral disorders.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 608 Program Planning and Implementation Credits: 3 (2-2-0)
Course Description: Design or adapt research-based prevention programs from a family-centered, developmentally appropriate perspective.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 609 Prevention Program Evaluation Credits: 3 (3-0-0)
Course Description: Concepts and practices of program evaluation in prevention science.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 610 Risk and Resilience Credits: 3 (3-0-0)
Course Description: Risk and resilience processes in human development.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 611 Early Child Development Credits: 3 (3-0-0)
Course Description: Advanced study of developmental changes from conception through age ten; research-based applications to practice.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 612 Adolescent Development Credits: 3 (3-0-0)
Course Description: Classical and contemporary theory; review of research related to major developmental processes.
Prerequisite: PSY 300 to 499 - at least 3 credits or SOC 300 to 499 - at least 3 credits or HDFS 300 to 499 - at least 3 credits.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 613 Adult Development and Aging Credits: 3 (3-0-0)
Course Description: Advanced study of developmental change and adaptation during adult years.
Prerequisite: PSY 300 to 499 - at least 3 credits or SOC 300 to 499 - at least 3 credits or HDFS 300 to 499 - at least 3 credits.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 620 Family Therapy Practice: Addictions Credits: 3 (1-2-1)
Course Description: Application of marriage and family therapy theories to clinical practice with a focus on addiction and self-of-the-therapist.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Marriage and Family Therapy Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

HDFS 621 Family Therapy Practice: Topics in Sexuality Credits: 3 (1-2-1)
Course Description: Integration of family therapy theories and practice related to topics in sexuality, termination and referral, and one's personal theory of change.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Marriage and Family Therapy Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

HDFS 624 Skills and Techniques in Family Therapy Credits: 3 (3-0-0)
Course Description: Elaboration of techniques and therapy skills based on theory and research.
Prerequisite: HDFS 534.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Marriage and Family Therapy Program or permission of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 636 Aging and the Family Credits: 3 (3-0-0)
Course Description: Theory and research relating to topics on aging during middle and late years of family life cycle.
Prerequisite: HDFS 300 to 481 - at least 1 course.
Restriction: Must be a: Graduate, Professional.
Registration Information: One course in adult development or 6 credits of upper-division behavioral science.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 644 Foundations in Family Therapy Credits: 3 (3-0-0)
Course Description: Contemporary research and treatment strategies for parenting problems, family violence, and substance abuse.
Prerequisite: HDFS 534.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Marriage and Family Therapy Program or permission of instructor.
Term Offered: Summer (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 650 Multivariate Research Methods I Credits: 3 (2-0-1)
Course Description: Statistical concepts and analysis.
Prerequisite: HDFS 550.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 676 Professional Skills Development Credits: 3 (3-0-0)
Course Description: Fundamental skills of marriage and family therapy; clinic procedures; case assessment, planning, and management.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Marriage and Family Therapy Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 677 Ethical and Legal Issues Credits: 3 (0-0-3)
Course Description: Ethical and legal issues in field of human development and family studies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HDFS 686A Practicum: Human Development Credits: Var[1-15] (0-0-0)
Course Description: Application of human development skills in a variety of professional settings.
Prerequisite: HDFS - at least 9 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 686B Practicum: Family Studies Credits: Var[1-15] (0-0-0)
Course Description: Application of human development skills in a variety of professional settings.
Prerequisite: HDFS - at least 9 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 686D Practicum: Developmental Assessment Credits: Var[1-15] (0-0-0)
Course Description: Application of human development skills in a variety of professional settings.
Prerequisite: HDFS - at least 9 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 686E Practicum: Early Childhood Education Credits: Var[1-15] (0-0-0)
Course Description: Application of human development skills in a variety of professional settings.
Prerequisite: HDFS - at least 9 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 687A Internship: Human Development Credits: Var[1-18] (0-0-0)
Course Description: Application of advanced human development skills in professional settings.
Prerequisite: HDFS 500 to 799 - at least 9 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 687B Internship: Family Studies Credits: Var[1-18] (0-0-0)
Course Description: Application of advanced human development skills in professional settings.
Prerequisite: HDFS 500 to 799 - at least 9 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 687C Internship: Marriage and Family Therapy Credits: Var[1-18] (0-0-0)
Course Description: Application of advanced human development skills in professional settings.
Prerequisite: HDFS 677, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 692A Family Issues: Intimacy and Human Sexuality Credits: 3 (0-0-3)
Course Description: Current issues in the family with implications for intervention, therapy, and policy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Six credits of upper division behavioral sciences.
Term Offered: Summer (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 692B Family Issues: Parenting Credits: 3 (0-0-3)
Course Description: Current issues in the family with implications for intervention, therapy, and policy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Six credits of upper division behavioral sciences.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 692C Family Issues: Family Policy and Programming Credits: 3 (0-0-3)
Course Description: Current issues in the family with implications for intervention, therapy, and policy.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Six credits of upper division behavioral sciences.
Term Offered: Summer (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 692D Family Issues: Contemporary Family Issues Credits: 3 (0-0-3)
Course Description: Current issues in the family with implications for intervention, therapy, and policy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Six credits of upper division behavioral sciences.
Terms Offered: Fall, Spring, Summer. Offered as needed.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 695A Independent Study: Human Development Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 695B Independent Study: Family Studies Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 695C Independent Study: Early Childhood Education Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 697 Group Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 698A Research: Human Development Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 698B Research: Family Studies Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: HDFS 550.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 710 Theories of Applied Developmental Science Credits: 3 (3-0-0)
Course Description: Theories of applied developmental science, and implications for intervention and policy.
Prerequisite: HDFS 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 750 Multivariate Research Methods II Credits: 3 (3-0-0)
Course Description: Applications of multivariate methods to research in applied developmental science.
Prerequisite: HDFS 650.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 772 Marriage and Family Therapy Supervision Credits: 3 (2-0-1)
Course Description: Prepares professionals to supervise marriage and family therapists in a variety of settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 792A Seminar: Lifespan Socioemotional Development Credits: 3 (0-0-3)
Course Description: Current issues in applied developmental science involving a synthesis of theory, research, and application.
Prerequisite: HDFS 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 792B Seminar: Lifespan Cognitive Development Credits: 3 (0-0-3)
Course Description: Current issues in applied developmental science involving a synthesis of theory, research, and application.
Prerequisite: HDFS 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 792C Seminar: Special Topics Credits: 3 (0-0-3)
Course Description: Current issues in applied developmental science involving a synthesis of theory, research, and application.
Prerequisite: HDFS 500.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Interior Design-INTD (INTD)

Courses

INTD 110 Visual Expression of Interior Environments (GT-AH1) Credits: 3 (3-0-0)
Course Description: Introduction to interior environments conceptualizing the interior architectural environment in the context of an interrelated system of spaces. Observation and analysis of spatial environments as a way of understanding how spatial environments produce and communicate culture as well as are shaped by those who design, navigate, and participate in these spaces.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Arts & Expression (GT-AH1).

INTD 129 Introduction-Interior Architecture & Design Credits: 3 (3-0-0)
Course Description: Industry perspective to the profession of interior architecture and design through commercial and residential interiors with a focus on the role of key elements such as lighting, color, texture, and pattern on shaping interior architectural environments. Emphasis will be on disciplinary professional values and design process in interior architecture and design.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 166 Visual Communication-Drawing Credits: 3 (0-6-0)
Course Description: Hand drafting, free-hand drawing and conceptualization to communicate interior architecture and design concepts visualizing two- and three-dimensional representations.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 200 Housing Values in America Credits: 3 (3-0-0)
Course Description: Housing issues in the U.S.; values, norms, roles of government and building professions; interaction of issues with U.S. public values to meet housing needs.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 201 Two-Dimensional Fundamentals-Interior Design Credits: 3 (0-6-0)
Course Description: Demonstration of 2-dimensional elements and principles of design incorporating creative thinking, design fundamentals, design communication skills.
Prerequisite: INTD 129 and INTD 166.
Registration Information: Design scenario advancement.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 210 Studio I-Interior Architecture and Design Credits: 3 (1-4-0)
Course Description: Applying basic concepts of human behavior, anthropometrics, ergonomics, space planning, and furniture arrangement to residential and commercial interiors.
Prerequisite: None.
Registration Information: Sophomore standing. Design scenario advancement. Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

INTD 236 Three-Dimensional Thinking Credits: 3 (0-6-0)
Course Description: Demonstration and application in visualizing interior space in three dimensions.
Prerequisite: INTD 129 and INTD 166.
Registration Information: Design scenario advancement.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 255 Residential Interiors Credits: 3 (0-0-3)
Course Description: Theories, issues, and planning elements that impact the design of residential interiors.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 256 Computer-Aided Design for Interior Designers Credits: 3 (1-4-0)
Course Description: Use of computer-aided design (CAD), specifically two-dimensional and three-dimensional drafting using PC software.
Prerequisite: INTD 129 and INTD 166.
Registration Information: Design scenario advancement. Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 266 Visual Communication-Digital Multi-Media Credits: 3 (0-6-0)
Course Description: Visual communication using design software applications and multi-media techniques for expressing design ideas.
Prerequisite: None.
Registration Information: Sophomore standing. Design scenario advancement.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 276 Studio II-Interior Architecture and Design Credits: 3 (1-4-0)
Course Description: Introduction to small-scale interior architecture and design projects, including residential, educational, and commercial dining spaces.
Prerequisite: INTD 210 with a minimum grade of C and INTD 266, may be taken concurrently.
Registration Information: Interior Architecture and Design majors only. Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

INTD 296A Group Study: Space Planning and Application Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Design scenario advancement.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

INTD 296B Group Study: Design Application Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Design scenario advancement.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

INTD 310 Studio III-Interior Architecture and Design Credits: 4 (1-6-0)
Course Description: Create a comprehensive design that reflects the integration of knowledge of structural and building systems. The design project is guided by a clear brief and developed through an Integrated Design Process, informed at each stage by data and analysis. The project is documented through working drawings, annotated diagrams, and information graphics.
Prerequisite: INTD 276 with a minimum grade of C and INTD 330, may be taken concurrently and INTD 335, may be taken concurrently and INTD 350, may be taken concurrently.
Registration Information: Interior architecture and design majors only. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

INTD 330 Lighting Design Credits: 3 (2-2-0)
Course Description: Application of lighting design in interiors.
Prerequisite: INTD 276 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

INTD 335 Interior Architecture and Design Technologies Credits: 3 (2-2-0)
Course Description: Principles and procedures required in building information modeling for digital design, detailing, documentation, and visualization in interior architecture and design.
Prerequisite: INTD 266.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both INTD 235 and INTD 335.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 336 Color Credits: 3 (0-0-3)
Course Description: Color theories, principles, trends and application in design.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 340 Interior Materials and Products Credits: 3 (3-0-0)
Course Description: Analysis of materials, finishes, furnishings, objects, and resources for interior architecture and design.
Prerequisite: INTD 350.
Registration Information: Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 350 Codes-Health and Safety Credits: 3 (3-0-0)
Course Description: Health, safety, and wellness issues in interiors, including laws, codes, standards, regulations, and guidelines.
Prerequisite: INTD 210, may be taken concurrently.
Registration Information: Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 359 History of Interior Architecture and Design Credits: 3 (3-0-0)
Course Description: Survey of interior architecture and design history from ancient times through the present.
Prerequisite: None.
Registration Information: AUCC 2 or concurrent registration. Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 376 Studio IV-Interior Architecture and Design Credits: 4 (1-6-0)
Course Description: Applications of creative problem-solving, digital and design skills to develop innovative interior design projects with a focus on medium-scale commercial interiors.
Prerequisite: INTD 310 with a minimum grade of C and INTD 340, may be taken concurrently.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

INTD 384 Supervised College Teaching Credits: Var[1-10] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

INTD 400 Interior Design Research Proposal Credits: 4 (1-4-1)
Course Description: Research, development, and presentation of a programming proposal for a large scale interior design project with service learning component.
Prerequisite: INTD 376 with a minimum grade of C.
Registration Information: Must register for lecture, laboratory, and recitation. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 410 Evidence-based Design Theory Credits: 3 (3-0-0)
Course Description: Theory and application of evidence-based design processes including research, development, and presentation of a programming proposal for a large scale interior project.
Prerequisite: INTD 310 with a minimum grade of C and PSY 100.
Registration Information: Completion of AUCC category 2.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

INTD 450 Travel Abroad-Sustainable Building Credits: 3 (3-0-0)
Also Offered As: CON 450.
Course Description: Major components of sustainable design and construction, energy, healthy buildings, natural resources and other environmental issues.
Prerequisite: None.
Registration Information: Credit not allowed for both INTD 450 and CON 450.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 456 Professional Practice-Interior Arch & Design Credits: 3 (3-0-0)
Course Description: Current design and business practices, project management and communication, exposure to multi-disciplinary ways of working in design. Emphasis on several key aspects of professional practice including entrepreneurship, ethics, and socially mediated communication.
Prerequisite: INTD 310, may be taken concurrently.
Registration Information: Completion of AUCC category 2. Credit not allowed for both INTD 356 and INTD 456.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 476 Capstone-Interior Architecture and Design Credits: 4 (1-6-0)
Course Description: Large scale projects representing research-based design solutions, illustrating synthesis and analysis of entry level professional competencies in interior architecture and design.
Prerequisite: INTD 400 with a minimum grade of C or INTD 410 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

INTD 487 Internship Credits: Var[3-16] (0-0-0)
Course Description:
Prerequisite: INTD 356 and INTD 376 with a minimum grade of C.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

INTD 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 10 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

INTD 496A Group Study: Program Skills Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 10 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

INTD 496B Group Study: Design Application Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 10 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

INTD 550 Universal Design Credits: 3 (3-0-0)
Course Description: Analysis and evaluation of universal design as it applies to diverse population segments and interior environments.
Prerequisite: INTD 376 with a minimum grade of C, may be taken concurrently.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 575 Problems-Interior Design Credits: Var[1-8] (0-0-0)
Course Description:
Prerequisite: INTD 376 with a minimum grade of C - at least 9 credits.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 578 Trends/Issues in Interior Design Credits: 3 (2-0-1)
Course Description:
Prerequisite: INTD 376 with a minimum grade of C or DM 551.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 675 Problems-Interior Design Credits: Var[1-8] (0-0-0)
Course Description:
Prerequisite: INTD 575 - at least 4 credits.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

International Education-IE (IE)

Courses

IE 116 Plants and Civilizations (GT-SS3) Credits: 3 (2-0-1)
Also Offered As: AGRI 116.
Course Description: Plant origins and their relationships with cultures/civilizations as food, spices, perfumes, and medicines and in art, religion, wars, slavery, etc.
Prerequisite: None.
Registration Information: Credit not allowed for both AGRI 116 and IE 116. Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

IE 179 Globalization: Exploring Our Global Village (GT-SS3) Credits: 3 (3-0-0)
Course Description: Analysis and implications of social, cultural, economic, and political change in the context of globalization and transnational relationships.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

IE 270 World Interdependence-Population and Food (GT-SS3) Credits: 3 (3-0-0)
Also Offered As: AGRI 270.
Course Description: Survey of world population and food; emphasis on understanding the problems and opportunities in a global context.
Prerequisite: None.
Registration Information: Credit not allowed for both IE 270 and AGRI 270.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

IE 272 World Interdependence - Current Global Issues Credits: 3 (3-0-0)
Course Description: A global perspective focusing on an international topic receiving current media coverage.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

IE 282A Study Abroad--Dominican Republic: Global Perspectives Credit: 1 (0-0-1)
Course Description: Focus on preparation for a short-term international experience. Opportunities for community engagement, discussions on the impact of student groups coming into a new culture, and learning how to prepare for integrating with another culture without causing harm.
Prerequisite: KEY 272.
Registration Information: Sophomore standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

IE 300 Global Studies Credits: 3 (3-0-0)
Course Description: Traditional and changing institutions, systems, values and identities in selected cultures and how they are perceived, portrayed, and experienced.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

IE 379 Integrating Global Learning Post Study Abroad Credit: 1 (0-0-1)
Course Description: Introduces theories of cultural adjustment and intercultural communication, and facilitates activities to enhance learning after an international experience. Students will describe and deepen their intercultural learning and self-understanding. Provides an opportunity to develop and effectively communicate personal, professional, and academic goals.
Prerequisite: None.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

IE 382A Study Abroad: Community Engagement in Nicaragua Credit: 1 (0-0-1)
Course Description: Exploration of the history and culture of Nicaragua. Fair trade processes, issues, and organizations.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

IE 382B Study Abroad: Global Service Learning - Costa Rica Credit: 1 (0-0-1)
Course Description: What does it mean to identify as a first-generation college student? What does it mean for community? How do identities inform and impact perspective? Explore these questions and more through storytelling, critical analysis of the media and pop culture, assessment instruments, guest speakers, and interactive simulations and activities. Grow cultural competencies in preparation for an international cultural immersion experience to Costa Rica.
Prerequisite: None.
Registration Information: Sophomore standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

IE 382C Study Abroad--Mexico: Community Engagement Credit: 1 (0-0-1)
Course Description: Exploration of the history and culture of Mexico. Fair trade and community development processes, issues, and organizations.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

IE 382D Study Abroad--Morocco: Educational Access Credit: 1 (0-0-1)
Course Description: Explores the education system of Morocco, including high school and secondary education. Gain understanding of educational and individual identity. Visit local schools, engage with guest lectures, service learning, cultural activities, guided reflections, learn about historical and political history of Rabat.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

IE 382E Study Abroad--Croatia: International Medical Shadowing Credit: 1 (0-0-1)
Course Description: Explore healthcare fields and systems, and participate in a medical shadowing experience in a Croatian hospital. Provides a framework to compare cultural influences of medical fields and first hand observations of medical practitioners. Engage with health professions interests in relevant and immersive intercultural experiences.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

IE 387 Intercultural Internship Credits: Var[1-6] (0-0-0)
Course Description: Supervised work experience in an intercultural setting.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of instructor. Student must demonstrate an international internship offer letter with a minimum of 45 hours of internship placement from program or internship host to be admitted into the course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

IE 450 International Social Welfare and Development Credits: 3 (2-0-1)
Also Offered As: SOWK 450.
Course Description: Framework of social welfare and development in international area; social need with focus on cultures/countries in transition.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Credit not allowed for both IE 450 and SOWK 450.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

IE 470 Women and Development Credits: 3 (3-0-0)
Course Description: Research and policy issues related to women in developing countries.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

IE 471 Children and Youth in Global Context Credits: 3 (3-0-0)
Course Description: Global issues affecting children and youth are examined in cultural context.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

IE 472 Education for Global Peace Credits: 3 (3-0-0)
Course Description: Peacekeeping, peacemaking and peace-building on micro and macro levels, and education's role in them, as key components for sustaining global peace.
Prerequisite: None.
Registration Information: Upper-division standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

IE 478 Managing International Development Programs Credits: 3 (3-0-0)
Course Description: Build practical skills for international development practitioners in project design and management. Provides an opportunity to design innovative projects to solve development issues that support self-reliance, sustainability, and poverty alleviation. Introduction to international development program management culminating in the development of a request for funding, with implementation and performance management plans.
Prerequisite: None.
Registration Information: Junior standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

IE 479 International Development Theory and Practice Credits: 3 (3-0-0)
Also Offered As: ANTH 479.
Course Description: Contemporary issues in international community and economic development with practical and theoretical analysis from interdisciplinary perspectives.
Prerequisite: None.
Restriction: Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Junior or senior standing. Credit not allowed for both IE 479 and ANTH 479.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

IE 482A Travel Study: Global Studies-Africa Credits: Var[1-6] (0-0-0)
Course Description: Current global issues, topics, traditions studied in one or more countries of the region.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

IE 482B Travel Study: Global Studies-Asia Credits: Var[1-6] (0-0-0)
Course Description: Study abroad session focusing on business and economic conditions in Japan.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

IE 482C Travel Study: Global Studies-Australia/Oceania Credits: Var[1-6] (0-0-0)
Course Description: Current global issues, topics, traditions studied in one or more countries of the region.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

IE 482D Travel Study: Global Studies-Canada/North America Credits: Var[1-6] (0-0-0)
Course Description: Current global issues, topics, traditions studied in one or more countries of the region.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

IE 482E Travel Study: Global Studies-Europe Credits: Var[1-6] (0-0-0)
Course Description: Current global issues, topics, traditions studied in one or more countries of the region.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

IE 482F Travel Study: Global Studies-Contemporary Cuba Credits: Var[1-6] (0-0-0)
Course Description: Interdisciplinary Travel Course on Contemporary Cuba; history, politics, economics, and culture of Cuba.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

IE 482G Travel Study: Global Studies-Middle East Credits: Var[1-6] (0-0-0)
Course Description: Current global issues, topics, traditions studies in one or more countries of the region.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

IE 492 International Education Seminar Credits: Var[1-3] (0-0-0)
Course Description: Topics in international education.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

IE 517 Perspectives in Global Health Credits: 3 (0-0-3)
Also Offered As: PSY 517.
Course Description: Science, skills, and beliefs directed at the maintenance and improvement of health for all people.
Prerequisite: None.
Registration Information: Credit not allowed for both IE 517 and PSY 517.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

IE 550 Ethics and International Development Credits: 3 (3-0-0)
Also Offered As: PHIL 550.
Course Description: Ethical reflection applied to development goals, strategies of Third World countries; relations between developed and developing countries.
Prerequisite: None.
Registration Information: Written consent of instructor. Credit not allowed for both IE 550 and PHIL 550.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

IE 679 Applications of International Development Credits: 3 (3-0-0)
Also Offered As: ANTH 679.
Course Description: In-depth interdisciplinary analysis of theoretical and practical issues in implementing economic and community-based international development programs.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Graduate standing. Credit not allowed for both IE 679 and ANTH 679.
Terms Offered: Fall, Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

IE 692 International Education Seminar Credits: Var[1-3] (0-0-0)
Course Description: Topics in international education.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Graduate standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

International Studies-INST (INST)

Courses

INST 200 Interdisciplinary Approaches to Globalization Credits: 3 (3-0-0)
Course Description: Uses an interdisciplinary lens to explore and elucidate the issues, themes, and problems associated with globalization. Helping students navigate the complexities of our globalized and globalizing world, introducing students to diverse cultures and societies around the world and highlight global patterns and connections, and familiarizing students with the value of interdisciplinary research.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E.

INST 301 International Studies Research Methods Credits: 3 (3-0-0)
Course Description: Familiarizes students with the research content and methods of International Studies. Illustrates applications of interdisciplinary research through various topics such as global commodities.
Prerequisite: GR 100 and INST 200.
Registration Information: Undergraduate standing. Sections may be offered: Online. International Studies, International Engineering, Interdisciplinary Liberal Arts majors, or International Development Studies minors only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

INST 382A Study Abroad--Jamaica: African History and Culture Credit: 1 (0-0-1)
Course Description: Exploration of the lives of African Caribbean people in Jamaica; the forces that have shaped the socio-economic and cultural history of the region; the impact of tourism on the Caribbean economy; and the importance of national culture in the articulation of Caribbean identity.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

INST 484 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted toward graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

INST 487 Internship Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

INST 492 Seminar Credits: 3 (0-0-3)
Course Description:
Prerequisite: INST 301.
Registration Information: International Studies majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

INST 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Intra-University-IU (IU)

Courses

IU 140 Foundations of Sport Management Credits: 2 (2-0-0)
Course Description: Introduces various sectors of the field of sport management to develop an understanding of the breadth of opportunities throughout the industry.
Prerequisite: None.
Registration Information: This is a partial semester course. Admission to the Interdisciplinary Minor in Sports Management.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

IU 150 Diverse Students in Higher Education Credits: 2 (2-0-0)
Course Description: Issues surrounding educational opportunity and social mobility through direct mentoring with high school students.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

IU 170 A Call to Lead I: Theories and Skills Credits: 2 (1-0-1)
Course Description: Fundamentals of leadership theories and skills.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Member of the President's Leadership Program; written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

IU 171 A Call to Lead II: Social Change Model Credits: 2 (1-0-1)
Course Description: Social change model of leadership development.
Prerequisite: IU 170.
Registration Information: Member of the President's Leadership Program; written consent of instructor. Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

IU 172 New Student Seminar Credit: 1 (0-0-1)
Course Description: Learn about and explore various academic/career options within the major tracks at CSU to inform decisions related to choice of major.
Prerequisite: None.
Registration Information: This is a partial semester course. Undeclared first-year students only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

IU 186 Practicum- Career Exploration Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

IU 193 Freshman Seminar Credit: 1 (0-0-1)
Course Description: Academic study in small-class setting. Topics vary by instructor.
Prerequisite: None.
Registration Information: Students who have earned fewer than 30 credits (CSU and transfer). Maximum of 1 credit allowed.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

IU 198 Freshman Laboratory Research Credit: 1 (0-3-0)
Course Description: Hands-on research on an academic research project.
Prerequisite: None.
Restriction: Must be a: Freshman.
Registration Information: Freshmen standing only. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

IU 270 Leadership Styles I: Personal Application Credits: 2 (1-0-1)
Course Description: Leadership styles and contexts for personal application.
Prerequisite: None.
Registration Information: Member of the President's Leadership Program; written consent of instructor. Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

IU 271 Leadership Styles II: Prominent Leaders Credits: 2 (1-0-1)
Course Description: Leadership styles and contexts of prominent leaders for personal application.
Prerequisite: IU 270.
Registration Information: Member of President's Leadership Program. Written consent of instructor. Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

IU 273 Leadership Techniques for Greeks Credits: 2 (1-0-1)
Course Description: Critical elements of analytical and intellectual examination and reflection of certain core issues in the practice of leadership.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

IU 470 Effective Leadership I: Success as a Leader Credits: 3 (2-0-1)
Course Description: Personal leadership skill development and its relationship to success as a leader.
Prerequisite: None.
Registration Information: Member of the President's Leadership Program; written consent of instructor. Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

IU 471 Effective Leadership II: Vision and Change Credits: 3 (2-0-1)
Course Description: Individual personal leadership styles; relationship between personal skill development and successful leadership.
Prerequisite: IU 470.
Registration Information: Member of President's Leadership Program; written consent of instructor. Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

IU 486 Practicum for Interdisciplinary Leadership Credits: Var[1-4] (0-0-0)
Course Description: Field experience applying leadership theories/ principles through professional projects.
Prerequisite: IU 171 and IU 271.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

IU 487 Internship for Interdisciplinary Leadership Credits: Var[1-4] (0-0-0)
Course Description: Internship applying leadership theories/principles in a professional setting.
Prerequisite: IU 171 and IU 271.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

IU 498 Research for Interdisciplinary Leadership Credits: Var[1-4] (0-0-0)
Course Description: Research exploring leadership and one's academic discipline.
Prerequisite: IU 171 and IU 271.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Journalism + Tech Commun-JTC (JTC)

Courses

JTC 100 Media in Society (GT-SS3) Credits: 3 (3-0-0)
Course Description: Role of media in American democracy; impact of media on individuals and society.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).

JTC 192 Freshman Seminar Credits: 3 (1-4-0)
Course Description: Basic journalism skills; newsgathering and newswriting.
Prerequisite: None.
Registration Information: Admission as JTC major. Credit not allowed for both JTC 192 and JTC 210. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 200 Professional Writing Credits: 3 (1-0-2)
Course Description: Basic elements of writing for professional and specialized audiences.
Prerequisite: CO 150 or HONR 193.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 203 Television Studio Production Credit: 1 (0-0-1)
Course Description: Hands-on application of the skills needed to produce programs in a television studio.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 204 Radio Operations Credit: 1 (0-0-1)
Course Description: Hands-on application of the skills needed to operate a radio station.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 210 Newswriting Credits: 3 (1-4-0)
Course Description: Theory and practice in newswriting.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory for face-to-face offerings. Sections may be offered: Online. Credit not allowed for both JTC 210 and JTC 192. Sections offered as Face-to-Face 03(1-4-0) or Online only 03(3-0-0).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 211 Visual Communication Credits: 3 (2-2-0)
Course Description: Theory and techniques for visually presenting information in various media industries.
Prerequisite: JTC 210.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

JTC 270 Analyzing Data in Journalism and Media Credits: 3 (2-0-1)
Course Description: Application of quantitative concepts and methodologies of data analysis to investigation of media and communication problems.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 300 Professional and Technical Communication (GT-CO3) Credits: 3 (2-0-1)
Course Description: Professional writing and presentation skills applied to students' major fields.
Prerequisite: CO 150 or HONR 193.
Registration Information: Must register for lecture and recitation. JTC students may not take JTC 300. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Advanced Writing 2, Advanced Writing (GT-CO3).

JTC 301 Corporate and Professional Communication (GT-CO3) Credits: 3 (2-0-1)
Course Description: Principles and practice of effective corporate communication with emphasis on written professional reports.
Prerequisite: CO 150 or HONR 193.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
Additional Information: Advanced Writing 2, Advanced Writing (GT-CO3).

JTC 305 Media and Global Cultural Identity Credits: 3 (3-0-0)
Course Description: Examines cultural diversity and how the media influences cultural identities.
Prerequisite: None.
Registration Information: Sophomore standing. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 308 Mobile Media Technology and Communication Credit: 1 (1-0-0)
Course Description: Using mobile technology as a tool in journalism.
Prerequisite: None.
Registration Information: Sophomore standing.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 310 Copy Editing Credits: 3 (2-2-0)
Course Description: Theory of copy preparation and editing; publication layout.
Prerequisite: JTC 210.
Registration Information: Sophomore standing. Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 311 History of Media Credits: 3 (3-0-0)
Course Description: Media development, growth, trends within context of political, social, and economic change.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 316 Multiculturalism and the Media Credits: 3 (3-0-0)
Course Description: Media and multiculturalism with emphasis on race, ethnicity, and other protected groups.
Prerequisite: None.
Registration Information: Sophomore standing. Sections may be offered: Online. Credit not allowed for both JTC 316 and ETST 316.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320A Reporting: General News Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320B Reporting: Sports Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320C Reporting: Business Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320D Reporting: Government and Political Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320E Reporting: Health and Medicine Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320F Reporting: Technology and Innovation Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320G Reporting: Education Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320H Reporting: Special Topics Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 326 Online Storytelling and Audience Engagement Credits: 3 (2-2-0)
Course Description: Production, theory, and techniques in online and mobile device storytelling, information sharing, and audience engagement.
Prerequisite: JTC 210 and JTC 211.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 328 Feature Writing Credits: 3 (3-0-0)
Course Description: Theory, methods and practice of reporting and writing feature stories, including human-interest, travel/adventure, reflective and in-depth articles.
Prerequisite: JTC 210.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 330 Narrative Journalism Credits: 3 (3-0-0)
Course Description: Examination of new journalism, long-form journalism, narrative descriptive journalism, and creative nonfiction, and the practitioners of the form whose work has illumined such disparate topics as history, business practices, race relations, and biomedical science.
Prerequisite: CO 150.
Registration Information: Sophomore standing. Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

JTC 335 Digital Photography Credits: 3 (2-2-0)
Course Description: Basic photographic theory and practice using digital camera and image processing technology.
Prerequisite: JTC 211.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

JTC 340 Digital Video Editing Credits: 3 (2-2-0)
Course Description: Theory and technique of editing picture and sound on digital platforms.
Prerequisite: JTC 210.
Registration Information: Must register for lecture and laboratory. Required field trips. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

JTC 341 TV News Writing, Reporting and Producing Credits: 3 (2-2-0)
Course Description: Practical application of principles, theory, and methods used in television newswriting, reporting, and producing.
Prerequisite: JTC 210.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

JTC 342 Writing for Specialized Electronic Media Credits: 3 (2-2-0)
Course Description: Audience and subject research; script structure and development; narrative techniques; visual story and role of visual media as change agents.
Prerequisite: JTC 210.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 343 Advanced Television News Production Credits: 3 (2-2-0)
Course Description: Advanced theory and practice of reporting and producing television news; basics of television news management.
Prerequisite: JTC 341.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 344 Fact to Fiction Credits: 3 (3-0-0)
Course Description: Crafting clear, precise prose in reporting the news and researching and writing long-form fiction.
Prerequisite: JTC 211.
Registration Information: Sophomore standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 345 Electronic Field Production Credits: 3 (2-2-0)
Course Description: Theory and techniques of video field production emphasizing news, current affairs, and special interest programs.
Prerequisite: JTC 340.
Registration Information: Junior standing. Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

JTC 347 Audio Production and Editing Credits: 3 (3-0-0)
Course Description: Principles and practice of producing, recording, mixing and editing sound for films, television, and video.
Prerequisite: None.
Registration Information: Junior Standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 350 Public Relations Credits: 3 (3-0-0)
Course Description: Public relations principles and practices of business, industry, education, and public agencies.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 351 Publicity and Media Relations Credits: 3 (2-2-0)
Course Description: Public relations techniques to gain exposure in news and entertainment media.
Prerequisite: JTC 210 and JTC 211.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 352 University Public Relations Credit: 1 (1-0-0)
Course Description: Overview of a multi-faceted university public relations operation, constituencies, staff, management and products.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 353 Communications Campaigns Credits: 3 (3-0-0)
Course Description: Development of professional communications programs, including analysis and research, strategy, implementation and evaluation.
Prerequisite: (JTC 210) and (JTC 350 or JTC 355 or JTC 365).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 355 Advertising Credits: 3 (3-0-0)
Course Description: Advertising principles and techniques used to develop effective advertising campaigns.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 356 Advertising Creativity and Copywriting Credits: 3 (3-0-0)
Course Description: Principles and practices producing advertising materials-print, broadcast, digital, out-of-home media, direct response, and collateral.
Prerequisite: JTC 211 and JTC 355.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 357 Persuasion in Advertising Credits: 3 (3-0-0)
Course Description: Theoretical issues in the study of persuasion and its application in creating advertising campaigns.
Prerequisite: JTC 355.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 358 Advertising Media Buying and Selling Credits: 3 (3-0-0)
Course Description: Principles of advertising, planning, assessment and sales for client, agency and media organization personnel.
Prerequisite: JTC 211 and JTC 355.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 361 Writing for Specialized Magazines Credits: 3 (2-2-0)
Course Description: Writing articles for agricultural, business, hobby, technical, trade, and other specialized periodicals whose readers use information to make decisions.
Prerequisite: JTC 210.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 363 Data Journalism Credits: 3 (3-0-0)
Course Description: Computer assisted journalistic reporting.
Prerequisite: JTC 211.
Registration Information: Junior standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 365 Trends in Digital Communication Credits: 3 (3-0-0)
Course Description: Issues and research in computer-mediated communication relating to individuals, groups, community, and society.
Prerequisite: JTC 210.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 370 Web Programming for Media Producers Credits: 3 (2-0-1)
Course Description: Web programming and scripting languages used commonly in developing rich content for visual narratives.
Prerequisite: JTC 211.
Registration Information: Sophomore standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 371 Publications Design and Production Credits: 3 (2-2-0)
Course Description: Principles of producing publications for print and electronic delivery, including newspapers, magazines, newsletters, brochures, and printed ephemera.
Prerequisite: JTC 211.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 372 Web Design and Management Credits: 3 (2-2-0)
Course Description: Design, development, and management of World Wide Web content.
Prerequisite: JTC 210 and JTC 211.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 373 Digital Promotion Management Credits: 3 (3-0-0)
Course Description: How organizations use digital technologies for advertising, publicity, promotional, and information purposes.
Prerequisite: JTC 211.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 374 Social Media Management Credits: 3 (3-0-0)
Course Description: Organizational uses of interactive media to build relationships and manage online communities.
Prerequisite: JTC 211.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 382 Travel Journalism in Croatia Credits: 3 (3-0-0)
Course Description: Study and practice of international travel journalism, including newspaper and magazine writing, photography, video, social media, and blogs.
Prerequisite: CO 150 or JTC 210.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 386 Communication Practicum Credit: 1,3 (0-0-0)
Course Description: Practicum in using the different communication tools that comprise student media.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 410 Newspaper Editing Credits: 2 (2-0-0)
Course Description: Editorial techniques, responsibilities, news evaluation.
Prerequisite: JTC 310.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 411 Media Ethics and Issues Credits: 3 (3-0-0)
Course Description: Professional ethics, issues of media performance and of the relation of media systems to the social systems.
Prerequisite: None.
Restriction: Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Junior or senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 412 International Mass Communication Credits: 3 (3-0-0)
Course Description: Media communication systems, their roles throughout the world; news flow; propaganda in national development; role of foreign correspondents.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 413 New Communication Technologies and Society Credits: 3 (3-0-0)
Course Description: Political, economic, social, philosophical, legal, and educational impacts of new technologies.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 414 Media Effects Credits: 3 (3-0-0)
Course Description: Perspectives on audience processes and media effects on individuals and society.
Prerequisite: None.
Registration Information: Junior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 415 Communications Law Credits: 3 (3-0-0)
Course Description: Constitutional, statutory law of political speech, obscenity, advertising, libel, privacy, copyright, information ownership and access.
Prerequisite: None.
Restriction: Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Junior or senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 416 Global Communication Technologies Credits: 3 (3-0-0)
Course Description: Broad-based survey of evolving and emergent global communication technologies.
Prerequisite: JTC 210.
Registration Information: Required field trips.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 417 Information Graphics Credits: 3 (2-0-1)
Course Description: Static and interactive data visualization and information design using charts, graphs, maps and other visual elements.
Prerequisite: JTC 211.
Registration Information: Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 418 Journalism, Peace, and War Credits: 3 (3-0-0)
Course Description: How the news media can contribute to a more harmonious world, more frequent conflict resolution, and the general well-being of all people.
Prerequisite: None.
Registration Information: Junior, senior, or graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 419 Food and Natural Resources Communication Credits: 3 (3-0-0)
Course Description: Natural resources issues and the role of news media, PR, and advertising and how people form beliefs about food and natural resources in communication.
Prerequisite: None.
Registration Information: Junior, senior, or graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 420 Advanced Reporting Credits: 3 (1-4-0)
Course Description: Advanced techniques for gathering and evaluating information; interpretive reporting of public affairs issues.
Prerequisite: (JTC 310 and JTC 211) and (JTC 320A or JTC 320B or JTC 320C or JTC 320D or JTC 320E or JTC 320F or JTC 320G or JTC 320H).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 421 Media, Business, and Economics Credits: 3 (3-0-0)
Course Description: Media coverage of U.S. and global businesses, economies, markets, recessions, crime, and government regulation.
Prerequisite: None.
Registration Information: Junior standing. Business Minor enrollment recommended.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 422 Entrepreneurial Journalism Credits: 3 (3-0-0)
Course Description: The concepts and practices of developing media content solutions for the digital age.
Prerequisite: JTC 326.
Registration Information: Junior standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 425 Strategic Multicultural Communication Credits: 3 (3-0-0)
Course Description: Identify, formulate and implement effective strategies in integrated advertising and communication campaigns to effectively connect with individuals of Hispanic/Latino, African-American and Asian descent as well as the LGBT sub-segments of the general market in the U.S.; consideration of the globalized marketplace and consumers across under-served markets internationally.
Prerequisite: JTC 326.
Registration Information: Junior standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 430 Advanced Digital Documentary Photography Credits: 3 (2-2-0)
Course Description: Conceptualization, production, and editing of photographic documentaries.
Prerequisite: JTC 326 and JTC 335.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 433 Advanced Video Editing Credits: 3 (3-0-0)
Course Description: Professional video editing practices, theories, and techniques with practical applications using current hardware and software.
Prerequisite: JTC 345.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 435 Documentary Video Production Credits: 3 (2-3-0)
Course Description: Writing, directing, and editing of long-form television documentaries.
Prerequisite: JTC 345.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

JTC 440 Advanced Electronic Media Production Credits: 3 (2-2-0)
Course Description: Techniques and concepts used in advanced media production for television.
Required field trips.
Prerequisite: JTC 341 and JTC 345.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

JTC 445 Communication in Human-Computer Interaction Credits: 3 (3-0-0)
Course Description: Evolution of human-computer interaction, from teletypewriters to virtual reality technologies.
Prerequisite: JTC 211.
Registration Information: Junior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 450 Public Relations Cases Credits: 3 (3-0-0)
Course Description: Analysis of specializations in the field; use of media to achieve objectives with target audiences.
Prerequisite: JTC 350.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 454A Study Abroad: International Media Studies–Europe Credits: 3 (2-0-1)
Course Description: Field survey of international media systems, technologies, and providers in diverse national and regional cultures.
Prerequisite: None.
Registration Information: Junior standing. Written consent of instructor.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 454B Study Abroad: International Media Studies–Australia and NZ Credits: 3 (0-0-3)
Course Description: A field survey of international media systems, technologies, and providers in diverse national and regional cultures.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 456 Documentary Film as a Liberal Art Credits: 3 (2-2-0)
Also Offered As: LB 456.
Course Description: Documentary film and its role in human history, culture, and social interaction.
Prerequisite: None.
Restriction: Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Credit not allowed for both JTC 456 and LB 456. Junior or senior standing. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 460 Senior Capstone Credits: 3 (3-0-0)
Course Description: Integration and reflection for seniors with a career component that will prepare them for the job market.
Prerequisite: JTC 326.
Registration Information: Senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 461 Writing About Science, Health, and Environment Credits: 3 (2-2-0)
Course Description: Writing about science, health, and the environment for lay audiences from a journalistic perspective.
Prerequisite: JTC 210 or JTC 300 or LB 300.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 464 Technical Communication Credits: 3 (2-2-0)
Course Description: Writing and producing technical and scientific information for electronic and print media for professionals.
Prerequisite: JTC 210 or JTC 300 or LB 300.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 465 Specialized and Technical Editing Credits: 3 (2-2-0)
Course Description: Editorial purpose, techniques, and evaluation of specialized and technical print and online information.
Prerequisite: (JTC 210 or JTC 300 or LB 300) and (JTC 211) and (JTC 461 or JTC 464).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 468 Convergence and Hypermedia Credits: 3 (3-0-0)
Course Description: Applications of theories of convergence, hypermedia, and social practices in computer-mediated communication. Development of a professional portfolio.
Prerequisite: JTC 310 and JTC 365.
Registration Information: JTC 310; JTC 365; 9 credits selected from JTC 326, JTC 372, JTC 373, or JTC 487.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 470 Transmedia Storytelling Credits: 3 (3-0-0)
Course Description: Examining and developing transmedia storytelling techniques and products that are applied to a single topic, entity or organization.
Prerequisite: JTC 326.
Registration Information: Junior standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 471 Research for Public Communicators Credits: 3 (3-0-0)
Course Description: Skills, knowledge and strategies needed to read, interpret, evaluate, and communicate about research reports across diverse fields.
Prerequisite: STAT 000 to 9999 - at least 1 course or ST 000 to 9999 - at least 1 course or STCC 000 to 9999 - at least 1 course.
Registration Information: Credit not allowed for both JTC 471 and JTC 500.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 475 News Literacy Credits: 3 (3-0-0)
Course Description: Discerning truthful reporting from propaganda to become critical analysts.
Prerequisite: None.
Registration Information: Junior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 487 Internship Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of department. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

JTC 490 Workshop Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495A Independent Study: Electronic Reporting Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495B Independent Study: Editing Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495C Independent Study: Photojournalism Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495D Independent Study: Public Relations Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495E Independent Study: Readings Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495F Independent Study: Reporting Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495G Independent Study: Technical Communication Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 496 Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 500 Communication Research and Evaluation Methods Credits: 4 (4-0-0)
Course Description: Theory and applied communication research and evaluation methodologies for assessing and improving communication in technological environment.
Prerequisite: None.
Registration Information: Credit not allowed for both JTC 500 and JTC 471.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 501 Process and Effects of Communication Credits: 4 (4-0-0)
Course Description: Examination of communication theory including communicator credibility, messages, channels, audiences, and information, behavior, and attitude change.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 505 Advanced Professional Writing Credits: 3 (3-0-0)
Course Description: How communication in the corporate, business, and professional world is changing as a result of technology and globalization.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 511 Corporate Media Ethics and Issues Credits: 3 (3-0-0)
Course Description: Professional ethics in corporate and media settings.
Prerequisite: None.
Registration Information: Graduate standing. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 513 Impacts of New Communication Technologies Credits: Var[1-2] (0-0-0)
Course Description: Current topics and issues regarding uses and impacts of video and computer-based communication technologies.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 526 Digital Media Writing and Production Credits: 3 (3-0-0)
Course Description: Writing and producing media content that will be delivered via a variety of communication channels to diverse publics.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 535 Electronic Media Regulation and Policy Credits: 3 (3-0-0)
Course Description: Role of legislators, regulatory agencies, judiciary and public in the evolution of U.S. broadcast and digital media. Implications for free press.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 540 Corporate Digital Video Editing Credits: 3 (3-0-0)
Course Description: Advanced theory and techniques of digital video editing in a corporate setting.
Prerequisite: None.
Registration Information: Graduate standing. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 544 Corporate and Institutional Media Production Credits: 3 (2-3-0)
Course Description: Advanced techniques in media production and management in corporate and institutional settings.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

JTC 545 Organizational Media Production Credits: 3 (3-0-0)
Course Description: Incorporation of multimedia content in video production in governmental, corporate and institutional media production.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 550 Public Relations Credits: 3 (3-0-0)
Course Description: Contemporary public relations principles and practices.
Prerequisite: None.
Registration Information: Graduate standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 555 Advertising and Marketing Communication Credits: 3 (3-0-0)
Course Description: Advertising and marketing communication principles and techniques used to develop effective strategic campaigns.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 560 Managing Communications Systems Credits: 3 (3-0-0)
Course Description: Examination of role, responsibilities of communication managers in translating theory into effective, applied communication programs.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 568A Journalism for High School Advisers: Journalism Concepts Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 568B Journalism for High School Advisers: Newspapers Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 568C Journalism for High School Advisers: Yearbooks Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 570 Political Economy of Global Media Credits: 3 (3-0-0)
Course Description: Examination of the changing media information system worldwide and the role of social, political, legal and economic forces upon it.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

JTC 571 Digital Media Research and Evaluation Methods Credits: 3 (3-0-0)
Course Description: Basic conceptual processes and tools for conducting applied research in the field of communication; research tools in real-world professions.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 572 Corporate Web Design and Management Credits: 3 (3-0-0)
Course Description: Design, development, and management of corporate digital media content.
Prerequisite: None.
Registration Information: Graduate standing. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 573 Strategic Digital Communication Credits: 3 (3-0-0)
Course Description: Development, implementation and assessment of digital communication projects and campaigns/programs.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 601 Cognitive Communication Theory Credits: 3 (3-0-0)
Course Description: Theories of information technology and communication as they relate to cognitive and social cognitive processing.
Prerequisite: JTC 501.
Restriction: Must be a: Graduate, Professional.
Registration Information: JTC 501 or written consent of graduate advisor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 602 Social and Cultural Communication Theory Credits: 3 (3-0-0)
Course Description: Theories of information technology and communication as they relate to the field of media systems, organizations, and culture.
Prerequisite: JTC 501.
Restriction: Must be a: Graduate, Professional.
Registration Information: JTC 501 or written consent of graduate advisor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 604 Colloquium--Grad/Teaching/Learning/Research Credit: 1 (1-0-0)
Course Description: Orientation to graduate studies; communication theories, processes, media, and technology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online. Maximum of 4 combined credits may be taken from JTC 604 and JTC 701.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

JTC 614 Public Communication Campaigns Credits: 3 (3-0-0)
Course Description: Conceptual, methodological issues and decisions underpinning determination of communication campaign effects, planning, implementation, and evaluation.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Written consent of graduate advisor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 630 Health Communication Credits: 3 (3-0-0)
Course Description: Role of health communication in public health programs and campaigns.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Written consent of instructor.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

JTC 640 Public Communication Technologies Credits: 3 (3-0-0)
Course Description: Analysis of evolving and emergent communication technologies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 650 Strategic Communications Credits: 3 (3-0-0)
Course Description: Theoretical/practical management issues in public relations, advertising/promotional communications including behavioral, societal, ethical, legal.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 660 Communication and Innovation Credits: 3 (3-0-0)
Course Description: Communication's role in the process of innovation as well as the diffusion of new technologies, products, ideas, behaviors and attitudes.
Prerequisite: JTC 501.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: JTC 501 or written consent of graduate advisor.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 661 Information Design Credits: 3 (3-0-0)
Course Description: Theoretical and empirical review of creation, presentation, storage, and distribution of information.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 662 Communicating Science and Technology Credits: 3 (3-0-0)
Course Description: Examination of theoretical and empirical studies concerning communication of science and technology subject matter.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 664 Quantitative Research in Communication Credits: 3 (3-0-0)
Course Description: Advanced quantitative research methods used in communication research.
Prerequisite: JTC 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: JTC 500 or written consent of graduate advisor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 665 Qualitative Methods in Communication Research Credits: 3 (3-0-0)
Course Description: Techniques for collecting; interpreting, analyzing qualitative communication data.
Prerequisite: JTC 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: JTC 500 or written consent of graduate advisor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 670 Communication in the Social Processes of Risk Credits: 3 (0-0-3)
Course Description: Communication and psychological, sociological, and cultural factors shaping risk involving technology, health, environment, disasters, sustainability.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: Philosophy, techniques, and approaches to teaching journalism skills courses, as supervised by faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 687 Internship Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 690 Workshop Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 695 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 698 Research Credits: 3 (0-0-3)
Course Description: Development of theoretical basis and methodology for thesis or research project.
Prerequisite: JTC 500 and JTC 501.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 790 Workshop Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 792A Seminar: Health and Risk Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 792B Seminar: Human Computer Interaction Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 792C Seminar: Communication Technology in Organizations Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 792D Seminar: Ethics, Law, and Policy Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 792E Seminar: Strategic Communication Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 792F Seminar: Media Technology and Society Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 793A Seminar: Experimental Design Credits: 3 (0-0-3)
Course Description:
Prerequisite: JTC 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: JTC 500 or written consent of graduate advisor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 793B Seminar: Survey Design Credits: 3 (0-0-3)
Course Description:
Prerequisite: JTC 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: JTC 500 or written consent of graduate advisor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 793C Seminar: Content Analysis Credits: 3 (0-0-3)
Course Description:
Prerequisite: JTC 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: JTC 500 or written consent of graduate advisor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 793D Seminar: Qualitative Methods Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of graduate advisor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 793E Seminar: Human Factors Credits: 3 (0-0-3)
Course Description:
Prerequisite: JTC 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: JTC 500 or written consent of graduate advisor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 793F Seminar: Critical and Cultural Methods Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of graduate advisor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 798 Research Credits: 3 (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of graduate advisor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Key Academic Community-KEY (KEY)

Courses

KEY 162 Bridging the Biol/Chem Gulf for Pre-Health Majors Credits: 2 (2-0-0)
Also Offered As: LIFE 162.
Course Description: Connections between chemistry and biology through inquiry-based exercises centered around societal and health issues.
Prerequisite: None.
Restriction: .
Registration Information: Enrollment in the KEY Health Professions Learning Community required. Credit not allowed for both KEY 162 and LIFE 162.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

KEY 192A Key Community Seminar Credit: 1 (0-0-1)
Course Description: Examination of an intellectual problem or theme. Topics vary by instructor.
Prerequisite: None.
Registration Information: Concurrent registration in companion courses in the Key Course Cluster.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

KEY 192B Key Community Seminar Credits: 2 (0-0-2)
Course Description: Examination of an intellectual problem or theme. Topics vary by instructor.
Prerequisite: None.
Registration Information: Concurrent registration in companion courses in the Key Course Cluster.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

KEY 192C Key Community Seminar Credits: 3 (0-0-3)
Course Description: Examination of an intellectual problem or theme. Topics vary by instructor.
Prerequisite: None.
Registration Information: Concurrent registration in companion courses in the Key Course Cluster.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

KEY 263 Academic and Career Decision-Making Credit: 1 (0-0-1)
Course Description: Enhance academic and career development and decision making through self-authorship, critical thinking, and reflection.
Prerequisite: None.
Registration Information: Participation in the Key Plus Learning Community.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

KEY 272 Leadership--Higher Education Environment Credit: 1 (0-0-1)
Course Description: Personal leadership and diversity theories.
Prerequisite: None.
Registration Information: Participation in the Key Plus Learning Community.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

KEY 484 Supervised College Teaching Credits: Var[1-2] (0-0-0)
Course Description: Develop expertise in facilitating seminar discussions, promoting effective learning strategies, and encouraging academic success with students enrolled in a Key Community Seminar.
Prerequisite: None.
Registration Information: Junior standing. May be taken up to three times for credit. Students must be selected as Mentors for the Key Communities to serve as a Key Seminar Teaching Assistant. Written consent of Key Community Director to register for the course.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Landscape Architecture-LAND (LAND)

Courses

LAND 110 Introduction to Landscape Architecture Credits: 3 (1-2-1)
Course Description: Introductory theories, methods, and applications of landscape studies.
Prerequisite: None.
Registration Information: Must register for lecture, laboratory, and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B.

LAND 120 History of the Designed Landscape Credits: 3 (3-0-0)
Course Description: Major monuments and spaces from ancient Middle East through classical antiquity, the Renaissance, and Western tradition.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 200 Topics in Landscape Theory and Garden Design Credits: 3 (3-0-0)
Course Description: Landscape theory and design principles in garden design. Students will be engaged through online discussions and will record weekly exercises and course material with the development of a sketchbook and blog/website postings.
Prerequisite: None.
Registration Information: This is a partial semester course. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 220 Fundamentals of Ecology (GT-SC2) Credits: 3 (3-0-0)
Also Offered As: LIFE 220.
Course Description: Interrelationships among organisms and their environments.
Prerequisite: (BIO 100 to 199 - at least 3 credits or BZ 100 to 199 - at least 3 credits or LIFE 100 to 199 - at least 3 credits or HORT 100) and (MATH 100 to 199 - at least 3 credits).
Registration Information: Credit allowed for only one of the following: LAND 220/LIFE 220, or LIFE 320. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

LAND 230 Drawing the Landscape Credits: 4 (2-4-0)
Course Description: Visual communication techniques; exploration of symbology, model building, design development drawing, and construction documentation draughting.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 240 Fundamentals of Landscape Design Process Credits: 4 (1-4-1)
Course Description: Initiation of formal exploration of design elements, materials, and principles, and introduction of design process as a defensible methodology.
Prerequisite: LAND 230.
Registration Information: Must register for lecture, laboratory and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 241 Environmental Analysis Credits: 3 (1-4-0)
Course Description: Exploration and understanding of natural and cultural landscapes through analytical simulation techniques.
Prerequisite: LAND 230.
Registration Information: Must have concurrent registration in LAND 240. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 357 Omnibus Field Studies Credits: 4 (0-8-0)
Course Description: Theories and methods for the analysis, design, and planning of garden and landscape scale environments.
Prerequisite: None.
Registration Information: 3 credits in landscape drawing and analysis.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 360 Basic Landscape Design and Construction Credits: 3 (0-6-0)
Course Description: Site programming analysis, design, and construction, including skill development in specifying earthwork, drainage, and vegetative composition.
Prerequisite: LAND 240.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 361 Digital Methods Credits: 3 (2-2-0)
Course Description: Landscape research, analysis, and design with ARCVIEW, AutoCAD, Microstation, and Photoshop.
Prerequisite: LAND 360, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 362 Form and Expression in Garden Design Credits: 3 (0-6-0)
Course Description: Formal decision making for site scale environments, including creative processes for form-giving, and generation of experimental solutions.
Prerequisite: LAND 361.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 363 Advanced Landscape Site Engineering Credits: 4 (2-4-0)
Course Description: Understanding and documenting the built environment with emphasis on construction and surveying as integral parts of design process.
Prerequisite: LAND 360.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 364 Design and Nature Credits: 4 (1-6-0)
Course Description: Computer-aided processes for siting, organizing, and evaluating cultural activities within ecologically fragile, landscape-scale environments.
Prerequisite: LAND 361.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 365 Landscape Contract Drawing and Specifications Credits: 3 (2-2-0)
Course Description: Construction details, design development, and construction documentation emphasizing implementation of design projects.
Prerequisite: LAND 363.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 366 Landscape Design Expression Credits: 4 (0-8-0)
Course Description: Idea, values, and process landscape form applied to interactions of natural, cultural systems at the site and community scale; design competitions.
Prerequisite: LAND 365.
Registration Information: Credit not allowed for both LAND 366 and LAND 376.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 368 Landscape Irrigation and Water Conservation Credits: 3 (2-2-0)
Also Offered As: HORT 368.
Course Description: Practical approaches and methods of irrigation, water conservation, and water management in the designed landscape.
Prerequisite: LAND 110 or HORT 100.
Registration Information: Credit not allowed for both LAND 368 and HORT 367 or HORT 368. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 376 Landscape Design and Visualization Credits: 4 (0-8-0)
Course Description: Precedents, ideas, values and processes of landscape form applied to landscape systems at the site and community scale; design competitions.
Prerequisite: LAND 362.
Registration Information: Credit not allowed for both LAND 376 and LAND 366. Required field trips.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LAND 392 Seminar-Designed Landscapes-Theory and Criticism Credits: 2 (0-0-2)
Course Description: Readings, discussions, and writing in landscape architectural design theory; critical analysis of the designed and constructed landscape.
Prerequisite: LAND 365.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

LAND 444 Ecology of Landscapes Credits: 3 (3-0-0)
Course Description: Theories, methods, and practices for interpreting, describing, and representing natural and human modified landscapes.
Prerequisite: LAND 220 or LIFE 220 or LIFE 320.
Registration Information: Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 446 Urban Design Credits: 4 (0-8-0)
Course Description: Designing the urban landscape, including precedent exploration about overall image, materials, and structure of the city and its components.
Prerequisite: LAND 366.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 447 Comprehensive Landscape Design Credits: 4 (0-8-0)
Course Description: Terminal studio; research, analysis, and synthesis for comprehensive project identified by student and approved in advance by faculty committee.
Prerequisite: LAND 446.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 449 Professional Practice Credit: 1 (1-0-0)
Course Description: Theory and skills of landscape architectural professional practice including functional, human, business, legal, and political aspects.
Prerequisite: LAND 447, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 454 Landscape Field Studies Credits: 5 (1-6-1)
Course Description: Field observation of spatial and temporal landscape patterns resulting from natural and cultural processes and interactions.
Prerequisite: LAND 366.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 455 Travel Abroad-European Landscape Architecture Credits: 5 (1-6-1)
Course Description: Exploration of major theoretical platforms in design through drawing, photographing, and measuring landscape architecture precedents in Europe.
Prerequisite: LAND 362.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 495A Independent Study: Design Projects Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LAND 495B Independent Study: Field Service Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LAND 496 Group Study Credits: Var[1-8] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LAND 510 Virtual Design Methods Credits: 3 (2-2-0)
Course Description: Exploration and application of advanced computing technology and methods for analyzing and organizing natural and cultural landscapes.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 520 Geographic Information Systems Credits: 3 (1-4-0)
Course Description: Theories and applications of geographic information systems in spatial analysis and land planning.
Prerequisite: LAND 241.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 560 Structure of Landscape Patterns Credits: 3 (2-2-0)
Course Description: Mechanisms and concepts in landscape structure for planning, design, and environmental management.
Prerequisite: LIFE 320.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 610 Topics in Garden Design Credits: 4 (2-6-0)
Course Description: Garden design theories, methods, and operations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 620 Topics in Park Design Credits: 4 (2-6-0)
Course Description: Ideas, values, and processes of landscape form applied to interactions of natural and cultural systems for park and recreation applications.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 630 Topics in Urban Design Credits: 4 (2-6-0)
Course Description: History and application of urban design principles, practices, and policies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 640 Major Landscape Change Credits: 4 (2-6-0)
Course Description: Addresses social and ecological resilience of large-scale landscapes through theory and application.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 670 Landscape Architecture Studio Option Credits: 4 (1-6-1)
Course Description: Ideas, values, and processes of landscape architectural studio practice.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Course may be taken up to 5 times for credit. Must register for lecture, laboratory, and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 695A Landscape Architectural Independent Study: Design Projects Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 695B Landscape Architectural Independent Study: Field Service Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 698 Research Credits: Var[1-5] (0-0-0)
Course Description: Guided research experience in landscape architecture.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Language-Amer Sign Lang-LSGN (LSGN)

Courses

LSGN 100 American Sign Language I Credits: 5 (5-0-0)
Course Description: Vocabulary, grammar and basic conversational skill in ASL, with information on deaf culture.
Prerequisite: None.
Registration Information: Open to all levels. Credit not allowed for both LSGN 100 and LSGN 109.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LSGN 101 American Sign Language II Credits: 5 (5-0-0)
Course Description: Development of communicative competence in ASL skill and expansion of knowledge of deaf culture.
Prerequisite: LSGN 100 or LSGN 109.
Registration Information: Open to all levels. Credit not allowed for both LSGN 101 and LSGN 110.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSGN 200 Second-Year American Sign Language I Credits: 3 (3-0-0)
Course Description: Building intermediate-low level speed/accuracy through complex vocabulary, syntax, depicting verbs and classifiers, and vital aspects of Deaf/ASL culture.
Prerequisite: LSGN 101 or LSGN 110.
Registration Information: Field trips required.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B.

LSGN 201 Second-Year American Sign Language II Credits: 3 (3-0-0)
Course Description: Building intermediate-mid level speed/accuracy through self-generated stories, analysis of ASL semantic structures and vital aspects of Deaf/ASL culture.
Prerequisite: LSGN 200.
Registration Information: Field trips required.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B.

LSGN 296 Group Study-American Sign Language Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

LSGN 304 Deafness and American Sign Language Credits: 3 (3-0-0)
Course Description: Exploration of Deaf culture in the United States, how it has evolved historically, compared to Deaf communities abroad and to the experiences of other marginalized communities in the US. Current public policy debates affecting the Deaf community. Taught in ASL.
Prerequisite: LSGN 201.
Registration Information: LSGN 201 OR conversational proficiency as assessed by course instructor and departmental faculty. Credit not allowed for both LSGN 304 and LSGN 380A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LSGN 347 American Sign Language for Professionals Credits: 3 (3-0-0)
Course Description: American Sign Language vocabulary and knowledge used in human services professions and language teaching. Especially useful for future medical and emergency professionals, educators, and business personnel. Taught in ASL.
Prerequisite: LSGN 201.
Registration Information: Credit not allowed for both LSGN 347 and LSGN 380A2.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Language-Arabic-LARA (LARA)

Courses

LARA 100 First-Year Arabic I Credits: 5 (5-0-0)
Course Description: Essentials of Arabic for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: No previous study in Arabic. Credit not allowed for both LARA 100 and LARA 105.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LARA 101 First-Year Arabic II Credits: 5 (5-0-0)
Course Description: Essentials of Arabic for the continuing student: aural comprehension, speaking, reading, writing.
Prerequisite: LARA 100 or LARA 105.
Registration Information: Credit not allowed for both LARA 101 and LARA 107.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LARA 200 Second-Year Arabic I (GT-AH4) Credits: 4 (4-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LARA 101 or LARA 107.
Registration Information: Placement exam can substitute for LARA 101.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LARA 201 Second-Year Arabic II (GT-AH4) Credits: 4 (4-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LARA 200.
Registration Information: Placement exam can substitute for LARA 200.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LARA 250 Arabic Language, Literature, Culture in Translation (GT-AH2) Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of the Arabic language, literature, and culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

LARA 296 Group Study-Arabic Credits: Var[1-5] (0-0-0)
Course Description: Group study in Arabic language/literature/culture.
Prerequisite: None.
Term Offered: Fall. Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

LARA 300 Third Year Arabic Credits: 3 (3-0-0)
Course Description: Develop reading and writing skills.
Prerequisite: LARA 201.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LARA 301 Oral Communication - Arabic Credits: 3 (3-0-0)
Course Description: In-depth study of Arabic to improve proficiency, emphasizing oral communication.
Prerequisite: LARA 201.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LARA 495 Independent Study-Arabic Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Three years of college-level Arabic.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

Language-Chinese-LCHI (LCHI)

Courses

LCHI 100 First-Year Chinese I Credits: 5 (5-0-0)
Course Description: Essentials of Chinese for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: No previous study in Chinese. Credit not allowed for both LCHI 100 and LCHI 105.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LCHI 101 First-Year Chinese II Credits: 5 (5-0-0)
Course Description: Essentials of the Chinese language for the continuing student; aural comprehension, speaking, reading, writing.
Prerequisite: LCHI 100 or LCHI 105.
Registration Information: Credit not allowed for both LCHI 101 and LCHI 107.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LCHI 200 Second-Year Chinese I (GT-AH4) Credits: 5 (5-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LCHI 101 or LCHI 107.
Registration Information: Placement exam can substitute for LCHI 101.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LCHI 201 Second-Year Chinese II (GT-AH4) Credits: 5 (5-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LCHI 200.
Registration Information: Placement exam can substitute for LCHI 200.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LCHI 205 Intermediate Written Chinese Credits: 3 (3-0-0)
Course Description: Development of fundamental language skills emphasizing writing and reading.
Prerequisite: LCHI 200.
Registration Information: Placement exam can substitute for LCHI 200.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LCHI 250 Chinese Language, Literature, Culture in Translation (GT-AH2) Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of Chinese literature and culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

LCHI 296 Group Study-Chinese Credits: Var[1-5] (0-0-0)
Course Description: Group study in Chinese language/literature/culture.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LCHI 304 Third-Year Chinese I Credits: 3 (3-0-0)
Course Description: Development of reading comprehension, communicative competence, and cultural understanding.
Prerequisite: LCHI 201.
Registration Information: Placement exam can substitute for LCHI 201.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LCHI 305 Third-Year Chinese II Credits: 3 (3-0-0)
Course Description: Development of reading comprehension, communicative competence, and cultural understanding.
Prerequisite: LCHI 304.
Registration Information: Placement exam can substitute for LCHI 304.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LCHI 309 Contemporary Chinese Literature and the Arts Credits: 3 (3-0-0)
Course Description: Trends resulting from traditional Chinese and contemporary foreign influences in Chinese literature and the arts.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LCHI 365 Introduction to Chinese Cinema Studies Credits: 3 (3-0-0)
Course Description: Terminology, techniques, and approaches specific to Chinese cinema. Taught in Chinese.
Prerequisite: LCHI 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LCHI 408 Chinese Calligraphy Credit: 1 (1-0-0)
Course Description: History of Chinese calligraphy and basic Chinese calligraphy skills.
Prerequisite: LCHI 304.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LCHI 495 Independent Study-Chinese Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Required: Three years of college-level Chinese.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LCHI 496 Group Study-Chinese Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: LCHI 304 or LCHI 305.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

Language-French-LFRE (LFRE)

Courses

LFRE 100 First-Year French I Credits: 5 (3-0-2)
Course Description: Essentials of French for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. No previous study in French. Credit allowed for only one of the following: LFRE 100, LFRE 105, or LFRE 106. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 101 First-Year French II Credits: 5 (3-0-2)
Course Description: Essentials of French for the continuing student: aural comprehension, speaking, reading, writing.
Prerequisite: LFRE 100 or LFRE 105 or LFRE 106.
Registration Information: Must register for lecture and recitation. Placement exam or instructor placement can substitute for course prerequisites. Credit allowed for only one of the following: LFRE 101, LFRE 107, or LFRE 108. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face only.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 106 First-Year French Review Credits: 3 (3-0-0)
Course Description: For students with minimal proficiency in French. Basic review of essential skills: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: Placement exam or instructor placement required. Credit allowed for only one of the following: LFRE 100, LFRE 105, or LFRE 106.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 108 Intensive French I Credits: 5 (3-0-2)
Course Description: First-year French through an accelerated practice (first and second semester combined) of the three modes of communication (interpersonal, interpretive and presentational) and the standards of cultures, connections, comparisons and communities. Designed for students with some prior French language knowledge.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online. Credit not allowed for both LFRE 101 and LFRE 108.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 120 Reading for Proficiency-French Credits: 3 (3-0-0)
Course Description: Essentials of the French language for developing reading proficiency.
Prerequisite: None.
Registration Information: Credit for LFRE 120 not allowed if LFRE 101, LFRE 107, or LFRE 108 has been completed.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 200 Second-Year French I (GT-AH4) Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in French conversation, reading, and writing.
Prerequisite: LFRE 101 or LFRE 107 or LFRE 108.
Registration Information: Placement exam can substitute for course prerequisites. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LFRE 201 Second-Year French II (GT-AH4) Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in French conversation, reading, and writing.
Prerequisite: LFRE 200.
Registration Information: Placement exam can substitute for LFRE 200. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LFRE 208 Intensive French II Credits: 5 (5-0-0)
Course Description: Accelerated practice in speaking, reading, writing, and aural comprehension.
Prerequisite: LFRE 108.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 250 French Language, Literature, Culture in Translation (GT-AH2) Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of the French language, literature, and culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

LFRE 296 Group Study-French Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

LFRE 300 Reading and Writing for Communication-French Credits: 3 (3-0-0)
Course Description: Development of reading and writing proficiency through an in-depth examination of contemporary French writing.
Prerequisite: LFRE 201 or LFRE 208.
Registration Information: Placement exam can substitute for course prerequisites. Credit not allowed for both LFRE 300 and LFRE 301.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 301 Oral Communication-French Credits: 3 (3-0-0)
Course Description: In-depth French language study to improve proficiency in all language skills emphasizing oral.
Prerequisite: LFRE 201.
Registration Information: Placement exam can substitute for LFRE 201. Credit not allowed for both LFRE 301 and LFRE 300.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 310 Approaches to French Literature Credits: 3 (3-0-0)
Course Description: Appreciation and critical readings of representative works in French prose, drama, and poetry.
Prerequisite: LFRE 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 312 Introduction to French Linguistics Credits: 3 (3-0-0)
Course Description: French linguistics, phonetics, phonology, morphology, syntax, semantics, and pragmatics.
Prerequisite: LFRE 300, may be taken concurrently.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 313 Introduction to French Translation and Interpreting Credits: 3 (3-0-0)
Course Description: Translation and interpreting of written and oral texts into and from French.
Prerequisite: LFRE 300.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 326 French Phonetics Credits: 3 (3-0-0)
Course Description: Phonetic principles and their application to language sound system; intensive practice in pronunciation, intonation.
Prerequisite: LFRE 300, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 335 Issues in French/Francophone Culture Credits: 3 (3-0-0)
Course Description: Historical context of contemporary issues in the culture of French-speaking countries.
Prerequisite: LFRE 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 345 Business French Credits: 3 (3-0-0)
Course Description: Business and commercial aspects of the French language and culture.
Prerequisite: LFRE 300.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 355 20th Century French Literature Credits: 3 (3-0-0)
Course Description: Representative literary works from the 20th century.
Prerequisite: LFRE 310.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 365 Introduction to French Cinema Studies Credits: 3 (3-0-0)
Course Description: Terminology, techniques, and approaches specific to French and Francophone cinema. Taught in French.
Prerequisite: LFRE 310 or LFRE 335.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 400 Advanced French Communication Skills Credits: 3 (3-0-0)
Course Description: Development of speaking, reading, and writing proficiency through an in-depth examination of representative writings and media communications.
Prerequisite: LFRE 300.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 413 Advanced French Translation and Interpreting Credits: 3 (3-0-0)
Course Description: Advanced practice in translation and interpreting of written and oral texts into and from French.
Prerequisite: LFRE 313.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 433A Advanced French/Francophone Culture: Representations Credits: 3 (3-0-0)
Course Description: French and Francophone cultural identities and their history.
Prerequisite: LFRE 300 and LFRE 301 to 399.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 433B Advanced French/Francophone Culture: Center and Margins Credits: 3 (3-0-0)
Course Description: French and Francophone cultural identities and their history.
Prerequisite: LFRE 300 and LFRE 301 to 399.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 441 Advanced Business French Credits: 3 (3-0-0)
Course Description: Advanced business and commercial aspects of the French language and culture.
Prerequisite: LFRE 345.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 450 Selected French Literary Movements and Periods Credits: 3 (3-0-0)
Course Description: Studies in selected literary movements and periods of France such as classicism, realism, naturalism, existentialism.
Prerequisite: (LFRE 300) and (LFRE 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 452 Genre Studies in French Credits: 3 (3-0-0)
Course Description: Development of critical approaches to major works in literature through selected literary genres and subgenres.
Prerequisite: (LFRE 300) and (LFRE 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 453 Author Studies in French Credits: 3 (3-0-0)
Course Description: Development of critical approaches to authors through the appreciation and analysis of selected works.
Prerequisite: (LFRE 300) and (LFRE 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 454 Topic Studies in French Credits: 3 (3-0-0)
Course Description: Selected topic studies such as themes, topoi, and interdisciplinary subjects in literature.
Prerequisite: (LFRE 300) and (LFRE 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 460 French/Francophone Women Writers Credits: 3 (3-0-0)
Course Description: Selected French and Francophone women writers in a variety of genres emphasizing relationships among gender, culture, and writing.
Prerequisite: (LFRE 300) and (LFRE 310).
Registration Information: May be taken up to 3 times for credit.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 470 French Grammatical Constructions Credits: 3 (3-0-0)
Course Description: Linguistic analysis of selected French grammatical constructions (word order, word formation and sentence structure), their relationship to meaning.
Prerequisite: LFRE 312.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 492 Seminar-French Language, Literature, and Society Credits: 3 (0-0-3)
Course Description: Integrative study of language, literature, and society emphasizing relationships between texts and the society of their origin.
Prerequisite: (LFRE 310) and (LFRE 400 to 479 - at least 2 courses).
Registration Information: Senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 495 Independent Study-French Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Three years of college-level French.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LFRE 500 Language Analysis/Stylistics-French Credits: 3 (3-0-0)
Course Description: Analysis of language structure through the examination of style in literary and non-literary texts.
Prerequisite: LFRE 400.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 508 Intensive French-Graduate Review Credits: 4 (3-3-0)
Course Description: Immersion review of French for the teacher, developing intermediate-level proficiency in culture and the four skills.
Prerequisite: None.
Registration Information: Admission to Summer Institute for Foreign Language Teaching. Must register for lecture and laboratory.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 514 Issues in Teaching French Credit: 1 (1-0-0)
Course Description: Current theory and practice in second-language instruction; technological applications.
Prerequisite: None.
Registration Information: Concurrent graduate teaching assistantship required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 525 History of the French Language Credits: 3 (3-0-0)
Course Description: Investigation of both internal (strictly linguistic) and external (sociolinguistic) factors in development of the language.
Prerequisite: LFRE 400.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 536 Topics in French Linguistics Credits: 3 (3-0-0)
Course Description: Acquisition, discourse analysis, and language change and variation over time and space.
Prerequisite: LFRE 500.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 551 Selected French Literary Movements/Periods Credits: 3 (3-0-0)
Course Description: Advanced studies in and critical approaches to selected literary movements or periods.
Prerequisite: None.
Registration Information: Undergraduate degree in French.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 552 Advanced Studies in French Literary Genres Credits: 3 (3-0-0)
Course Description: Advanced studies in and critical approaches to literary genres through study of major works in foreign literatures.
Prerequisite: None.
Registration Information: Undergraduate degree in French.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 553 Advanced French Author Studies Credits: 3 (3-0-0)
Course Description: Critical approaches to the study of selected authors through appreciation and analysis of their major works.
Prerequisite: None.
Registration Information: Undergraduate degree in French.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 554 Advanced Topic Studies-French Credits: 3 (3-0-0)
Course Description: Selected topics (theme, topoi, and interdisciplinary subjects) in foreign literatures.
Prerequisite: None.
Registration Information: Undergraduate degree in French.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 692 Seminar-French Credits: 3 (0-0-3)
Course Description: Treatment of selected topics in seminar.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Undergraduate degree in French.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

LFRE 695 Independent Study-French Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Language-General-LGEN (LGEN)

Courses

LGEN 114 First-Year Language I Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 115 First-Year Language II Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 192 Modern Languages/Cultures: Italian and Japanese Credits: 3 (0-0-3)
Course Description: Language, cultural issues, and historical heritage of modern Italian and Japanese societies.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 214 Second-Year Language I Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 215 Second-Year Language II Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 290 Theatre Workshop in a Foreign Language Credits: Var[1-3] (0-0-0)
Course Description: Application of communication skills in a foreign language through informal staging of dramatic scripts.
Prerequisite: LARA 100 or LARA 105 or LCHI 100 or LCHI 105 or LFRE 100 or LFRE 105 or LGER 100 or LGER 105 or LITA 100 or LITA 105 or LJPN 100 or LJPN 105 or LKOR 105 or LRUS 100 or LRUS 105 or LSPA 100 or LSPA 105.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 296 Group Study-General Credits: Var[1-5] (0-0-0)
Course Description: Group study in language/literature/culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

LGEN 314 Third-Year Language I Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 315 Third-Year Language II Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 365 Introduction to Cinema Studies Credits: 3 (3-0-0)
Course Description: Terminology, techniques, and approaches specific to foreign cinema. Taught in English.
Prerequisite: LCHI 305 or LFRE 310 or LFRE 335 or LGER 310 or LGER 335 or LJPN 305 or LRUS 305 or LSPA 310 or LSPA 335.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 382 Italian Ethnic Identity, Culture, and Gender Credits: 3 (2-0-1)
Also Offered As: ETST 382.
Course Description: Different ethnic identities in southern and northern Italy. Historical and contemporary culture and feminism. Enhancement of linguistic skills.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Credit not allowed for both ETST 382 and LGEN 382.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 414 Fourth-Year Language I Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 415 Fourth-Year Language II Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 465A Studies in Foreign Film: The Americas Credits: 3 (3-0-0)
Course Description: Representation of foreign societies through film, taught in English.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGEN 465B Studies in Foreign Film: Asia Credits: 3 (3-0-0)
Course Description: Representation of foreign societies through film, taught in English.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGEN 465C Studies in Foreign Film: Europe Credits: 3 (3-0-0)
Course Description: Representation of foreign societies through film, taught in English.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGEN 465D Studies in Foreign Film: Africa Credits: 3 (3-0-0)
Course Description: Representation of foreign societies through film, taught in English.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 487 Internship Credits: Var[1-12] (0-0-0)
Course Description: Advisor-approved position at a professional off-campus training program with international connections.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 492 Language, Literature, and Society-General Credits: 3 (0-0-3)
Course Description: Integrative study of language, literature and society.
Prerequisite: (LFRE 310 or LGER 310 or LSPA 310) and (LFRE 400 to 481 - at least 2 courses or LGER 400 to 481 - at least 2 courses or LSPA 400 to 481 - at least 2 courses).
Registration Information: Senior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 505 Methods/Technologies in Language Instruction Credits: 2 (2-1-0)
Course Description: Theory and methodology of teaching foreign languages and cultures, including video and computer-assisted technology.
Prerequisite: None.
Registration Information: Admission to Summer Institute for Foreign Language Teaching. Must register for lecture and laboratory.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGEN 510 Research Methods Credit: 1 (1-0-0)
Course Description: Resources and reference tools appropriate to research in foreign languages and literatures.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGEN 516 Theory/Methods-Foreign Language Instruction Credits: 3 (3-0-0)
Course Description: Foreign language teaching methodology.
Prerequisite: None.
Registration Information: Admission to graduate studies in foreign language.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 530 Literary and Cultural Theory Credits: 3 (3-0-0)
Course Description: Theoretical approaches to contemporary literary and cultural criticism.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 535 Graduate Studies in Civilization Credits: 3 (3-0-0)
Course Description: Critical and analytical approaches to a foreign civilization and culture. Research related to language of specialization.
Prerequisite: LFRE 433A or LFRE 433B or LGER 434 or LSPA 436 or LSPA 437.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 545 Translation—Theory and Practice Credits: 3 (0-0-3)
Course Description: Theory and practice of translation. Fundamental concepts of translation and the translation profession. Translation practice. A variety of texts are analyzed, and different translation problems and techniques are presented and put into practice to translate real texts.
Prerequisite: None.
Registration Information: Graduate standing. Reading knowledge of a foreign language required. May be repeated for up to 9 credits. Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGEN 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

LGEN 694 Independent Study: Portfolio Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 698 Research: Project Credits: 3 (0-0-3)
Course Description:
Prerequisite: LGEN 510.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 699 Thesis Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Language-German-LGER (LGER)

Courses

LGER 100 First-Year German I Credits: 5 (3-0-2)
Course Description: Essentials of German for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. No previous study in German. Credit not allowed for both LGER 100 and LGER 105. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 101 First-Year German II Credits: 5 (3-0-2)
Course Description: Essentials of German for the continuing student: aural comprehension, speaking, reading, writing.
Prerequisite: LGER 100 or LGER 105.
Registration Information: Must register for lecture and recitation. Placement exam can substitute for LGER 100. Credit allowed for only one of the following: LGER 101, LGER 107, or LGER 108. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face only.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 108 Intensive German I Credits: 5 (3-0-2)
Course Description: First-year German through an accelerated practice (first and second semester combined) of the three modes of communication (interpersonal, interpretive and presentational) and the standards of cultures, connections, comparisons and communities. Designed for students with some prior German language knowledge.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online. Credit not allowed for both LGER 101 and LGER 108.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 120 Reading for Proficiency-German Credits: 3 (3-0-0)
Course Description: Essentials of the German language for developing reading proficiency.
Prerequisite: None.
Registration Information: Credit for LGER 120 not allowed if LGER 101, LGER 107, or LGER 108 has been completed.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 200 Second-Year German I (GT-AH4) Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in German conversation, reading, and writing.
Prerequisite: LGER 101 or LGER 107 or LGER 108.
Registration Information: Placement exam can substitute for course prerequisites. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LGER 201 Second-Year German II (GT-AH4) Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LGER 200.
Registration Information: Placement exam can substitute for LGER 200. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LGER 208 Intensive German II Credits: 5 (5-0-0)
Course Description: Accelerated practice in speaking, reading, writing, and aural comprehension.
Prerequisite: LGER 108.
Registration Information: Placement exam can substitute for LGER 108.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 250 German Language, Literature, Culture in Translation (GT-AH2) Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of the German language, literature, and culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

LGER 251 The Holocaust in Literature and Film Credits: 3 (3-0-0)
Course Description: Literature and the arts through representations of the Holocaust, more appropriately known as the Shoah. What role have the arts played in working through (and memorializing) the past? And what risks are there in "aestheticizing" the Holocaust? Topics include trauma, collective guilt, violence, and the role of the arts in society. Readings and discussion will be in English.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B.

LGER 296 Group Study-German Credits: Var[1-5] (0-0-0)
Course Description: Group study in German language/literature/culture.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LGER 300 Reading and Writing for Communication-German Credits: 3 (3-0-0)
Course Description: Development of reading and writing proficiency through an in-depth examination of contemporary writing.
Prerequisite: LGER 201 or LGER 208.
Registration Information: Placement exam can substitute for course prerequisites.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 301 Oral Communication-German Credits: 3 (3-0-0)
Course Description: In-depth language study to improve proficiency in all language skills emphasizing oral.
Prerequisite: LGER 201.
Registration Information: Placement exam can substitute for LGER 201. Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 310 Approaches to German Literature Credits: 3 (3-0-0)
Course Description: Appreciation and critical readings of representative works in prose, drama, and poetry.
Prerequisite: LGER 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 313 Introduction to German Translation and Interpreting Credits: 3 (3-0-0)
Course Description: Translation and interpreting of written and oral texts into and from German.
Prerequisite: LGER 300.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 326 German Phonetics Credits: 3 (3-0-0)
Course Description: Phonetic principles and their application to language sound system; intensive practice in pronunciation, intonation.
Prerequisite: LGER 300, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 335 Issues in German Culture Credits: 3 (3-0-0)
Course Description: Historical context of contemporary issues in the culture of German-speaking countries.
Prerequisite: LGER 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 336 Issues in Swiss and Austrian Culture Credits: 3 (3-0-0)
Course Description: Swiss and Austrian culture focusing on the development of their respective cultures from the medieval to the modern periods. Taught in German.
Prerequisite: LGER 300.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 345 Business German Credits: 3 (3-0-0)
Course Description: Business and commercial aspects of the German language and culture.
Prerequisite: LGER 300.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 355 20th Century German Literature Credits: 3 (3-0-0)
Course Description: Representative literary works from the 20th century.
Prerequisite: LGER 310.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 365 Introduction to German Cinema Studies Credits: 3 (3-0-0)
Course Description: Terminology, techniques, and approaches specific to German cinema. Taught in German.
Prerequisite: LGER 310 or LGER 335.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 400 Advanced German Communication Skills Credits: 3 (3-0-0)
Course Description: Development of speaking, reading, and writing proficiency through an in-depth examination of representative writings and media communications.
Prerequisite: LGER 300.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 401 Advanced German Oral Communication Credits: 3 (3-0-0)
Course Description: Advanced language study to improve proficiency in German language skills, with an emphasis on oral communication.
Prerequisite: LGER 300.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

LGER 413 Advanced German Translation and Interpreting Credits: 3 (3-0-0)
Course Description: Advanced practice in translation and interpreting of written and oral texts into and from the German.
Prerequisite: LGER 313.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 434 Advanced German Culture Credits: 3 (3-0-0)
Course Description: Critical examination of selected topics in culture and cultural history of German-speaking countries.
Prerequisite: LGER 335 or LGER 336.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 441 Advanced Business German Credits: 3 (3-0-0)
Course Description: Advanced business and commercial aspects of the German language and culture.
Prerequisite: LGER 345.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 450 Selected German Literary Movements and Periods Credits: 3 (3-0-0)
Course Description: Studies in selected literary movements and periods of Germany, such as classicism, realism, naturalism, existentialism.
Prerequisite: LGER 300 and LGER 310.
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 452 Genre Studies in German Credits: 3 (3-0-0)
Course Description: Development of critical approaches to major works in literature through selected literary genres and subgenres.
Prerequisite: LGER 300 and LGER 310.
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 453 Author Studies in German Credits: 3 (3-0-0)
Course Description: Development of critical approaches to authors through the appreciation and analysis of selected works.
Prerequisite: LGER 300 and LGER 310.
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 454 Topic Studies in German Credits: 3 (3-0-0)
Course Description: Selected topic studies such as themes, topics, and interdisciplinary subjects in literature.
Prerequisite: LGER 300 and LGER 310.
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 465 Advanced Studies in German Film Credits: 3 (3-0-0)
Course Description: Representation of German society and culture through film. Taught in German.
Prerequisite: LGER 365.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 492 Seminar-German Language, Literature, and Society Credits: 3 (0-0-3)
Course Description: Integrative study of language, literature, and society emphasizing relationships between texts and the society of their origin.
Prerequisite: (LGER 310) and (LGER 400 to 481 - at least 2 courses).
Registration Information: Senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 495 Independent Study-German Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LGER 500 Language Analysis/Stylistics-German Credits: 3 (3-0-0)
Course Description: Analysis of German structure through the examination of style in literary and non-literary texts.
Prerequisite: LGER 400.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 508 Intensive German-Graduate Review Credits: 4 (3-3-0)
Course Description: Immersion review of German for the teacher, developing intermediate-level proficiency in culture and the four skills.
Prerequisite: None.
Registration Information: Admission to Summer Institute for Foreign Language Teaching. Must register for lecture and laboratory.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 514 Issues in Teaching German Credit: 1 (1-0-0)
Course Description: Current theory and practice in second-language instruction; technological applications.
Prerequisite: None.
Registration Information: Concurrent graduate teaching assistantship required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 525 History of the German Language Credits: 3 (3-0-0)
Course Description: Investigation of both internal (strictly linguistic) and external (sociolinguistic) factors in development of German.
Prerequisite: LGER 400.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 551 Selected German Literary Movements/Periods Credits: 3 (3-0-0)
Course Description: Advanced studies in and critical approaches to selected literary movements or periods.
Prerequisite: None.
Registration Information: Undergraduate degree in German.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 552 Advanced Studies in German Literary Genres Credits: 3 (3-0-0)
Course Description: Advanced studies and critical approaches to literary genres through study of major works in foreign literatures.
Prerequisite: None.
Registration Information: Undergraduate degree in German.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 553 Advanced German Author Studies Credits: 3 (3-0-0)
Course Description: Critical approaches to the study of selected authors through appreciation and analysis of their major works.
Prerequisite: None.
Registration Information: Undergraduate degree in German.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 554 Advanced German Topic Studies Credits: 3 (3-0-0)
Course Description: Selected topics (theme, topoi, and interdisciplinary subjects) in foreign literatures.
Prerequisite: None.
Registration Information: Undergraduate degree in German.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 692 Seminar-German Credits: 3 (0-0-3)
Course Description: Treatment of selected topics in seminar.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Undergraduate degree in German.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

LGER 695 Independent Study-German Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Language-Greek-LGRK (LGRK)

Courses

LGRK 152 Classical Greek I Credits: 3 (3-0-0)
Course Description: Essentials of the Greek language, reading, and translation.
Prerequisite: None.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGRK 153 Classical Greek II Credits: 3 (3-0-0)
Course Description: Essentials of the Greek language, reading, and translation.
Prerequisite: LGRK 152.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

Language-Italian-LITA (LITA)

Courses

LITA 100 First-Year Italian I Credits: 5 (3-0-2)
Course Description: Essentials of Italian for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. No previous study in Italian. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face. Credit not allowed for both LITA 100 and LITA 105.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LITA 101 First-Year Italian II Credits: 5 (3-0-2)
Course Description: Essentials of Italian for the continuing student: aural comprehension, speaking, reading, writing.
Prerequisite: LITA 100 or LITA 105.
Registration Information: Open to all levels. Must register for lecture and recitation. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face only. Credit not allowed for both LITA 101 and LITA 107.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LITA 200 Second-Year Italian I (GT-AH4) Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in Italian conversation, reading, and writing.
Prerequisite: LITA 101 or LITA 107.
Registration Information: Placement exam can substitute for LITA 101.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LITA 201 Second-Year Italian II (GT-AH4) Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LITA 200.
Registration Information: Placement exam can substitute for LITA 200.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LITA 296 Group Study-Italian Credits: Var[1-5] (0-0-0)
Course Description: Group study in language/literature/culture.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LITA 337 Italian Cinema, Culture, and Society Credits: 3 (3-0-0)
Course Description: Examination of how historical, social, political, and economic forces have shaped Italian society and culture in the modern period, including contemporary Italy, through the prism of film. Taught in Italian.
Prerequisite: LITA 201.
Registration Information: Credit not allowed for both LITA 337 and LITA 365.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LITA 348 Italian for the Creative Professions Credits: 3 (3-0-0)
Course Description: Development of Italian communication skills applied to several professional field and academic areas of interest, including tourism, fashion, the visual arts, gastronomy, and music.
Prerequisite: LITA 201.
Grade Mode: Traditional.
Special Course Fee: No.

LITA 365 Studies in Foreign Film-Italian Credits: 3 (3-0-0)
Course Description: Representation of Italian society through film. Taught in Italian.
Prerequisite: None.
Registration Information: Credit not allowed for both LITA 337 and LITA 365.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LITA 495 Independent Study-Italian Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Must have completed three years of Italian at college level.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Language-Japanese-LJPN (LJPN)

Courses

LJPN 100 First-Year Japanese I Credits: 5 (5-0-0)
Course Description: Essentials of Japanese for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: No previous study in Japanese. Credit not allowed for both LJPN 100 and LJPN 105.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LJPN 101 First-Year Japanese II Credits: 5 (5-0-0)
Course Description: Essentials of Japanese for the continuing student: aural comprehension, speaking, reading, writing.
Prerequisite: LJPN 100 or LJPN 105.
Registration Information: Open to all levels. Credit not allowed for both LJPN 101 and LJPN 107.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LJPN 200 Second-Year Japanese I (GT-AH4) Credits: 5 (5-0-0)
Course Description: Grammar review and extensive practice in Japanese conversation, reading, and writing.
Prerequisite: LJPN 101 or LJPN 107.
Registration Information: Placement exam can substitute for LJPN 101 or LJPN 107. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LJPN 201 Second-Year Japanese II (GT-AH4) Credits: 5 (5-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LJPN 200.
Registration Information: Placement exam can substitute for LJPN 200. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LJPN 208 Kanji Study Credit: 1 (1-0-0)
Course Description: Kanji (Chinese characters) learning strategies, through examination and analysis of Kanji characters.
Prerequisite: LJPN 100 or LJPN 105.
Registration Information: May be taken up to 4 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LJPN 250 Japanese Language, Literature, Culture in Translation (GT-AH2) Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of Japanese language, literature, and culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

LJPN 282A Study Abroad--Japan: Cultural Studies Credits: 3 (0-0-3)
Course Description: Experiential learning of traditional and modern aspects of Japanese culture.
Prerequisite: None.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LJPN 296 Group Study-Japanese Credits: Var[1-5] (0-0-0)
Course Description: Group study in Japanese language/literature/culture.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LJPN 304 Third-Year Japanese I Credits: 3 (3-0-0)
Course Description: Development of reading comprehension, communicative competence, and cultural understanding.
Prerequisite: LJPN 201.
Registration Information: Placement exam can substitute for LJPN 201.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LJPN 305 Third-Year Japanese II Credits: 3 (3-0-0)
Course Description: Enhanced development of reading comprehension, communicative competence, and cultural sensitivity.
Prerequisite: LJPN 304.
Registration Information: Placement exam can substitute for LJPN 304.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LJPN 365 Introduction to Japanese Cinema Studies Credits: 3 (3-0-0)
Course Description: Terminology, techniques, and approaches specific to Japanese cinema. Taught in Japanese.
Prerequisite: LJPN 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LJPN 404 Historical Aspects of the Language and Society Credits: 3 (3-0-0)
Course Description: Advanced Japanese language course designed to further enhance proficiency through a variety of activities.
Prerequisite: LJPN 305.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

LJPN 405 Integrated Japanese: Beyond Words Credits: 3 (3-0-0)
Course Description: Advanced Japanese language course designed to further enhance proficiency through a variety of activities for the continuing student.
Prerequisite: LJPN 305.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

LJPN 408 Advanced Kanji Study Credit: 1 (1-0-0)
Course Description: Kanji learning strategies and acquisition of advanced Kanji characters.
Prerequisite: LJPN 201.
Registration Information: May be taken up to 4 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LJPN 495 Independent Study-Japanese Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Must have completed three years of college-level Japanese.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LJPN 496 Group Study-Japanese Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: LJPN 305.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Language-Korean-LKOR (LKOR)

Courses

LKOR 105 First-Year Korean I Credits: 5 (5-0-0)
Course Description: Essentials of Korean for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: No previous study in Korean.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LKOR 107 First-Year Korean II Credits: 5 (5-0-0)
Course Description: Essentials of Korean for the continuing student: aural comprehension, speaking, reading, writing.
Prerequisite: LKOR 105.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LKOR 202 Intermediate Korean and Culture I Credits: 3 (3-0-0)
Course Description:
Prerequisite: LKOR 107.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LKOR 203 Intermediate Korean and Culture II Credits: 3 (3-0-0)
Course Description:
Prerequisite: LKOR 202.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

Language-Latin-LLAT (LLAT)

Courses

LLAT 100 First Year Latin I Credits: 5 (5-0-0)
Course Description: Essentials of Latin grammar, vocabulary, and phonology.
Prerequisite: None.
Registration Information: Open to all levels. Credit not allowed for both LLAT 100 and LLAT 105.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LLAT 101 First-Year Latin II Credits: 5 (5-0-0)
Course Description: Six tenses of verbs, active and passive; use subjunctive review of the five declensions of nouns and adjectives; new vocabulary.
Prerequisite: LLAT 100 or LLAT 105.
Registration Information: Open to all levels. Credit not allowed for both LLAT 101 and LLAT 107.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LLAT 296 Group Study-Latin Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

Language-Russian-LRUS (LRUS)

Courses

LRUS 100 First-Year Russian I Credits: 5 (5-0-0)
Course Description: Essentials of the Russian for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: No previous study in Russian. Credit not allowed for both LRUS 100 and LRUS 105.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LRUS 101 First-Year Russian II Credits: 5 (5-0-0)
Course Description: Essentials of Russian for the continuing student: aural comprehension, speaking, reading, writing.
Prerequisite: LRUS 100 or LRUS 105.
Registration Information: Open to all levels. Credit not allowed for both LRUS 101 and LRUS 107.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LRUS 200 Second-Year Russian I (GT-AH4) Credits: 4 (4-0-0)
Course Description: Grammar review and extensive practice in Russian conversation, reading, and writing.
Prerequisite: LRUS 101 or LRUS 107.
Registration Information: Placement exam can substitute for LRUS 101.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LRUS 201 Second-Year Russian II (GT-AH4) Credits: 4 (4-0-0)
Course Description: Grammar review and extensive practice in Russian conversation, reading, and writing.
Prerequisite: LRUS 200.
Registration Information: Placement exam can substitute for LRUS 200.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LRUS 250 Russian Language, Literature, Culture in Translation (GT-AH2) Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of Russian language, literature, and culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

LRUS 296 Group Study--Russian Credits: Var[1-5] (0-0-0)
Course Description: Group study in Russian language/literature/culture.
Prerequisite: LRUS 100 to 499 between 3 and 5 credits - at least 3 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LRUS 304 Third-Year Russian I Credits: 3 (3-0-0)
Course Description: Development of reading comprehension, communicative competence, and cultural understanding.
Prerequisite: LRUS 201.
Registration Information: Placement exam can substitute for LRUS 201.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LRUS 305 Third-Year Russian II Credits: 3 (3-0-0)
Course Description: Enhanced development of reading comprehension, communicative competence, and cultural sensitivity.
Prerequisite: LRUS 304.
Registration Information: Placement exam can substitute for LRUS 304.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LRUS 350 Russian Culture Credits: 3 (3-0-0)
Course Description: Russian culture and its development through literature, as well as geography, history, and music.
Prerequisite: LRUS 201.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LRUS 365 Introduction to Russian Cinema Studies Credits: 3 (3-0-0)
Course Description: Terminology, techniques, and approaches specific to Russian cinema. Taught in Russian.
Prerequisite: LRUS 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LRUS 495 Independent Study-Russian Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Must have completed three years of college-level Russian.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LRUS 496 Group Study-Russian Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: LRUS 305.
Registration Information: Placement exam can substitute for LRUS 305.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Language-Spanish-LSPA (LSPA)

Courses

LSPA 100 First-Year Spanish I Credits: 5 (3-0-2)
Course Description: Essentials of Spanish for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. No previous study in Spanish. Credit allowed for only one of the following: LSPA 100, LSPA 105, or LSPA 106. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 101 First-Year Spanish II Credits: 5 (3-0-2)
Course Description: Essentials of Spanish for the continuing student: aural comprehension, speaking, reading, and writing.
Prerequisite: LSPA 100 or LSPA 105 or LSPA 106.
Registration Information: Must register for lecture and recitation. Placement exam or instructor placement can substitute for course prerequisites. Credit allowed for only one of the following: LSPA 101, LSPA 107, or LSPA 108. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face only.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 106 First-Year Spanish Review Credits: 3 (3-0-0)
Course Description: For students with minimal proficiency in Spanish. Basic review of essential skills: aural comprehension, speaking, reading, and writing.
Prerequisite: None.
Registration Information: Placement exam or instructor placement. Credit allowed for only one of the following: LSPA 100, LSPA 105, or LSPA 106. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 108 Intensive Spanish I Credits: 5 (3-0-2)
Course Description: First-year Spanish through an accelerated practice (first and second semester combined) of the three modes of communication (interpersonal, interpretive and presentational) and the standards of cultures, connections, comparisons and communities. Designed for students with some prior Spanish language knowledge.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online. Credit not allowed for both LSPA 101 and LSPA 108.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 120 Reading for Proficiency-Spanish Credits: 3 (3-0-0)
Course Description: Essentials of language for developing reading proficiency.
Prerequisite: None.
Registration Information: Credit for LSPA 120 not allowed if LSPA 101, LSPA 107, or LSPA 108 has been completed.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 200 Second-Year Spanish I (GT-AH4) Credits: 3 (3-0-0)
Course Description: Review and practice of Spanish language and culture in the three modes of communication: interpersonal, interpretative and presentational communication and in all four skills (speaking, writing, listening, and reading) with a focus on a proficiency level target of intermediate-low.
Prerequisite: LSPA 101 or LSPA 107 or LSPA 108.
Registration Information: Placement exam can substitute for course prerequisites.Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LSPA 201 Second-Year Spanish II (GT-AH4) Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LSPA 200.
Registration Information: Placement exam can substitute for LSPA 200. Credit not allowed for both LSPA 201 and LSPA 228B.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LSPA 208 Intensive Spanish II Credits: 5 (5-0-0)
Course Description: Accelerated practice in speaking, reading, writing, and aural comprehension.
Prerequisite: LSPA 108.
Registration Information: Placement exam can substitute for LSPA 108.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 230 Spanish for Heritage Speakers Credits: 3 (3-0-0)
Course Description: Expands vocabulary, oral communication, writing and reading skills, as well as the contents and contexts of communication in Spanish.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B.

LSPA 250 Spanish Language, Literature, Culture in Translation (GT-AH2) Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of Spanish literature and culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

LSPA 251 Spanish Language for Education Abroad Credits: 3 (3-0-0)
Course Description: Instruction in the language through selected works in Spanish literature and culture that prepares for education abroad experience.
Prerequisite: None.
Registration Information: This is a partial semester course. Offered as an online course only.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 282A Study Abroad: Spain and the Way of St. James Credits: 3 (0-0-3)
Course Description: Culture and history of Spain as encountered along the medieval pilgrimage route of St. James.
Prerequisite: None.
Registration Information: Credit not allowed for LSPA 282A and LSPA 382A.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 296 Group Study-Spanish Credits: Var[1-5] (0-0-0)
Course Description: Group study in language/literature/culture.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LSPA 300 Reading and Writing for Communication-Spanish Credits: 3 (3-0-0)
Course Description: Development of reading and writing proficiency through an in-depth examination of contemporary writing.
Prerequisite: LSPA 201 or LSPA 230.
Registration Information: Placement exam can substitute for LSPA 201. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 301 Oral Communication-Spanish Credits: 3 (3-0-0)
Course Description: In-depth language study to improve proficiency in all language skills emphasizing oral.
Prerequisite: LSPA 201.
Registration Information: Placement exam can substitute for LSPA 201.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 310 Approaches to Spanish Literature Credits: 3 (3-0-0)
Course Description: Appreciation and critical readings of representative works in prose, drama, and poetry.
Prerequisite: LSPA 300.
Registration Information: Placement exam can substitute for LSPA 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 312 Introduction to Spanish Linguistics Credits: 3 (3-0-0)
Course Description: Phonetics, phonology, morphology, syntax, semantics, and pragmatics.
Prerequisite: LSPA 300, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 313 Introduction to Spanish Translation and Interpreting Credits: 3 (3-0-0)
Course Description: Translation and interpreting of written and oral texts into and from the Spanish language.
Prerequisite: LSPA 300.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 326 Spanish Phonetics Credits: 3 (3-0-0)
Course Description: Phonetic principles and their application to Spanish sound system; intensive practice in pronunciation, intonation.
Prerequisite: LSPA 300, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 335 Issues in Hispanic Culture Credits: 3 (3-0-0)
Course Description: Historical context of contemporary issues in the culture of Spanish-speaking countries.
Prerequisite: LSPA 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 340 Spanish for Animal Health and Care Fields Credits: 3 (1-0-2)
Course Description: Develop intermediate-mid level communication skills in Spanish for students in animal care fields. Specific terminology and the basic linguistic skills necessary to communicate about veterinary care and proper handling of livestock. All targeted linguistic forms, communicative activities and assessments are task-based and practical in nature.
Prerequisite: LSPA 200.
Registration Information: Placement exam can substitute for course prerequisite. Sections may be offered as Mixed Face-to-Face or Online. Credit not allowed for both LSPA 280A2 and LSPA 340.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 342 Spanish for Animal Health and Care Fields II Credits: 3 (1-0-2)
Course Description: Continuing development of intermediate-level communication skills in Spanish for students in large and small animal care fields. Development of specific terminology and linguistic skills necessary to communicate about animal health and care. All targeted linguistic forms, communicative activities and assessments are task-based and practical in nature.
Prerequisite: LSPA 340.
Registration Information: Must register for lecture and recitation. Sections may be offered: Mixed Face-to-Face or Online. Credit not allowed for both LSPA 342 and LSPA 380A2.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 343 Spanish Terminology-Animal Health/Agriculture Credits: 3 (1-0-2)
Course Description: Spanish lexicon specific to animal health and plant-based agricultural practices and sciences. Focuses on enhancing vocabulary breadth and depth by developing awareness of both meaning relations among words and morphological composition applied to the production and interpretation of the complex word types found in this field. All course materials are in the target language.
Prerequisite: LSPA 342.
Registration Information: Must register for lecture and recitation. Sections may be offered: Mixed Face-to-Face or Online. Credit not allowed for both LSPA 343 and LSPA 381A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 345 Business Spanish Credits: 3 (3-0-0)
Course Description: Business and commercial aspects of the Spanish language and culture.
Prerequisite: LSPA 300.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 346 Spanish for Health Care Credits: 3 (3-0-0)
Course Description: Specific linguistic and cultural issues necessary to function in the Hispanic health care world.
Prerequisite: LSPA 300.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 347 Spanish for Working with Youth and Families Credits: 3 (3-0-0)
Course Description: Content-based language in the social sciences (Human Development Family Studies, Social Work, Early Childhood Education, etc.) with a multicultural focus. Grammar and vocabulary designed to develop competency in areas listed. Oral component includes working on interview techniques for each area to help students develop cultural and linguistic abilities to work with youth and families from the Spanish-speaking community.
Prerequisite: LSPA 300.
Registration Information: Sections may be offered: Online. Credit not allowed for both LSPA 347 and LSPA 381A2.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 348 Spanish Professional Terminology in Context Credits: 3 (1-0-2)
Course Description: Development of Spanish professional terminology through the study of etymology, meaning relations among words and word formation mechanisms, applied to professional and academic areas of interest. Focused practice on building lexical proficiency for a richer and more accurate spoken and written professional communication.
Prerequisite: LSPA 300 to 365 - at least 3 credits.
Registration Information: Must register for lecture and recitation. Sections may be offered: Mixed Face-to-Face or Online.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 365 Introduction to Spanish Cinema Credits: 3 (3-0-0)
Course Description: Representation of Spanish society through film. Taught in Spanish.
Prerequisite: LSPA 310.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 379 Service Learning-Spanish Credit: 1 (0-2-0)
Course Description: Language-related voluntary community work.
Prerequisite: None.
Registration Information: Concurrent registration with 300-level Spanish course. Written consent of instructor required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LSPA 382A Study Abroad: Camino de Santiago in Spain Credits: 3 (0-0-3)
Course Description: Culture and history of Spain as encountered along the medieval pilgrimage route of St. James. Taught in Spanish.
Prerequisite: LSPA 300.
Registration Information: Credit not allowed for both LSPA 282A and LSPA 382A.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 400 Advanced Spanish Communication Skills Credits: 3 (3-0-0)
Course Description: Development of speaking, reading, and writing proficiency through an in-depth examination of representative writings and media communications.
Prerequisite: LSPA 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 401 Advanced Spanish Oral Communication Credits: 3 (3-0-0)
Course Description: Advanced language study to improve proficiency in Spanish language skills, with an emphasis on oral communication.
Prerequisite: LSPA 300.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 413 Advanced Spanish Translation and Interpreting Credits: 3 (3-0-0)
Course Description: Advanced practice in translation and interpreting of written and oral texts into and from the Spanish language.
Prerequisite: LSPA 313.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 435 Caribbean Culture in Hispanic Literature Credits: 3 (3-0-0)
Course Description: Hispanic-Caribbean cultures with emphasis on African heritage and cultural identify.
Prerequisite: LSPA 335.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 436 Advanced Latin American Culture Credits: 3 (3-0-0)
Course Description: Latin American cultural identities and their history.
Prerequisite: LSPA 335.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 437 Advanced Spanish Culture Credits: 3 (3-0-0)
Course Description: Cultural characteristics of Spanish society through the ages.
Prerequisite: LSPA 335.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 441 Advanced Business Spanish Credits: 3 (3-0-0)
Course Description: Advanced business and commercial aspects of the Spanish language and culture.
Prerequisite: LSPA 345.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 442 Colonial Latin American Literature Credits: 3 (3-0-0)
Course Description: Literature and literary culture of colonial Latin America. Readings and essays are in Spanish.
Prerequisite: (LSPA 300) and (LSPA 310).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 443 Spanish Theatre Credits: 3 (3-0-0)
Course Description: Major authors and works of Spanish theatre.
Prerequisite: (LSPA 300) and (LSPA 310).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 444 The Intercultural Workplace-Animal Health/Ag Credits: 3 (1-0-2)
Course Description: Continued development of Spanish competency applied to cultural awareness in a diverse workplace. Analytical tools to uncover students' own culturally and socially constructed patterns of behavior and beliefs, as well as those of a different culture. Implications of cultural displacement in a diverse workplace and agricultural and animal care fields; personal distance and power relative to age/gender/ethnic relations, as manifested in verbal and non-verbal communication.
Prerequisite: LSPA 343.
Registration Information: Must register for lecture and recitation. Sections may be offered: Mixed Face-to-Face or Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 445 Women Writers in the Hispanic World Credits: 3 (3-0-0)
Course Description: Selected Hispanic women writers in a variety of genres emphasizing relationships among gender, culture, and writing.
Prerequisite: (LSPA 300) and (LSPA 310).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 449 Spanish-American Literary Movements and Periods Credits: 3 (3-0-0)
Course Description: Studies in selected literary movements and periods of Spanish America such as classicism, realism, naturalism, existentialism.
Prerequisite: (LSPA 300) and (LSPA 310).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 450 Selected Spanish Literary Movements and Periods Credits: 3 (3-0-0)
Course Description: Studies in selected literary movements and periods of Spain, such as classicism, realism, naturalism, existentialism.
Prerequisite: (LSPA 300) and (LSPA 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 452 Genre Studies in Spanish Credits: 3 (3-0-0)
Course Description: Development of critical approaches to major works in literature through selected literary genres and subgenres.
Prerequisite: (LSPA 300) and (LSPA 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 453 Author Studies in Spanish Credits: 3 (3-0-0)
Course Description: Development of critical approaches to authors through the appreciation and analysis of selected works.
Prerequisite: (LSPA 300) and (LSPA 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 454 Topic Studies in Spanish Credits: 3 (3-0-0)
Course Description: Selected topic studies such as themes, topoi, and interdisciplinary studies in literature.
Prerequisite: (LSPA 300) and (LSPA 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 465A Studies in Foreign Film: Spain Credits: 3 (3-0-0)
Course Description: Representation of Spanish society or specific topics through film. Taught in Spanish.
Prerequisite: LSPA 310 and LSPA 335.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 465B Studies in Foreign Film: Latin America Credits: 3 (3-0-0)
Course Description: Representation of Latin American societies or specific topics through film. Taught in Spanish.
Prerequisite: LSPA 310 and LSPA 335.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 470 Spanish Grammatical Constructions Credits: 3 (3-0-0)
Course Description: Linguistic analysis of selected Spanish grammatical constructions (word order, word formation, and sentence structure), their relationship to meaning.
Prerequisite: LSPA 400.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 479 Service Learning-Spanish Credit: 1 (0-2-0)
Course Description: Language-related voluntary community work.
Prerequisite: None.
Registration Information: Concurrent registration with 400-level Spanish course. Written consent of the instructor of the 400-level Spanish course required. May be taken up to 3 times for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LSPA 492 Seminar-Spanish Language, Literature, and Society Credits: 3 (0-0-3)
Course Description: Integrative study of language, literature, and society.
Prerequisite: (LSPA 310) and (LSPA 400 to 479 - at least 2 courses).
Registration Information: Senior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 495 Independent Study-Spanish Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Three years of college-level Spanish.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LSPA 500A Spanish Language Analysis: Syntax Credits: 3 (3-0-0)
Course Description: Analysis of Spanish structure through the examination of syntax.
Prerequisite: LSPA 400.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 500B Spanish Language Analysis: Phonetics and Phonology Credits: 3 (3-0-0)
Course Description: Theoretical and practical study of speech sounds (phonetics), and the systematic use of such sounds in language (phonology).
Prerequisite: LSPA 400.
Registration Information: Graduate standing.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 508 Intensive Spanish-Graduate Review Credits: 4 (3-3-0)
Course Description: Immersion review of Spanish for the teacher; developing intermediate-level proficiency in culture and the four skills.
Prerequisite: None.
Registration Information: Admission to Summer Institute for Foreign Language Teaching. Must register for lecture and laboratory.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 514 Issues in Teaching Spanish Credit: 1 (1-0-0)
Course Description: Current theory and practice in second-language instruction; technological applications.
Prerequisite: None.
Registration Information: Concurrent graduate teaching assistantship required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 525 History of the Spanish Language Credits: 3 (3-0-0)
Course Description: Investigation of both internal (strictly linguistic) and external (sociolinguistic) factors in development of the Spanish language.
Prerequisite: LSPA 400.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 536 Topics in Spanish Linguistics Credits: 3 (3-0-0)
Course Description: Acquisition, discourse analysis, and language change and variation over time and space.
Prerequisite: LSPA 500.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 549 Literary Periods of Spanish America Credits: 3 (3-0-0)
Course Description: Advanced studies in critical approaches to selected literary movements or periods of Spanish America.
Prerequisite: None.
Registration Information: Undergraduate degree in Spanish.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 551 Selected Spanish Literary Movements/Periods Credits: 3 (3-0-0)
Course Description: Advanced studies in and critical approaches to selected literary movements or periods.
Prerequisite: None.
Registration Information: Undergraduate degree in Spanish.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 552 Advanced Studies in Spanish Literary Genres Credits: 3 (3-0-0)
Course Description: Advanced studies in and critical approaches to literary genres through study of major works in foreign literatures.
Prerequisite: None.
Registration Information: Undergraduate degree in Spanish.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 553 Advanced Spanish Author Studies Credits: 3 (3-0-0)
Course Description: Critical approaches to the study of selected authors through appreciation and analysis of their major works.
Prerequisite: None.
Registration Information: Undergraduate degree in Spanish.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 554 Advanced Topic Studies-Spanish Credits: 3 (3-0-0)
Course Description: Selected topics (theme, topoi, and interdisciplinary subjects) in Spanish literature.
Prerequisite: None.
Registration Information: Undergraduate degree in Spanish.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 692 Seminar-Spanish Credits: 3 (0-0-3)
Course Description: Treatment of selected topics in seminar.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Undergraduate degree in Spanish.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

LSPA 695 Independent Study-Spanish Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Ldrsp,Entrpnrsp,Advc,Publ-LEAP (LEAP)

Courses

LEAP 200 Advocacy in the Visual and Performing Arts Credits: 3 (3-0-0)
Course Description: The importance of the role of advocacy for the arts, issues of censorship, public funding, arts education, and artists' advocacy through the arts.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C.

LEAP 220 Technology and the Arts in the 21st Century Credits: 3 (2-2-0)
Course Description: Utilizing technology to better serve arts creation, arts marketing and promotion.
Prerequisite: LEAP 200.
Registration Information: Music, Theatre, Dance or Art majors only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LEAP 300 Arts Outreach and Community Engagement Credits: 3 (3-0-0)
Course Description: Research, development and production of arts outreach projects; team projects for community engagement.
Prerequisite: LEAP 220.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LEAP 310 Creative Industries Career Management Credits: 3 (3-0-0)
Course Description: Trains individuals for careers in the arts and creative industries with skills in arts entrepreneurship, leadership, marketing, financial management, and project management.
Prerequisite: None.
Registration Information: Sophomore standing. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LEAP 482 South Africa: Arts Community Collaboration Credits: 3 (1-4-1)
Course Description: Research, development and production of international arts outreach projects; team project for community engagement.
Prerequisite: None.
Registration Information: Sophomore standing.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LEAP 482A Study Abroad: International Arts Collaboration in India Credits: 3 (0-0-3)
Course Description: Research, development and production of international arts outreach projects in India; develop and implement a team project for community engagement in India with emphasis on problem definition, research, collaboration, evaluation, and ethical implementation.
Prerequisite: None.
Registration Information: Sophomore standing. Written consent of instructor. Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LEAP 487 Internship Credits: Var[2-12] (0-0-0)
Course Description: In-field internship.
Prerequisite: None.
Registration Information: Must have concurrent registration in LEAP 492. Enrollment in LEAP minor, Music, Theatre, Dance or Art major; junior or senior standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LEAP 492 Internship Seminar Credit: 1 (0-0-1)
Course Description: Integration of and reflection on Field internship and workplace opportunities.
Prerequisite: LEAP 310.
Registration Information: Junior standing. Must have concurrent registration in LEAP 487. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LEAP 495 Independent Study in Arts Leadership Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LEAP 500 Leadership in the Arts Credits: 3 (3-0-0)
Course Description: Theoretical and applied knowledge about concepts of leadership, leadership styles as applied to arts-related organizations.
Prerequisite: None.
Registration Information: Senior or graduate standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LEAP 600 Arts Policy and Advocacy Credits: 3 (0-0-3)
Course Description: Discussion of the role of artist as citizen and how we affect public policy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Master of Arts Leadership and Administration program. Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

LEAP 650 Arts Events Management Credits: 3 (3-0-0)
Course Description: Technical aspects of events, season and festival management for arts-related organizations.
Prerequisite: LEAP 500, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Required field trips. Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

LEAP 660 Arts Collaboration and the Community Credits: 3 (1-2-1)
Course Description: Research, development and production of outreach projects; team projects for community engagement.
Prerequisite: LEAP 650.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, lab, and recitation. Sections may be offered: Online. Required field trips.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

LEAP 670 Law and the Arts Credits: 3 (3-0-0)
Course Description: Examines the legal foundations of artistic creation including copyright, freedom of expression, public domain laws, and contract negotiation.
Prerequisite: LEAP 600.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

LEAP 687 Internship Credits: Var[2-12] (0-0-0)
Course Description: Field internship at local, regional or national arts organization (45 hours per credit).
Prerequisite: LEAP 500 and LEAP 692, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LEAP 692 Internship Seminar Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: LEAP 600.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LEAP 695 Independent Study in Arts Leadership Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: LEAP 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: A maximum of 6 credits allowed. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Liberal Arts-LB (LB)

LB 170 World Literatures to 1500 (GT-AH2) Credits: 3 (3-0-0)
Course Description: Culturally significant literary texts from the beginnings of writing to 1500 from Europe, Asia, and Africa.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Literature & Humanities (GT-AH2).

LB 171 World Literatures-The Modern Period (GT-AH2) Credits: 3 (3-0-0)
Course Description: Culturally significant literary texts from 1500 to the present from Europe, Asia, Africa, the Americas.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Literature & Humanities (GT-AH2).

LB 192 College of Liberal Arts First-Year Seminar Credits: 3 (0-0-3)
Course Description: Traditions, concepts, and topics integral to the liberal arts; cultivates reading, communication, and critical thinking.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LB 193 Concepts/Critical Thinking in Liberal Arts Credit: 1 (0-0-1)
Course Description: Concepts and success strategies essential to the Liberal Arts. Students create a comprehensive academic plan.
Prerequisite: None.
Registration Information: Declared majors within the College of Liberal Arts. Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LB 205 Contemporary Legal Studies Credits: 3 (3-0-0)
Course Description: Introduction to sources and contemporary principles of law in the United States and to the study and practice of law.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LB 235 Working With Data Credits: 3 (3-0-0)
Also Offered As: ECON 235.
Course Description: Data management and spreadsheet skills; what data is and how it is used (and misused) in social and economic research; applied questions such as how data is collected, types of data, where to find data, how to summarize and tabulate data, and data visualization and presentation.
Prerequisite: None.
Registration Information: Sections may be offered: Online. Credit allowed for only one of the following ECON 235, ECON 280A1, or LB 235.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LB 300 Specialized Professional Writing Credits: 3 (2-0-1)
Course Description: Emphasizes specialized writing skills used in professional letters, resumes, manuals, critiques, complaints, and interest-specific research projects.
Prerequisite: CO 150 or HONR 193.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Advanced Writing 2.

LB 360 Mock Trial Credits: 3 (3-0-0)
Course Description: Aspects of trial court procedure and litigation process, including opening statements, physical and demonstrative evidence introduction, direct and cross-examination of witnesses, objections, responses to objections, and closing arguments. Role play of civil and criminal courtroom action.
Prerequisite: LB 205.
Registration Information: Sophomore standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LB 370 Liberal Arts and Meaningful Work Credit: 1 (1-0-0)
Course Description: Assist Liberal Arts students transition from college to career. Students will apply skills and theory from their Liberal Arts degrees to the search for meaningful work, research the job market, and begin building professional networks.
Prerequisite: None.
Registration Information: Completion of AUCC Category 2. This is a partial semester course. Offered as an online course only. Credit not allowed for both LB 370 and LB 380A1.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LB 386A Practicum: CTV Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LB 386B Practicum: KCSU Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LB 386C Practicum: Collegian Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LB 386D Practicum: College Avenue Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LB 386E Practicum: Arts Production Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LB 386F Practicum–Sports Production Credits: Var[1-3] (0-0-0)
Course Description: Practicum in producing for various sporting events.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LB 386G Practicum–Event Production Credits: Var[1-3] (0-0-0)
Course Description: Practicum in producing for various on- and off-campus CSU-related events.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LB 392 Junior Seminar Credits: 3 (0-0-3)
Course Description: Employing interdisciplinary approaches and methods, this course explores contemporary issues and problems that cross or transcend any one liberal arts disciplinary perspective.
Prerequisite: None.
Registration Information: Junior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LB 393 Seminar in Arts, Humanities, Social Sciences Credits: 3 (0-0-3)
Course Description: Special topics team-taught course in the arts and/or humanities and/or social sciences that crosses disciplinary boundaries.
Prerequisite: CO 150.
Restriction: Must be a: Undergraduate.
Registration Information: Sophomore standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LB 455 Narrative Fiction Film as a Liberal Art Credits: 3 (2-3-0)
Also Offered As: SPCM 455.
Course Description: Narrative fiction film and its role in human history, culture, and social interaction.
Prerequisite: None.
Restriction: .
Registration Information: Junior standing. Must register for lecture and laboratory. Credit not allowed for both SPCM 455 and LB 455.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LB 456 Documentary Film as a Liberal Art Credits: 3 (2-2-0)
Also Offered As: JTC 456.
Course Description: Documentary film and its role in human history, culture, and social interaction.
Prerequisite: None.
Restriction: Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Junior or senior standing. Must register for lecture and laboratory. Credit not allowed for both LB 456 and JTC 456.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LB 482A Study Abroad: Energy Transitions in Europe Credits: 3 (0-0-3)
Also Offered As: E 482A.
Course Description: A multi-disciplinary and multi-national study of energy transitions.
Prerequisite: CO 150.
Registration Information: Sophomore standing. Registration is through the Office of International Programs. Credit not allowed for both E 482A and LB 482A.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LB 484 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted toward graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LB 487 Internship Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LB 490 Interdisciplinary Portfolio Workshop Credit: 1 (0-0-1)
Course Description: Identifying, reflecting, and focusing interdisciplinary Liberal Arts experience via the completion of a senior portfolio of work demonstrating breadth of understanding and mastery of the key skill sets and interdisciplinary approaches to problem-solving.
Prerequisite: LB 492, may be taken concurrently.
Restriction: Must be a: Undergraduate.
Registration Information: Seniors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LB 492 Liberal Arts Capstone Seminar Credits: 3 (3-0-0)
Course Description: Integration and reflection for liberal arts majors with an emphasis on core competencies and academic, professional and/or career transitions.
Prerequisite: LB 392 and LB 490, may be taken concurrently.
Registration Information: Senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LB 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Courses

LB 170 World Literatures to 1500 (GT-AH2) Credits: 3 (3-0-0)
Course Description: Culturally significant literary texts from the beginnings of writing to 1500 from Europe, Asia, and Africa.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Literature & Humanities (GT-AH2).

LB 171 World Literatures-The Modern Period (GT-AH2) Credits: 3 (3-0-0)
Course Description: Culturally significant literary texts from 1500 to the present from Europe, Asia, Africa, the Americas.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Literature & Humanities (GT-AH2).

LB 192 College of Liberal Arts First-Year Seminar Credits: 3 (0-0-3)
Course Description: Traditions, concepts, and topics integral to the liberal arts; cultivates reading, communication, and critical thinking.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LB 193 Concepts/Critical Thinking in Liberal Arts Credit: 1 (0-0-1)
Course Description: Concepts and success strategies essential to the Liberal Arts. Students create a comprehensive academic plan.
Prerequisite: None.
Registration Information: Declared majors within the College of Liberal Arts. Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LB 205 Contemporary Legal Studies Credits: 3 (3-0-0)
Course Description: Introduction to sources and contemporary principles of law in the United States and to the study and practice of law.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LB 235 Working With Data Credits: 3 (3-0-0)
Also Offered As: ECON 235.
Course Description: Data management and spreadsheet skills; what data is and how it is used (and misused) in social and economic research; applied questions such as how data is collected, types of data, where to find data, how to summarize and tabulate data, and data visualization and presentation.
Prerequisite: None.
Registration Information: Sections may be offered: Online. Credit allowed for only one of the following ECON 235, ECON 280A1, or LB 235.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LB 300 Specialized Professional Writing Credits: 3 (2-0-1)
Course Description: Emphasizes specialized writing skills used in professional letters, resumes, manuals, critiques, complaints, and interest-specific research projects.
Prerequisite: CO 150 or HONR 193.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Advanced Writing 2.

LB 360 Mock Trial Credits: 3 (3-0-0)
Course Description: Aspects of trial court procedure and litigation process, including opening statements, physical and demonstrative evidence introduction, direct and cross-examination of witnesses, objections, responses to objections, and closing arguments. Role play of civil and criminal courtroom action.
Prerequisite: LB 205.
Registration Information: Sophomore standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LB 370 Liberal Arts and Meaningful Work Credit: 1 (1-0-0)
Course Description: Assist Liberal Arts students transition from college to career. Students will apply skills and theory from their Liberal Arts degrees to the search for meaningful work, research the job market, and begin building professional networks.
Prerequisite: None.
Registration Information: Completion of AUCC Category 2. This is a partial semester course. Offered as an online course only. Credit not allowed for both LB 370 and LB 380A1.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LB 386A Practicum: CTV Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LB 386B Practicum: KCSU Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LB 386C Practicum: Collegian Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LB 386D Practicum: College Avenue Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LB 386E Practicum: Arts Production Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LB 386F Practicum–Sports Production Credits: Var[1-3] (0-0-0)
Course Description: Practicum in producing for various sporting events.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LB 386G Practicum–Event Production Credits: Var[1-3] (0-0-0)
Course Description: Practicum in producing for various on- and off-campus CSU-related events.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LB 392 Junior Seminar Credits: 3 (0-0-3)
Course Description: Employing interdisciplinary approaches and methods, this course explores contemporary issues and problems that cross or transcend any one liberal arts disciplinary perspective.
Prerequisite: None.
Registration Information: Junior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LB 393 Seminar in Arts, Humanities, Social Sciences Credits: 3 (0-0-3)
Course Description: Special topics team-taught course in the arts and/or humanities and/or social sciences that crosses disciplinary boundaries.
Prerequisite: CO 150.
Restriction: Must be a: Undergraduate.
Registration Information: Sophomore standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LB 455 Narrative Fiction Film as a Liberal Art Credits: 3 (2-3-0)
Also Offered As: SPCM 455.
Course Description: Narrative fiction film and its role in human history, culture, and social interaction.
Prerequisite: None.
Restriction: .
Registration Information: Junior standing. Must register for lecture and laboratory. Credit not allowed for both SPCM 455 and LB 455.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LB 456 Documentary Film as a Liberal Art Credits: 3 (2-2-0)
Also Offered As: JTC 456.
Course Description: Documentary film and its role in human history, culture, and social interaction.
Prerequisite: None.
Restriction: Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Junior or senior standing. Must register for lecture and laboratory. Credit not allowed for both LB 456 and JTC 456.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LB 482A Study Abroad: Energy Transitions in Europe Credits: 3 (0-0-3)
Also Offered As: E 482A.
Course Description: A multi-disciplinary and multi-national study of energy transitions.
Prerequisite: CO 150.
Registration Information: Sophomore standing. Registration is through the Office of International Programs. Credit not allowed for both E 482A and LB 482A.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LB 484 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted toward graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LB 487 Internship Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LB 490 Interdisciplinary Portfolio Workshop Credit: 1 (0-0-1)
Course Description: Identifying, reflecting, and focusing interdisciplinary Liberal Arts experience via the completion of a senior portfolio of work demonstrating breadth of understanding and mastery of the key skill sets and interdisciplinary approaches to problem-solving.
Prerequisite: LB 492, may be taken concurrently.
Restriction: Must be a: Undergraduate.
Registration Information: Seniors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LB 492 Liberal Arts Capstone Seminar Credits: 3 (3-0-0)
Course Description: Integration and reflection for liberal arts majors with an emphasis on core competencies and academic, professional and/or career transitions.
Prerequisite: LB 392 and LB 490, may be taken concurrently.
Registration Information: Senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LB 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Library Information-LI (LI)

Courses

LI 301 Research in the Information Age Credit: 1 (1-0-0)
Course Description: Developing strategies for library research; locating appropriate resources; and selecting, evaluating, and recording relevant information.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LI 382A Study Abroad--Mexico: Empowerment and Cultural Literacy Credit: 1 (0-0-1)
Course Description: Global opportunity that encourages Latinx Heritage Seekers to embrace and strengthen their identity as bicultural individuals, by learning how to navigate an international setting that offers increased self-awareness related to history and culture. Expand and explore identity through cultural literacy in a diversity of formats (e.g., lectures, cultural institutions, performance, libraries, readings, discussions, and interaction with peers). The course is open to all.
Prerequisite: None.
Registration Information: Sophomore standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Life Science-LIFE (LIFE)

Courses

LIFE 102 Attributes of Living Systems (GT-SC1) Credits: 4 (3-3-0)
Course Description: Levels of organization, stability, and change in living systems.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Strongly recommend high school chemistry or equivalent. Intended for students requiring additional courses in biology or areas related to biological science.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

LIFE 103 Biology of Organisms-Animals and Plants Credits: 4 (3-3-0)
Course Description: Diversity of animals and plants; their structural and functional characteristics.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

LIFE 162 Bridging the Biol/Chem Gulf for Pre-Health Majors Credits: 2 (2-0-0)
Also Offered As: KEY 162.
Course Description: Connections between chemistry and biology through inquiry-based exercises centered around societal and health issues.
Prerequisite: None.
Registration Information: Enrollment in the KEY Health Professions Learning Community. Credit not allowed for both LIFE 162 and KEY 162.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LIFE 201A Introductory Genetics: Applied/Population/Conservation/Ecological (GT-SC2) Credits: 3 (3-0-0)
Course Description: Introduction to genetics, with emphasis on applied genetics, population genetics, and conservation/ecological genetics.
Prerequisite: LIFE 102.
Registration Information: Credit not allowed for both LIFE 201A and LIFE 201B.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

LIFE 201B Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2) Credits: 3 (3-0-0)
Course Description: Introduction to genetics, with emphasis on applied genetics, population genetics, and conservation/ecological genetics.
Prerequisite: LIFE 102.
Restriction: Must be a: Undergraduate.
Registration Information: Credit not allowed for both LIFE 201A and LIFE 201B.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

LIFE 202A Introductory Genetics Recitation: Applied/Population/Conservation/Ecological Credit: 1 (0-0-1)
Course Description: Case-studies and problem solving in applied genetics, population genetics, and conservation/ecological genetics.
Prerequisite: LIFE 201A, may be taken concurrently.
Registration Information: Credit not allowed for both LIFE 202A and LIFE 202B.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LIFE 202B Introductory Genetics Recitation: Molecular Credit: 1 (0-0-1)
Course Description: Case studies and problem-solving in molecular genetics.
Prerequisite: LIFE 201B, may be taken concurrently.
Registration Information: Participation in University Honors program. Credit not allowed for both LIFE 202B and LIFE 202A.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LIFE 203 Introductory Genetics Laboratory Credits: 2 (0-3-1)
Course Description: Basic molecular genetics and molecular aspects of development laboratory.
Prerequisite: LIFE 201A, may be taken concurrently or LIFE 201B, may be taken concurrently.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

LIFE 205 Microbial Biology Credits: 3 (3-0-0)
Course Description: General principles of microbiology focused on human-microbial interactions.
Prerequisite: (CHEM 107 or CHEM 111) and (LIFE 102 or BZ 110 and BZ 111).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LIFE 206 Microbial Biology Laboratory Credits: 2 (0-4-0)
Course Description:
Prerequisite: LIFE 205, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

LIFE 210 Introductory Eukaryotic Cell Biology Credits: 3 (3-0-0)
Course Description: Structure and function of macromolecules focusing on proteins and lipid bilayers. Cellular composition, organelles and trafficking between them. Basic metabolism, cell signaling and proliferation control.
Prerequisite: CHEM 111 and CHEM 112 and LIFE 102.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LIFE 211 Introductory Cell Biology Honors Recitation Credit: 1 (0-0-1)
Course Description: Molecular aspects of cellular and subcellular biology and introductory biochemistry recitation.
Prerequisite: LIFE 210, may be taken concurrently.
Registration Information: Participation in University Honors program.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LIFE 212 Introductory Cell Biology Laboratory Credits: 2 (0-3-1)
Course Description: Molecular aspects of cellular and subcellular biology and introductory biochemistry laboratory.
Prerequisite: CHEM 112, may be taken concurrently and LIFE 210, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

LIFE 220 Fundamentals of Ecology (GT-SC2) Credits: 3 (3-0-0)
Also Offered As: LAND 220.
Course Description: Interrelationships among organisms and their environments.
Prerequisite: (BIO 100 to 199 or BZ 100 to 199 or LIFE 100 to 199 or HORT 100) and (MATH 100 to 199).
Registration Information: Credit allowed for only one of the following: LAND 220/LIFE 220, or LIFE 320. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

LIFE 320 Ecology Credits: 3 (3-0-0)
Course Description: Interrelationships among organisms and their environments using conceptual models and quantitative approaches.
Prerequisite: (BZ 101 or BZ 104 or BZ 110 or BZ 120 or LIFE 102) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Credit not allowed for more than one of the following: LIFE 220/LAND 220 or LIFE 320.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Management-MGT (MGT)

Courses

MGT 301 Supply Chain Management Credits: 3 (3-0-0)
Course Description: Concept of value-driven supply chains; design and management of effective supply chains; emphasis on current practice and recent trends.
Prerequisite: None.
Registration Information: Sophomore standing. Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 305 Fundamentals of Management Credits: 3 (3-0-0)
Course Description: Managerial process of planning, directing, and controlling inputs of an organization. Analysis, decision making, and survey of research literature.
Prerequisite: None.
Registration Information: Sections may be offered: Online. Credit not allowed for both MGT 305 and MGT 320.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 310 Human Resource Management Credits: 3 (3-0-0)
Course Description: Principles and practices of employee management including hiring, development, compensation, and employee relations.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 320 Contemporary Management Principles/Practices Credits: 3 (3-0-0)
Course Description: Principles of management in combination with practices of the new economy to achieve managerial goals.
Prerequisite: (BUS 300) and (AREC 202 or ECON 202) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Credit not allowed for both MGT 320 and MGT 305. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 330 Creativity, Innovation, and Value Creation Credits: 3 (3-0-0)
Course Description: How creativity and innovation can be developed for application in value creation.
Prerequisite: None.
Restriction: Must not be a: Freshman, Sophomore.
Registration Information: Sophomore standing. Business Administration, Mechanical Engineering, Agriculture Business, Apparel and Merchandising, Biomedical Engineering, Computer Science majors; declared LEAP minors or LEAP graduate students only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 340 Fundamentals of Entrepreneurship Credits: 3 (3-0-0)
Course Description: Concepts of entrepreneurship and role of entrepreneurs in the economy.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 350 Employment Relations: The Legal Environment Credits: 3 (3-0-0)
Course Description: Legal principle and policy issues arising from the employment relationship.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 360 Social and Sustainable Venturing Credits: 3 (3-0-0)
Course Description: Entrepreneurship and economic opportunities in the transition to a socially and ecologically sustainable global economy.
Prerequisite: None.
Restriction: Must not be a: Freshman, Sophomore.
Registration Information: Junior standing or higher.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 374 Total Rewards and Performance Management Credits: 3 (3-0-0)
Course Description: Principles and best practices for the strategic design and implementation of compensation and performance management systems.
Prerequisite: MGT 310.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 375 Advanced Supply Management Credits: 3 (3-0-0)
Course Description: Advanced design of purchasing and supply management within global supply chains.
Prerequisite: MGT 301.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 376 Advanced Service and Manufacturing Operations Credits: 3 (3-0-0)
Course Description: Advanced concepts for the management of operations in service and manufacturing companies.
Prerequisite: MGT 301.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 377 Advanced Logistics Credits: 3 (3-0-0)
Course Description: Advanced design and management of logistics and distribution operations within global supply chains.
Prerequisite: MGT 301.
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 382 Management in an International Context Credits: 3 (3-0-0)
Course Description: Fundamentals of management taught in an international context. Emphasis on global management topics.
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 410 Leadership and Organizational Behavior Credits: 3 (3-0-0)
Course Description: Behavior of people and groups as members of organizations.
Prerequisite: MGT 305 or MGT 320.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 411 Leading High Performance Teams Credits: 3 (3-0-0)
Course Description: Design, management, and leadership of teams in organizational settings.
Prerequisite: MGT 305 or MGT 320.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 420 New Venture Creation Credits: 3 (3-0-0)
Course Description: Entrepreneurs and the entrepreneurial process. Growth of an independent business.
Prerequisite: MGT 340.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 424 Ventures in Social Entrepreneurship Credits: 3 (3-0-0)
Also Offered As: IDEA 424.
Course Description: Focus on value creation, and delivery of a solution to a team community project. Application of human-centered design, and the venture design processes provide solutions to real world problems facing some of society's most vulnerable populations.
Prerequisite: MGT 360.
Restriction: Must be a: Undergraduate.
Registration Information: Credit not allowed for both IDEA 424 and MGT 424.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 425 Organizational Communication Strategies Credits: 3 (3-0-0)
Course Description: Strategic communications in organizations; contribution that organizational members make whether acting as individual or group communicators.
Prerequisite: (FIN 300 or FIN 305) and (MKT 300 or MKT 305) and (MGT 305 or MGT 320).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 430 Leadership and Social Responsibility Credits: 3 (3-0-0)
Course Description: Social responsiveness of managers as they face expectations in the firm's internal and external environment.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 435 Global Ethical Leadership & Stakeholder Mgmt Credits: 3 (3-0-0)
Course Description: Develop knowledge and competence in global ethical leadership and stakeholder relationships in a global economy.
Prerequisite: BUS 220 and MGT 320.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 440 New Venture Management Credits: 3 (3-0-0)
Course Description: Theories and skills necessary for managing startup and existing small firms.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 450 Biomedical Entrepreneurship I Credits: 2 (2-0-0)
Course Description: Commercialization process for biomedical inventions; market and competitor analysis, regulations, patents; preliminary feasibility study.
Prerequisite: BIOM 470 or MGT 340 or MECH 470.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 468 Negotiating Globally Credits: 3 (3-0-0)
Course Description: Characteristics and process of negotiation in a global context.
Prerequisite: MGT 305 or MGT 320.
Registration Information: MGT 305 or MGT 320 or International Studies majors.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MGT 470 Managerial Decisions-Issues and Analysis Credits: 3 (3-0-0)
Course Description: Investigation and application of managerial decision-making processes and methods to solve problems in business functions.
Prerequisite: (MGT 301) and (MGT 305 or MGT 320).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 471 Micro Issues in Supply Chain Management Credits: 3 (3-0-0)
Course Description: Managing the supply function (locally or globally) and the productive flow of materials in goods and services-producing supply chains.
Prerequisite: MGT 301.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 472 Macro Issues in Supply Chain Management Credits: 3 (3-0-0)
Course Description: Application of analytical and computer-based tools in the analysis and improvement of supply chains with variable demand and supply.
Prerequisite: MGT 301.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 473 Employment Relations: Labor and Management Credits: 3 (3-0-0)
Course Description: Managerial decision making and action in labor-management relations as affected by labor legislation and administrative practices.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 474 Human Resource Planning and Development Credits: 3 (3-0-0)
Course Description: Human resource planning, recruitment, selection, training, and development.
Prerequisite: MGT 310.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 475 International Business Management Credits: 3 (3-0-0)
Course Description: Multinational corporations: their scope, activities, managerial problems and decisions.
Prerequisite: (FIN 300 or FIN 305) and (MKT 300 or MKT 305) and (MGT 305 or MGT 320).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 476 Negotiation and Conflict Management Credits: 3 (3-0-0)
Course Description: Principles and practices of negotiation and conflict management including bargaining as a social and managerial activity.
Prerequisite: MGT 320 or MGT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 478 Global Supply Chain Management Credits: 3 (3-0-0)
Course Description: Principles and best practices for the strategic design and implementation of global supply chains.
Prerequisite: MGT 375, may be taken concurrently and MGT 376, may be taken concurrently and MGT 377, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 482A Study Abroad: International New Venture Creation Credits: 3 (3-0-0)
Course Description: New venture creation taught in an international setting focusing on multi-country contexts. Emphasis on entrepreneurship and intrapreneurship in today's global environments.
Prerequisite: None.
Registration Information: Written consent of instructor. Completion of 60 credit hours.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 482B Study Abroad – Global SCM Experience: Peru Credits: 3 (0-0-3)
Course Description: Examination of supply chain practices and culture of Peru.
Prerequisite: MGT 301 or MGT 665 or BUS 650.
Registration Information: Sophomore standing. Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 482C Study Abroad--Todos Santos: Ventures in Social Entrepreneurship Credit: 1 (0-0-1)
Also Offered As: IDEA 482C.
Course Description: Interdisciplinary, service-learning course that incorporates human-centered design with the business design process in order to provide solutions to real world problems facing some of society's most vulnerable populations. Offers an experiential trip to meet the community partners working in Todos Santos, Mexico.
Prerequisite: MGT 360.
Restriction: Must be a: Undergraduate.
Registration Information: Must have concurrent registration with IDEA 424 or MGT 424. Credit not allowed for both IDEA 482C and MGT 482C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 486 Practicum in Supply Chain Management Credits: 3 (1-4-0)
Course Description: Research and recommend solutions to "real world" supply chain management problems.
Prerequisite: MGT 375, may be taken concurrently and MGT 376, may be taken concurrently or MGT 375, may be taken concurrently and MGT 377, may be taken concurrently or MGT 376, may be taken concurrently and MGT 377, may be taken concurrently.
Registration Information: Select two courses from the following: MGT 375, MGT 376, MGT 377. Must register for lecture and laboratory. Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 487 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MGT 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MGT 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MGT 498 Research Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MGT 600 Manufacturing Process and Systems Design Credits: 3 (3-0-0)
Course Description: Strategic understanding of alternate manufacturing processes and systems design support needed to manage those processes.
Prerequisite: BUS 620 and BUS 625.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 601 Enterprise Computing and Systems Integration Credits: 3 (3-0-0)
Also Offered As: CIS 601.
Course Description: Integrated extended enterprise planning and execution systems concepts including ERP, CRM, SCM, MRPII, business processes, front/back office systems.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online. Credit not allowed for both MGT 601 and CIS 601.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 610 Strategic Human Resource Management Credits: 3 (3-0-0)
Course Description: Strategic issues associated with recruiting, staffing, evaluating, compensating, and developing employees; leadership issues associated therein.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to master's program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 611 Management of Organization Development Credits: 3 (3-0-0)
Course Description: Methods for managing organizational change.
Prerequisite: MGT 305 or MGT 320.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 612 Managing in a Global Context Credits: 3 (3-0-0)
Course Description: Global management and HR development issues/practices. Cross-cultural issues in organization behavior, recruitment, selection, training, compensation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to GSSE program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 620 Management Credits: 3 (3-0-0)
Course Description: Practices, policies, philosophies, and behavior.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 625 Managerial Communication Practices Credits: 3 (3-0-0)
Course Description: Internal, external, and managerial communication. Managerial speaking and writing skills enhancement.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master's program in business.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 640 Supply Chain Management Strategies Credits: 2 (2-0-0)
Course Description: How to create an effective supply chain management system to establish an efficient network for supplying final consumption.
Prerequisite: MGT 600.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 663 Strategic Opportunities in Impact Enterprise Credits: 3 (3-0-0)
Course Description: Gain foundational knowledge of central sustainability challenges, concepts and tools of strategic management and entrepreneurship, and discover the economic opportunities present in the resolution of social and environmental issues. Develop an understanding of the role of corporations and entrepreneurs in resolving market imperfections, addressing sustainability challenges, and transitioning to a more sustainable economy. Introduce sustainability practices used by corporations and new ventures.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Impact MBA.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 665 Supply Chain Development and Management Credits: 2 (2-0-0)
Course Description: This course teaches the development and management of the global supply chain that plans, sources, makes and delivers an organization's products.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 667 Global Social Sustainable Entrepreneurship Credits: 3 (3-0-0)
Course Description: Global challenges–poverty, environmental degradation, public health, agriculture. Role of entrepreneurial management in private and public sector.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 668 New Venture Development for Social Enterprise Credits: 3 (3-0-0)
Course Description: Early stages of a new venture, including creation of business plan. Additional study of social entrepreneurship and sustainable business strategies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 671 Labor Management Relations Credits: 3 (3-0-0)
Course Description: Collective bargaining process, administration of contract, and impact of public policy on industrial relations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 675 Service Operations/Supply Chain Management Credits: 3 (3-0-0)
Course Description: Supply chain management (SCM) and operations function. Primary focus on service sector.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master's program in business.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 679 Principles of Strategic Management Credits: 3 (3-0-0)
Course Description: Processes through which firms choose and implement strategies. Formulation and implementation of strategic management process in variety of industries.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master's program in business.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MGT 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MGT 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Marketing-MKT (MKT)

Courses

MKT 300 Marketing Credits: 3 (3-0-0)
Course Description: Market and buyer analysis, product and service development, pricing, promotion, advertising, selling, and distribution.
Prerequisite: (AREC 202 or ECON 202) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Sections may be offered: Face-to-Face, Mixed Face-to-Face, or Online. Credit not allowed for both MKT 300 and MKT 305.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 305 Fundamentals of Marketing Credits: 3 (3-0-0)
Course Description: Overview of marketing activities involved in provision of products and services to customers, including target markets and managerial aspects.
Prerequisite: AREC 202 or ECON 101 or ECON 202.
Registration Information: Credit not allowed for both MKT 305 and MKT 300. Sections may be offered: Face-to-Face, Online, or Mixed Face-to-Face.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 307 Fundamentals of Sports Marketing Credits: 3 (3-0-0)
Course Description: General marketing and the application within sporting related contexts. Focuses on the nature and scope of marketing a sports franchise as well as marketing traditional products or services with the assistance of sports figures.
Prerequisite: None.
Registration Information: This is a partial semester course. Offered as an online course only. Sport Management Minors only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 315 Marketing Communication Design Credits: 3 (3-0-0)
Course Description: Creating multiple kinds of marketing communications using graphic design software.
Prerequisite: MKT 300 or MKT 305.
Registration Information: Business majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 320 Integrated Marketing Communications Credits: 3 (3-0-0)
Course Description: Principles and practices of managing promotional activities including advertising, sales promotion, and other major media.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 330 Business Customer Relationships Credits: 3 (3-0-0)
Course Description: Managing relationships with distribution channel intermediaries and business customers.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 360 Retailing Credits: 3 (3-0-0)
Also Offered As: DM 360.
Course Description: Retail markets, institutions, operations, and problems.
Prerequisite: MKT 300 or MKT 305.
Registration Information: Credit not allowed for both MKT 360 and DM 360. Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 361 Buyer Behavior Credits: 3 (3-0-0)
Course Description: Marketing analysis of buying behavior of individuals, households, businesses, and not-for-profit organizations.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 362 Professional Selling Credits: 3 (3-0-0)
Course Description: Persuasive personal communications in selling consumer and industrial products and services.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 363 Sales Management Credits: 3 (3-0-0)
Course Description: Recruiting, selecting, training, compensating, motivating, supervising, and evaluating a sales force.
Prerequisite: MKT 300 or MKT 305.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 364 Product Design Credits: 3 (3-0-0)
Course Description: Designing innovative products, services, brands, and experiences is critical for creating value within all kinds of organizations in the marketplace and society. Creative problem solving to define design challenges, create concepts with low-fidelity prototyping, evaluate assumptions using co-creation, and communicate ideas with stakeholders. Internalize and practice the frameworks, processes, and tools for leading a product innovation process in any kind of organization.
Prerequisite: MKT 300 or MKT 305.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 365 International Marketing Credits: 3 (3-0-0)
Course Description: Analysis of international markets and development of strategic and tactical options for marketing across national boundaries.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 366 Services Marketing Credits: 3 (3-0-0)
Course Description: Customer service issues and unique challenges involved in marketing and management of services operations.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 367 Sports Marketing Credits: 3 (3-0-0)
Course Description: The nature and scope of applying marketing strategy and tactics in the sports marketing environment.
Prerequisite: MKT 300 or MKT 305.
Registration Information: Credit allowed for only one of the following: MKT 367, MKT 367A, MKT 367B.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 370 Digital Marketing Credits: 3 (3-0-0)
Course Description: Introduction to digital marketing: the landscape and tactics needed to execute marketing strategy in an online, connected, world.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 375 Social Media Marketing Credits: 3 (3-0-0)
Course Description: Provides the knowledge and skills to effectively use social media to market a business. Obtain in-depth knowledge and understanding of the various facets of social media marketing strategy, platforms and tactics, and how social media integrates into the overall marketing and communication plan.
Prerequisite: MKT 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 410 Marketing Research Credits: 3 (3-0-0)
Course Description: Role and methodology of research in business emphasizing selection of study's direction, collecting data, and choosing techniques for analyzing these data.
Prerequisite: (MKT 300 or MKT 305) and (STAT 204 or STAT 301 or STAT 307 or STAT 311 or STAT 315).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 440 Pricing and Financial Analysis in Marketing Credits: 3 (3-0-0)
Course Description: Financial analysis involved in addressing marketing problems; advanced study of pricing strategy and tactics.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 450 Marketing Analytics Credits: 3 (3-0-0)
Course Description: Analytic techniques used by marketers to transform data into decision-making information.
Prerequisite: MKT 410.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 479 Marketing Strategy and Management Credits: 3 (3-0-0)
Course Description: Marketing decisions involving integration of elements of the marketing mix.
Prerequisite: MKT 410.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 482A Study Abroad: Cross-Cultural Marketing in China Credits: 3 (0-0-3)
Course Description: International setting focusing on multi-country contexts. Emphasis on consumer and business customer behavior in today's global environment.
Prerequisite: MKT 300 or MKT 305.
Registration Information: Written consent of instructor.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 486 Marketing Practicum Credits: 3 (0-0-3)
Course Description: To give students the experience of working on a real marketing problem with a team at a sponsoring firm.
Prerequisite: MKT 300 or MKT 305.
Registration Information: Written consent of instructor required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 487 Internship Credits: 3 (0-0-9)
Course Description:
Prerequisite: MKT 300.
Registration Information: Written consent of instructor required. Maximum of 3 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MKT 492 Seminar Credits: 3 (0-0-3)
Course Description:
Prerequisite: MKT 300 or MKT 305.
Registration Information: Written consent of instructor required.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MKT 495 Independent Study Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: 2.75 GPA or better.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MKT 496 Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MKT 498 Research Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MKT 600 Marketing Management and Strategy Credits: 3 (3-0-0)
Course Description: Processes of customer value creation and value capture; marketing strategy analysis.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master's program in business.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 601 Marketing for Social Sustainable Enterprises Credits: 3 (3-0-0)
Course Description: Customer and stakeholder value creation and capture. Marketing strategy with emphasis on social sustainable organizations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to GSSE Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 610 Qualitative Marketing Research Methods Credit: 1 (1-0-0)
Course Description: Overview of qualitative research methods including focus groups, in-depth interviews, observations, and projective techniques.
Prerequisite: BUS 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 611 Quantitative Marketing Research Methods Credit: 1 (1-0-0)
Course Description: Overview of the field of business research, with a focus on quantitative research methods.
Prerequisite: BUS 601 and BUS 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 621 Search Engine Marketing and Optimization Credit: 1 (1-0-0)
Course Description: Focuses on search engine optimization (SEO) and search engine marketing (SEM). Students will improve the visibility of webpage(s) in the “organic results” through a variety of SEO tactics. Use paid activities (using the Google AdWords platform) to drive traffic from the search engine results page. Emphasizes application of class frameworks and concepts.
Prerequisite: BUS 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master's program in business. This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 650 Marketing Analytics I Credits: 2 (2-0-0)
Course Description: Examine the pivotal role of marketing research in the data analytics process. Emphasis on research design, experimental design, sampling theory and various data collection methods. Evaluate the reliability and validity of marketing research data and data analysis tools (SPSS/SAS/R) and report on research findings.
Prerequisite: BUS 601 and BUS 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 651 Marketing Analytics II Credits: 2 (2-0-0)
Course Description: Introduces the scope of the secondary data environment and teaches the analytic techniques used by marketers to transform data into decision making information. Focuses on primary data collection techniques, advanced analytic techniques and their application to marketing decision making.
Prerequisite: MKT 650.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 661 Consumer Behavior Credit: 1 (1-0-0)
Course Description: Marketing analysis of buying behavior of individual consumers.
Prerequisite: BUS 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 662 Strategic Selling for Business Customers Credit: 1 (1-0-0)
Course Description: Examination of sales strategies, sales tactics and best practices in professional selling with a primary context in business selling.
Prerequisite: BUS 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 664 Design Thinking for Sustainable Enterprise Credits: 3 (3-0-0)
Course Description: Guides students in generating sustainable products, services, and business models. Topics build on a foundational understanding of markets and strategies that address triple bottom line imperatives. Emphasizes applying design thinking tools, cross-disciplinary insights, qualitative research, low-fidelity prototyping, and experimentation.
Prerequisite: MKT 601.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 667 Services Marketing Management Credit: 1 (1-0-0)
Course Description: Fundamental concepts and strategies that differentiate the marketing of services from the marketing of tangible goods, including customer satisfaction.
Prerequisite: BUS 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 670 Digital Marketing Credit: 1 (1-0-0)
Course Description: Overview of digital marketing tactics. Focuses on the practical application of tactics in support of basic business strategies as they apply to the online world of marketing, including websites, analytics, content marketing, email marketing, and emerging technologies, among other digital based topics. Particular focus will be given to measurement in a digital world through analytics and metrics.
Prerequisite: BUS 655 and MKT 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 692 Seminar Credits: 3 (0-0-3)
Course Description: Critical review and discussion of relevant marketing topics.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MKT 695 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: 3.25 GPA or better.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Materials Science + Engineering-MSE (MSE)

MSE 465 Sustainable Strategies for E-Waste Management Credits: 3 (3-0-0)
Also Offered As: GES 465.
Course Description: Trans-disciplinary overview of the electronics industry, with an emphasis on sources and impacts of e-waste on human & natural systems. Systems approaches to mitigating environmental and social impacts of electronics--from product design, materials and manufacture to use, re-use, recycle and disposal. Apply learnings in trans-disciplinary project teams to evaluate opportunities for improving the sustainability of the industry and its products.
Prerequisite: None.
Registration Information: Junior standing. Sections may be offered: Online. Credit allowed for only one of the following: GES 465, GES 481A1, MSE 465, or MSE 481A1.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MSE 501 Materials Technology Transfer Credit: 1 (1-0-0)
Course Description: The pathways toward commercialization of materials from research. Case studies, technology readiness levels, proposal writing, entrepreneurship, and intellectual property practices.
Prerequisite: MECH 331.
Registration Information: Senior standing.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MSE 502A Materials Science & Engineering Methods: Materials Structure and Scattering Credit: 1 (1-0-0)
Course Description: Introduction to the atomic level arrangements of materials, defects related to these structures, and X-ray Diffraction, X-ray scattering, and electron diffraction methods.
Prerequisite: MATH 345 and MECH 331.
Registration Information: Senior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MSE 502B Materials Science & Engineering Methods: Computational Materials Methods Credit: 1 (1-0-0)
Course Description: Introduction to mathematical and computational methods that are used to model materials: Simulation/Modeling, Monte-Carlo, Monte-Carlo Potts, Density Functional Theory, and other approaches.
Prerequisite: (MATH 340 or MATH 345) and (MECH 331).
Registration Information: Senior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MSE 502C Materials Science & Engineering Methods: Materials Microscopy Credit: 1 (1-0-0)
Course Description: Introduction to modern microscopy techniques for materials research using optical microscopy. Interferometry and confocal techniques, scanning electron, microscopy transmission electron microscopy, and scanning probe microscopy.
Prerequisite: (CHEM 431 or MECH 331) and (MATH 340 or MATH 345).
Registration Information: Senior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MSE 502D Materials Science & Engineering Methods: Materials Spectroscopy Credit: 1 (1-0-0)
Course Description: The investigation and measurement of spectra produced when matter interacts with or emits electromagnetic radiation, including an introduction to X-ray photoelectron spectroscopy, electron energy loss spectroscopy, Raman and infrared, and energy dispersive spectroscopy for materials research.
Prerequisite: (MATH 340 or MATH 345) and (MECH 331).
Registration Information: Senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MSE 502E Materials Science & Engineering Methods: Bulk Properties and Performance Credit: 1 (1-0-0)
Course Description: Physical properties of materials and how they relate to the functionalization of materials, including their use in electronic, magnetic, optical, and other functional devices.
Prerequisite: (MATH 340 or MATH 345) and (MECH 331).
Registration Information: Senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MSE 502F Materials Science & Engineering Methods: Experimental Methods for Materials Research Credit: 1 (1-0-0)
Course Description: Modern experimental design methods and techniques for materials research. Topics include vacuum systems, cryogenic experimentation, temperature characterization, data acquisition and digitization, device and circuitry design in the context of materials research.
Prerequisite: (MATH 340 or MATH 345) and (MECH 331).
Registration Information: Senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MSE 503 Mechanical Behaviors of Materials Credits: 3 (3-0-0)
Course Description: The mechanical behavior of metals, polymeric, ceramic, and composite materials in mechanical designs from a structure to processing to properties perspective. Practical and specific performance analyses of structural materials are examined.
Prerequisite: (MSE 501 or MSE 502A or MECH 331) and (MATH 340 or MATH 345).
Registration Information: Senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MSE 504 Thermodynamics of Materials Credits: 3 (3-0-0)
Course Description: The determination of whether and the means by which a given reaction can occur. Macroscopic and microscopic solid-state thermodynamics with experimental methodologies for characterizing them, with a focus on thermodynamic and statistical mechanical aspects of material structure-property relationships.
Prerequisite: (CBE 210 or CHEM 476 or MECH 331 or PH 361) and (MATH 340 or MATH 345).
Registration Information: Senior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MSE 505 Kinetics of Materials Credits: 3 (3-0-0)
Course Description: The determination of whether and the means by which a given reaction can occur. Macroscopic and microscopic solid-state kinetics with experimental methodologies for characterizing them, with a focus on the kinetic aspects of material structure-property relationships.
Prerequisite: MSE 504.
Registration Information: Senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MSE 631 Defects in Crystals Credits: 3 (3-0-0)
Also Offered As: MECH 631.
Course Description: Mechanics, thermodynamics and kinetics of defects in crystalline solids including point defects, dislocations, and grain boundaries.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online. Credit allowed for only one of the following: MECH 631, MSE 631, or MECH 681A2.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MSE 651 Special Topics in Materials Science Credits: 3 (0-0-3)
Course Description: New or emerging topics in materials science and engineering.
Prerequisite: MECH 331.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

MSE 695 Independent Study Credits: Var[1-5] (0-0-0)
Course Description: Independent study of special topics in materials science and engineering.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MSE 699 Thesis Credits: Var[1-6] (0-0-0)
Course Description: Thesis in materials science and engineering.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MSE 784 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description: Supervised college teaching in materials science and engineering.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MSE 793 Professional Development Seminar Credit: 1 (1-0-0)
Course Description: Professional skills for careers in materials science and providing opportunities for students to see materials innovation and discovery up-close.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Required field trips. Restricted to students in MSE graduate programs or by consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MSE 795 Independent Study Credits: Var[1-5] (0-0-0)
Course Description: Advanced independent study of special topics in materials science and engineering.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MSE 799 Dissertation Credits: Var[1-12] (0-0-0)
Course Description: Dissertation in materials science and engineering.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Mathematics-MATH (MATH)

Courses

MATH 101 Math in the Social Sciences (GT-MA1) Credits: 3 (2-2-0)
Course Description: Voting theory, power indices, fair division, apportionment, circuits and trees, list processing, descriptive statistics, probability.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B, Mathematics (GT-MA1).

MATH 105 Patterns of Phenomena Credits: 3 (2-0-1)
Course Description: Applications of mathematical ideas and mode of thought in the arts and humanities, focusing on classification, recognition.
Prerequisite: None.
Registration Information: Mathematics Placement Examination or Mathematics Challenge Exam required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B.

MATH 117 College Algebra in Context I (GT-MA1) Credit: 1 (1-0-0)
Course Description: Functions as mathematical models. Linear, quadratic, and polynomial functions considered symbolically, graphically, numerically, and contextually.
Prerequisite: None.
Registration Information: Mathematics Placement Examination or Mathematics Challenge Exam required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B, Mathematics (GT-MA1).

MATH 118 College Algebra in Context II (GT-MA1) Credit: 1 (1-0-0)
Course Description: Reciprocals of linear functions, rational functions, and power functions considered symbolically, graphically, numerically, and contextually.
Prerequisite: MATH 117, may be taken concurrently.
Registration Information: MATH 117 or Mathematics Placement Examination or Mathematics Challenge Examination required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B, Mathematics (GT-MA1).

MATH 124 Logarithmic and Exponential Functions (GT-MA1) Credit: 1 (1-0-0)
Course Description: Definition and graphs of exponential and logarithmic functions, properties of logarithmic functions, exponential and logarithmic equations, applications.
Prerequisite: MATH 118, may be taken concurrently.
Registration Information: Required: MATH 118 or Mathematics Placement Examination or Mathematics Challenge Examination. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B, Mathematics (GT-MA1).

MATH 125 Numerical Trigonometry (GT-MA1) Credit: 1 (1-0-0)
Course Description: Definition and graphs of trigonometric functions, laws of sines and cosines, solutions of right and oblique triangles, applications.
Prerequisite: MATH 118, may be taken concurrently.
Registration Information: MATH 118 or Mathematics Placement Examination or Mathematics Challenge Examination required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B, Mathematics (GT-MA1).

MATH 126 Analytic Trigonometry (GT-MA1) Credit: 1 (1-0-0)
Course Description: Inverse trigonometric functions, trigonometric identities, solving trigonometric equations.
Prerequisite: MATH 125, may be taken concurrently.
Registration Information: MATH 125 or Mathematics Placement Examination or Mathematics Challenge Examination required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B, Mathematics (GT-MA1).

MATH 141 Calculus in Management Sciences (GT-MA1) Credits: 3 (3-0-0)
Course Description: Analytic geometry, limits, equilibrium of supply and demand, differentiation, integration, applications of the derivative, integral.
Prerequisite: MATH 118.
Registration Information: Sections may be offered: Online. Credit allowed for only one of the following courses: MATH 141, MATH 155, MATH 159, or MATH 160.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B, Mathematics (GT-MA1).

MATH 151 Mathematical Algorithms in Matlab I Credit: 1 (0-2-0)
Course Description: Statements, expressions and variable assignments, scripts, control statements and logical statements. Newton's method, Simpson's rule, recursion.
Prerequisite: MATH 141 or MATH 155 or MATH 160.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 152 Mathematical Algorithms in Maple Credit: 1 (0-2-0)
Course Description: Iteration and recursion, control and logical statements, expressions, functions, data types, binary numbers, symbolic manipulation of terms.
Prerequisite: MATH 141 or MATH 155 or MATH 160.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 155 Calculus for Biological Scientists I (GT-MA1) Credits: 4 (4-0-0)
Course Description: Limits, continuity, differentiation, and integration of elementary functions with applications in the biosciences.
Prerequisite: (MATH 124) and (MATH 125).
Registration Information: Credit allowed for only one of the following courses: MATH 141, MATH 155, MATH 159, or MATH 160. Programmable graphing calculator required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B, Mathematics (GT-MA1).

MATH 157 One Year Calculus IA (GT-MA1) Credits: 3 (3-0-0)
Course Description: Algebra and trigonometry, study skills for calculus. Limits, continuity, differentiation of elementary functions with applications.
Prerequisite: (MATH 124, may be taken concurrently) and (MATH 126).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B, Mathematics (GT-MA1).

MATH 158 Mathematical Algorithms in C Credit: 1 (0-2-0)
Also Offered As: CS 158.
Course Description: Compilers, expressions, variable types, control statements, pointers, logical statements, plotting, secant method, trapezoidal rule, recursion.
Prerequisite: MATH 151 and CS 156 and MATH 160.
Registration Information: Credit not allowed for both MATH 158 and CS 158.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 159 One Year Calculus IB (GT-MA1) Credits: 3 (3-0-0)
Course Description: Study skills for calculus. Differentiation and integration of elementary functions with applications. Conic section.
Prerequisite: MATH 157.
Registration Information: Credit allowed for only one of the following: MATH 141, MATH 155, MATH 159, or MATH 160.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B, Mathematics (GT-MA1).

MATH 160 Calculus for Physical Scientists I (GT-MA1) Credits: 4 (3-2-0)
Course Description: Limits, continuity, differentiation, and integration of elementary functions with applications; conic sections.
Prerequisite: (MATH 124 with a minimum grade of B) and (MATH 126 with a minimum grade of B).
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online. Credit allowed for only one of the following courses: MATH 141, MATH 155, MATH 159 or MATH 160.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B, Mathematics (GT-MA1).

MATH 161 Calculus for Physical Scientists II (GT-MA1) Credits: 4 (3-2-0)
Course Description: Transcendental functions, integration techniques, polar coordinates, sequences and series, with mathematical software.
Prerequisite: (MATH 124) and (MATH 159 or MATH 160).
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B, Mathematics (GT-MA1).

MATH 192 First Year Seminar in Mathematical Sciences Credit: 1 (0-0-1)
Course Description: Introduction to the richness and variety of problems addressed by mathematical language and techniques; resources and available careers.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 229 Matrices and Linear Equations Credits: 2 (2-0-0)
Course Description: Linear systems, matrix arithmetic, homogeneous coordinates, complex numbers, eigenvalues, eigenvectors, applications to discrete dynamical systems.
Prerequisite: MATH 141 or MATH 155 or MATH 160.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 230 Discrete Mathematics for Educators Credits: 3 (2-2-0)
Course Description: Voting theory, fair division, graph theory, linear programming, probability, teaching in small groups, proof techniques, mathematical technology.
Prerequisite: MATH 161 and EDUC 275, may be taken concurrently.
Registration Information: Credit not allowed for both MATH 230 and MATH 330.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 235 Introduction to Mathematical Reasoning Credits: 2 (2-0-0)
Course Description: Mathematical statements and proof techniques, induction, set theory, inequalities, number systems, functions.
Prerequisite: MATH 161 or MATH 271.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 255 Calculus for Biological Scientists II Credits: 4 (4-0-0)
Course Description: Derivatives and integrals of functions of several variables, differential and difference equations, matrices, applications in the biosciences.
Prerequisite: (MATH 126, may be taken concurrently) and (MATH 155).
Registration Information: Credit not allowed for both MATH 255 and MATH 261.Programmable graphing calculator required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B.

MATH 261 Calculus for Physical Scientists III Credits: 4 (4-0-0)
Course Description: Vector functions, partial differentiation, cylindrical and spherical coordinates, multiple integrals, line integrals, Green's theorem.
Prerequisite: MATH 161.
Registration Information: Sections may be offered: Online. Credit not allowed for both MATH 255 and MATH 261.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 271 Applied Mathematics for Chemists I Credits: 4 (4-0-0)
Course Description: Series and limits, Taylor series, complex variables, first- and second- order ordinary differential equations, matrices, linear transformations, determinants, and eigenvalues.
Prerequisite: MATH 155 or MATH 159 or MATH 160.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 272 Applied Mathematics for Chemists II Credits: 4 (4-0-0)
Course Description: Vector fields, partial differentiation, cylindrical and spherical coordinates, multiple integrals, line integrals, the Wave and the Schrödinger equations, separation of variables method. Inner Product Spaces. Fourier Series.
Prerequisite: MATH 271.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 301 Introduction to Combinatorial Theory Credits: 3 (3-0-0)
Course Description: Matrices, orthogonal Latin squares, designs, difference sets, sets, binomial coefficients, inclusion and exclusion, recurrence, Ramsey's theorem, SDRs.
Prerequisite: MATH 161.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 317 Advanced Calculus of One Variable Credits: 3 (3-0-0)
Course Description: Convergence of sequences, series: limits, continuity, differentiation, integration of one-variable functions.
Prerequisite: (MATH 161) and (MATH 230 or MATH 235).
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 331 Introduction to Mathematical Modeling Credits: 3 (3-0-0)
Course Description: Problem formulation. Modeling, theoretical and empirical. Variable selection. Derivation and simulation of solutions. Model testing including prediction.
Prerequisite: (MATH 161, may be taken concurrently) and (MATH 229, may be taken concurrently or MATH 369, may be taken concurrently).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 332 Partial Differential Equations Credits: 3 (3-0-0)
Course Description: Partial differential equations, separation of variables, Fourier series and transforms, Laplace, heat and wave equations.
Prerequisite: MATH 340 or MATH 345.
Registration Information: Credit not allowed for both MATH 332 and MATH 530.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 340 Introduction to Ordinary Differential Equations Credits: 4 (3-2-0)
Course Description: First and second order equations, series, Laplace transforms, linear algebra, eigenvalues, first order systems of equations, numerical techniques.
Prerequisite: MATH 255 or MATH 261.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both MATH 340 and MATH 345.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 345 Differential Equations Credits: 4 (3-2-0)
Course Description: First and second order equations, LaPlace transforms, first order systems of equations, numerical methods, applied linear algebra, linearization.
Prerequisite: (MATH 229 or MATH 369) and (MATH 255 or MATH 261).
Registration Information: Must register for lecture and laboratory. Credit not allowed for both MATH 345 and MATH 340.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 348 Theory of Population and Evolutionary Ecology Credits: 4 (3-3-0)
Also Offered As: BZ 348.
Course Description: Principles and methods for building, analyzing, and interpreting mathematical models of ecological and evolutionary problems in biology.
Prerequisite: MATH 155 or MATH 160.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: BZ 348, BZ 548, MATH 348.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 360 Mathematics of Information Security Credits: 3 (3-0-0)
Course Description: Codes, ciphers, Chinese remainder theorem, primality testing, public key ciphers, RSA, finite fields, discrete algorithms, AES encryption.
Prerequisite: (MATH 229 or MATH 369) and (MATH 161).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 366 Introduction to Abstract Algebra Credits: 3 (3-0-0)
Course Description: Sets, integers, polynomials, real and complex numbers, groups, integral domains, and fields; development of skills for proving theorems.
Prerequisite: MATH 161 or MATH 271.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 369 Linear Algebra I Credits: 3 (3-0-0)
Course Description: Linear systems, matrices, subspaces of Euclidean spaces, linear transformations on Euclidean spaces, eigenvalues, eigenvectors.
Prerequisite: MATH 161 or MATH 255 or MATH 271.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 384 Supervised College Teaching Credit: 1 (1-0-0)
Course Description: Skills for effective tutoring of precalculus mathematics; design and implementation of the Individualized Mathematics Program.
Prerequisite: None.
Registration Information: Written consent of instructor. May not be used to satisfy Mathematics degree requirements. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 405 Introduction to Number Theory Credits: 3 (3-0-0)
Course Description: Diophantine equations; distribution of primes; multiplicative functions; finite fields; quadratic reciprocity; quadratic number fields.
Prerequisite: MATH 360 or MATH 366.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 417 Advanced Calculus I Credits: 3 (3-0-0)
Course Description: Topology of Euclidean spaces, limits, derivatives and integrals on Euclidean spaces. Implicit functions and the implicit function theorem.
Prerequisite: MATH 369 and MATH 317.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 418 Advanced Calculus II Credits: 3 (3-0-0)
Course Description: Line and surface integrals, series, sequences and series of functions.
Prerequisite: MATH 417.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 419 Introduction to Complex Variables Credits: 3 (3-0-0)
Course Description: Analyticity, Cauchy integral theorem and formula, Taylor and Laurent series, residue calculus, conformal mapping and harmonic functions.
Prerequisite: MATH 261.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 425 History of Mathematics Credits: 3 (3-0-0)
Course Description: Historical development of geometry, arithmetic, algebra, and calculus from ancient times to 20th century.
Prerequisite: (EDUC 331) and (MATH 317 and MATH 366 or MATH 317 and MATH 369 or MATH 366 and MATH 369).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 430 Fourier and Wavelet Analysis with Apps Credits: 3 (3-0-0)
Also Offered As: ECE 430.
Course Description: Fourier analysis and transforms, FFTs; sampling theorems, computational algorithms; wavelets; applications to communication, imaging, and compression.
Prerequisite: MATH 340 or MATH 345.
Registration Information: Credit not allowed for both MATH 430 and ECE 430.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 435 Projects in Applied Mathematics Credits: 3 (1-4-0)
Course Description: Open-ended projects with emphasis on problem identification and formulation, team approach, and reporting results.
Prerequisite: (CS 156 or CS 163 or CS 164 or CS 253 or MATH 151) and (MATH 229 or MATH 369) and (MATH 340 or MATH 345).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 450 Introduction to Numerical Analysis I Credits: 3 (3-0-0)
Course Description: Solutions of systems of linear and nonlinear equations, interpolation, approximation.
Prerequisite: (CS 156 or CS 163 or CS 164 or CS 253 or MATH 151) and (MATH 255 or MATH 261).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 451 Introduction to Numerical Analysis II Credits: 3 (3-0-0)
Course Description: Numerical computation of eigenvalues, numerical solution of ordinary and partial differential equations.
Prerequisite: (CS 156 or CS 163 or CS 164 or CS 253 or MATH 151) and (MATH 340 or MATH 345).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 455 Mathematics in Biology and Medicine Credits: 3 (3-0-0)
Course Description: Models in population biology, cell division, host-parasoid systems, bacterial growth and predator-prey systems.
Prerequisite: BZ 348 or MATH 255 or MATH 340 or MATH 345 or MATH 348.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 460 Information and Coding Theory Credits: 3 (3-0-0)
Course Description: Entropy, mutual information, channel capacity, channel coding theorem, syndrome decoding, BCH codes, recent developments.
Prerequisite: MATH 360 and MATH 369 or MATH 366.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 466 Abstract Algebra I Credits: 3 (3-0-0)
Course Description: Comprehensive introduction to groups, rings, and fields.
Prerequisite: MATH 235 or MATH 360 or MATH 366.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 467 Abstract Algebra II Credits: 3 (3-0-0)
Course Description: Advanced topics in abstract algebra: Euclidean domains, abstract vector spaces, extension fields, Galois theory.
Prerequisite: MATH 466 and MATH 369, may be taken concurrently.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 469 Linear Algebra II Credits: 3 (3-0-0)
Course Description: Abstract vector spaces, general theory of linear transformations, theory of determinants, canonical forms.
Prerequisite: MATH 369.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 470 Euclidean and Non-Euclidean Geometry Credits: 3 (3-0-0)
Course Description: Topics from real Euclidean, affine metric and non-Euclidean geometries emphasizing methods and connections with other areas of mathematics.
Prerequisite: (MATH 229 or MATH 369) and (MATH 261).
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 472 Introduction to Topology Credits: 3 (3-0-0)
Course Description: Topologies on sets, continuous functions, homeomorphisms. Sequences and convergence, metric spaces, connectedness, path-connectedness. Separation properties. Compactness, Countability axioms.
Prerequisite: MATH 317.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 474 Introduction to Differential Geometry Credits: 3 (3-0-0)
Course Description: Local and global geometry of curves and surfaces in Euclidean space, curvature, covariant differentiation, geodesics and the Gauss-Bonnet theorem.
Prerequisite: MATH 261 and MATH 369.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 476 Topics in Mathematics Credits: 3 (3-0-0)
Course Description: Study experiences which deal with established content areas in mathematics.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 487 Internship Credits: Var[1-16] (0-0-0)
Course Description: A work-learn experience integrating classroom theory with practical experience.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring. Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 498 Undergraduate Research in Mathematics Credits: Var[1-3] (0-0-0)
Course Description: Research skills and techniques taught to suit student's level and interests. Includes both oral and written communication of results.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 501 Combinatorics I Credits: 3 (3-0-0)
Course Description: Puzzles, numbers and counting, subsets, recurrence relations, generating functions, inversion, counting with symmetry, networks, matchings.
Prerequisite: (MATH 301) and (MATH 360 or MATH 366).
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 502 Combinatorics II Credits: 3 (3-0-0)
Course Description: Graph algorithms, external set theory; partitions, Hadamard matrices, q-binomials, finite geometries, strongly regular graphs, triple systems, designs.
Prerequisite: MATH 501.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 505 Teaching Problem Solving in Mathematics K-12 Credits: 3 (0-0-3)
Course Description: Problem-solving strategies, cooperative learning, and manipulatives for K-12 classroom.
Prerequisite: None.
Registration Information: Offered as telecourse only. Teacher licensure required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 507 Advanced Reasoning in Mathematics Credits: 3 (3-0-0)
Course Description: General proof techniques, proof in abstract algebra, proof in analysis, and proof in combinatorics.
Prerequisite: None.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 510 Linear Programming and Network Flows Credits: 3 (3-0-0)
Course Description: Optimization methods; linear programming, simplex algorithm, duality, sensitivity analysis, minimal cost network flows, transportation problem.
Prerequisite: MATH 261 or MATH 315.
Registration Information: Credit not allowed for both MATH 510 and ENGR 510.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 517 Introduction to Real Analysis Credits: 3 (3-0-0)
Course Description: Euclidean and metric spaces, compactness, continuity, sequences, series, multivariable differentiation, inverse and implicit function theorems.
Prerequisite: MATH 417 and MATH 369.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 519 Complex Variables I Credits: 3 (3-0-0)
Course Description: Analytic functions, complex integration theory, singularities, elementary functions, and mapping.
Prerequisite: MATH 317.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 520 Nonlinear Programming Credits: 3 (3-0-0)
Course Description: Theoretical, computational, practical aspects of nonlinear programming (NLP); unconstrained, constrained NLP; quadratic programming; large-scale NLP.
Prerequisite: MATH 510.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 525 Optimal Control Credits: 3 (3-0-0)
Course Description: Theory and application of optimal control and optimal estimation theory; continuous and discrete time systems; Pontryagin maximum principle.
Prerequisite: MATH 340 or MATH 345.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 530 Mathematics for Scientists and Engineers Credits: 4 (4-0-0)
Course Description: Proof-oriented linear algebra, ordinary and partial differential equations.
Prerequisite: MATH 340 or MATH 345.
Registration Information: Primarily for students in the Mathematics Graduate Interdisciplinary Studies Program. Credit not allowed for both MATH 530 and MATH 332.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 532 Mathematical Modeling of Large Data Sets Credits: 3 (3-0-0)
Course Description: Mathematical theory and algorithms for modeling large data sets. Application to real world problems. Emphasis on geometric ideas.
Prerequisite: MATH 369 or MATH 530.
Registration Information: Preparedness to do programming in a standard language required.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 535 Foundations of Applied Mathematics Credits: 3 (3-0-0)
Course Description: Calculus of variations, peturbation methods, models of continuum, dimensional analysis, stochastic models, integral equations, diffusion.
Prerequisite: MATH 340 or MATH 345.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 540 Dynamical Systems Credits: 3 (3-0-0)
Course Description: Linear and nonlinear systems, orbits, phase space, flows of vector fields, stability, bifurcation theory, chaos, strange attractors and applications.
Prerequisite: MATH 369 and MATH 417.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 545 Partial Differential Equations I Credits: 3 (3-0-0)
Course Description: Second order linear PDEs, elliptic and parabolic equations, equations of math physics, separation of variables, Fourier series.
Prerequisite: MATH 340 or MATH 345 or MATH 530.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 546 Partial Differential Equations II Credits: 3 (3-0-0)
Course Description: Distribution theory, Green's functions, Sobolev spaces, elliptic and parabolic equations.
Prerequisite: MATH 545.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 550 Numerical Methods in Science and Engineering Credits: 3 (3-0-0)
Also Offered As: ENGR 550.
Course Description: Finite elements, finite differences, spectral methods, method of lines, conservation laws; stability and convergence analysis for PDEs.
Prerequisite: MATH 340 or MATH 345 or MATH 530.
Registration Information: Credit not allowed for both MATH 550 and ENGR 550.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 560 Linear Algebra Credits: 3 (3-0-0)
Course Description: Finite dimensional vector spaces, inner products, dual spaces, transformations, projections, adjoints, norms, eigenvalues, eigenvectors.
Prerequisite: MATH 369.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 561 Numerical Analysis I Credits: 4 (4-0-0)
Course Description: Numerical linear algebra, solving nonlinear systems, least squares, and minimization.
Prerequisite: (MATH 151 or CS 156 or CS 160 or CS 253) and (MATH 560).
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 566 Introduction to Abstract Algebra I Credits: 3 (3-0-0)
Course Description: Analysis of algebraic structures including groups, rings, fields, and vector spaces.
Prerequisite: MATH 366.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 567 Introduction to Abstract Algebra II Credits: 3 (3-0-0)
Course Description: Field theory, Galois theory, and advanced linear algebra.
Prerequisite: MATH 566.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 569A Linear Algebra for Data Science: Matrices and Vectors Spaces Credit: 1 (1-0-0)
Course Description: A basic introduction to matrices and linear algebra with preparation to pursue further studies in the applications of matrices with an emphasis on the foundations of data science.
Prerequisite: MATH 124 or MATH 126.
Restriction: Must be a: Graduate.
Registration Information: Graduate students in Mathematics may not take this course for credit. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 570 Topology I Credits: 3 (3-0-0)
Course Description: Point-set topology including basic set theory, continuity, product and quotient spaces, metrization, compactness, and connectedness.
Prerequisite: MATH 417 or MATH 472.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 571 Topology II Credits: 3 (3-0-0)
Course Description: Fundamental group, free groups and presentations, and manifolds.
Prerequisite: MATH 566 and MATH 570.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 584 Supervised College Teaching Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 592 Seminar in Mathematics Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 601 Advanced Combinatorics I Credits: 3 (3-0-0)
Course Description: Special numbers, mobius inversions, transversals, partial orders, different sets, codes, t-designs.
Prerequisite: MATH 502 and MATH 566.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 602 Advanced Combinatorics II Credits: 3 (3-0-0)
Course Description: Hypergeometric functions, graph algorithms, hadamard matrices, strongly regular graphs, association schemes.
Prerequisite: MATH 601.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 605A Number Theory: Algebraic Number Theory Credits: 3 (3-0-0)
Course Description:
Prerequisite: MATH 519, may be taken concurrently and MATH 566 and MATH 567, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 605B Number Theory: Arithmetic Geometry Credits: 3 (3-0-0)
Course Description:
Prerequisite: MATH 519, may be taken concurrently and MATH 566 and MATH 567, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 605C Number Theory: Elliptic Curves Credits: 3 (3-0-0)
Course Description:
Prerequisite: MATH 519, may be taken concurrently and MATH 566 and MATH 567, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 617 Integration and Measure Theory Credits: 4 (4-0-0)
Course Description: Riemann-Cauchy integration theory, sigma-algebras, Lebesgue theory of measure and integration, Fubini's Theorem, Radon-Nikodym theorem, Lp spaces.
Prerequisite: MATH 517.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 618 Advanced Real Analysis Credits: 3 (3-0-0)
Course Description: Normed linear spaces, Banach and Hilbert spaces, elements of functional analysis.
Prerequisite: MATH 560 and MATH 617.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 619 Complex Variables II Credits: 3 (3-0-0)
Course Description: Infinite products, entire functions, analytic continuation, Riemann surfaces, other topics.
Prerequisite: MATH 519.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 620 Variational Methods and Optimization I Credits: 3 (3-0-0)
Course Description: Unconstrained and constrained infinite dimensional optimization, calculus of variations, applications.
Prerequisite: MATH 570 or MATH 517.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 621 Variational Methods and Optimization II Credits: 3 (3-0-0)
Course Description: Unconstrained and constrained infinite dimensional optimization, variational inequalities, Lagrange multipliers, control, applications.
Prerequisite: MATH 620.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 633 Industrial and Applied Mathematics Credits: 3 (2-2-0)
Course Description: Team solution of problems arising in industrial and applied mathematics. Problem formulation, solution proposal, implementation and analysis.
Prerequisite: MATH 530 or MATH 560 or MATH 561.
Restriction: Must be a: Graduate, Professional.
Registration Information: Preparedness to do programming in a standard language required. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 640 Ordinary Differential Equations I Credits: 3 (3-0-0)
Course Description: Existence and uniqueness, continuation, continuous dependence, linear systems, and stability.
Prerequisite: (MATH 340 or MATH 345 or MATH 530) and (MATH 369 and MATH 517).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 641 Ordinary Differential Equations II Credits: 3 (3-0-0)
Course Description: Topics selected from nonlinear boundary value problems, periodic phenomena, differential operators, and others.
Prerequisite: MATH 640.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 645 Advanced Partial Differential Equations I Credits: 3 (3-0-0)
Course Description: Abstract methods for linear partial differential equations.
Prerequisite: MATH 546.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 646 Advanced Partial Differential Equations II Credits: 3 (3-0-0)
Course Description: Problems in nonlinear partial differential equations.
Prerequisite: MATH 645.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 651 Numerical Analysis II Credits: 4 (4-0-0)
Course Description: Interpolation, approximation, quadrature, initial and boundary value problems.
Prerequisite: (CS 156 or CS 160 or CS 253 or MATH 151) and (MATH 340 or MATH 345 or MATH 369 or MATH 530).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 652 Advanced Numerical Methods for PDEs Credits: 3 (3-0-0)
Course Description: Theory of numerical methods for solution of PDEs: convergence and stability properties; error estimation; approximation theory.
Prerequisite: MATH 545 or MATH 560 or MATH 617.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 666 Advanced Algebra I Credits: 3 (3-0-0)
Course Description: Theory of rings and algebras with applications.
Prerequisite: MATH 567.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 667 Advanced Algebra II Credits: 3 (3-0-0)
Course Description: Advanced topics from algebra: representation theory, Wedderburn theory, bilinear forms, multilinear and homological algebra.
Prerequisite: MATH 666.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 670 Introduction to Differential Manifolds Credits: 3 (3-0-0)
Course Description: Finite-dimensional differential manifolds, submanifolds, vector fields and flows, Lie groups and algebras.
Prerequisite: MATH 560.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 672 Projective Geometry I Credits: 3 (3-0-0)
Course Description: Algebraic sets in projective space, the Nullstellensatz, rational maps and functions, coordinate rings, Hilbert functions, dimension, degree.
Prerequisite: MATH 567.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 673 Projective Geometry II Credits: 3 (3-0-0)
Course Description: Topics selected from curves and surfaces, sheaf theory, algebraic geometry, singularity theory, vector bundles.
Prerequisite: MATH 672.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 676 Topics in Mathematics Credits: 3 (3-0-0)
Course Description: Advanced study experiences which deal with established content areas in mathematics.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: May be taken up to 5 times for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 687 Internship Credits: Var[1-9] (0-0-0)
Course Description: A work-learn experience integrating classroom theory with practical experience.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 693 Seminar in Mathematics Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 717 Functional Analysis I Credits: 3 (3-0-0)
Course Description: Topological vector spaces; Banach and Hilbert spaces.
Prerequisite: MATH 618.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 718 Functional Analysis II Credits: 3 (3-0-0)
Course Description: Spectral theory, operator theory, semigroups of transformations, and distribution theory.
Prerequisite: MATH 717.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 750 Numerical Methods and Models I Credits: 3 (3-0-0)
Course Description: Derivation of model equations, introduction to solution techniques and computing.
Prerequisite: MATH 561.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 751 Numerical Methods and Models II Credits: 3 (3-0-0)
Course Description: Convergence, stability, error estimates and computing.
Prerequisite: MATH 561.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 793 Seminar in Mathematics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Mechanical Engineering-MECH (MECH)

Courses

MECH 103 Introduction to Mechanical Engineering Credits: 3 (3-0-0)
Course Description: The discipline of Mechanical Engineering as described in problems and problem solving methods-energy, materials, motion, fluids.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 105 Mechanical Engineering Problem Solving Credits: 3 (3-0-0)
Course Description: Programming and engineering problem solving techniques, algorithms and processes from physics and calculus first principles.
Prerequisite: MECH 103 and MATH 160 and PH 141, may be taken concurrently.
Registration Information: Credit not allowed for both MECH 105 and MECH 102.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 200 Introduction to Manufacturing Processes Credits: 3 (2-2-0)
Course Description: Engineering drawings, materials, manufacturing, and safety. Hand tools, cutting, drilling, the lathe, mill and numerical control.
Prerequisite: MECH 105.
Registration Information: Mechanical engineering and engineering science majors only. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 201 Engineering Design I Credits: 2 (1-2-0)
Course Description: Engineering design methods used to portray three-dimensional objects and visually communicate design information with an emphasis on computer-aided design using parametric solid modeling and geometric dimensioning and tolerancing.
Prerequisite: MECH 105.
Registration Information: Must register for lecture and laboratory. Offered as Mixed Face-to-Face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 202 Engineering Design II Credits: 3 (2-2-0)
Course Description: Engineering design process with emphasis on teamwork, ideation, decision-making, project planning applied to a group design project.
Prerequisite: MECH 201 and MECH 200, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 231 Engineering Experimentation Credits: 3 (2-2-0)
Course Description: Measurement systems; experimental design; data acquisition and analysis techniques.
Prerequisite: (MECH 102 or MECH 105) and (PH 142).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 237 Introduction to Thermal Sciences Credits: 3 (3-0-0)
Course Description: First and second laws of thermodynamics, properties of materials, energy conversion, statistical aspects, heat transfer.
Prerequisite: PH 141 and MATH 160.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 262 Engineering Mechanics Credits: 4 (4-0-0)
Course Description: Forces, static equilibrium, mass center, moments of inertia, kinematics and kinetics of particles and rigid bodies.
Prerequisite: (MATH 161) and (PH 141).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 301A Engineering Design III: Finite Element Analysis Credit: 1 (0-2-0)
Course Description: Application of computer-aided finite element analysis (FEA) tools for the simulation and prediction of robustness and performance of mechanical components and assemblies.
Prerequisite: CIVE 360 and MECH 202, may be taken concurrently and MECH 342.
Registration Information: This is a partial semester course. Offered as Mixed Face-to-Face. Credit not allowed for both (MECH 301 and MECH 301A) or (MECH 301A and MECH 302).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 301B Engineering Design III: Computational Fluid Dynamics Credit: 1 (0-2-0)
Course Description: Application of computer-aided computational fluid dynamics (CFD) tools for the simulation and prediction of robustness and performance of mechanical components and assemblies.
Prerequisite: CIVE 360 and MECH 202, may be taken concurrently and MECH 301A, may be taken concurrently and MECH 342.
Registration Information: This is a partial semester course. Offered as Mixed Face-to-Face. Credit not allowed for (MECH 301 and MECH 301B) or (MECH 301B and MECH 302).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 303 Energy Engineering Credits: 3 (3-0-0)
Course Description: Energy generation (coal, oil, natural gas, solar, wind, geothermal, hydropower, tidal, biofuel, nuclear...), conversion, distribution, storage, efficiency.
Prerequisite: CBE 310 or ECE 341 or MECH 237 or MECH 337 or PH 361.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 307 Mechatronics and Measurement Systems Credits: 4 (3-3-0)
Course Description: Mechatronic and measurement system analysis and design; applied electronics; data acquisition; microcontroller interfacing and programming.
Prerequisite: CIVE 261 and ECE 204 and MATH 340 and MECH 231.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 324 Dynamics of Machines Credits: 4 (3-2-0)
Course Description: Analysis and synthesis of moving machinery.
Prerequisite: CIVE 261 and MATH 340, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 325 Machine Design Credits: 3 (3-0-0)
Course Description: Design of mechanical components to avoid failure during operation. Stress analysis, failure theories, and specific mechanical components in design context.
Prerequisite: CIVE 360.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 331 Introduction to Engineering Materials Credits: 4 (3-2-0)
Course Description: Characteristics of metallic, plastic, and ceramic material; basic principles which relate properties of materials to their atomic and microstructure.
Prerequisite: CHEM 111 and CHEM 112 and MECH 231.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 337 Thermodynamics Credits: 4 (3-0-1)
Course Description: First and second laws, property relationships, characteristic functions, thermodynamics solver, various thermodynamics applications.
Prerequisite: MATH 261 and PH 141.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 338 Thermal/Fluid Sciences Laboratory Credit: 1 (0-3-0)
Course Description: Experimental methods in heat transfer, fluid flow, and thermodynamics.
Prerequisite: MECH 337 and MECH 342 and MECH 344, may be taken concurrently.
Registration Information: Biomedical Engineering with ME and Mechanical Engineering majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 342 Mechanics and Thermodynamics of Flow Processes Credits: 3 (3-0-0)
Course Description: Engineering details of viscous flow with losses, measurements, compressibility, turbomachinery, convective heat transfer.
Prerequisite: MATH 340 and PH 141 and MECH 337, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 344 Heat and Mass Transfer Credits: 3 (3-0-0)
Course Description: Transport and rate processes, conduction, convection, and radiation.
Prerequisite: MECH 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 392 Graduate Education and Research Seminar Credit: 1 (0-0-1)
Course Description: Research in graduate school and industry as a career option for mechanical engineers.
Prerequisite: MECH 231 and MECH 237.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 402 Mechanical Engineering Experimental Analysis Credits: 3 (2-2-0)
Course Description: Analysis of large data sets associated with mechanical engineering experimentation; optimization; variability; design of experiments.
Prerequisite: MECH 307 and MECH 324 and MECH 331.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 407 Laser Applications in Mechanical Engineering Credits: 3 (3-0-0)
Course Description: Review of electromagnetic waves; applications of lasers and optics in engineering, e.g., position sensing, flowfield measurement, cutting and welding.
Prerequisite: PH 142.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 408 Applied Engineering Economy Credits: 3 (3-0-0)
Course Description: The basic principles and calculations of engineering economy with application to real problems, including energy and the environment.
Prerequisite: MATH 161.
Registration Information: Credit not allowed for both MECH 408 and MECH 410. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 411 Manufacturing Engineering Credits: 3 (3-0-0)
Course Description: Casting, forming, machining, and welding processes used in manufacturing operations.
Prerequisite: CIVE 360 and MECH 331.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 417 Control Systems Credits: 3 (2-2-0)
Course Description: Feedback and forward loop control design and simulation; discrete time and frequency domain methods with implementation considerations.
Prerequisite: MATH 340 and MECH 307.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 424 Advanced Dynamics Credits: 3 (3-0-0)
Course Description: Kinematics and dynamics of rigid bodies. Hamilton's principle and Lagrange's equations for lumped parameter extended bodies and distributed systems.
Prerequisite: MECH 324.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 425 Mechanical Engineering Vibrations Credits: 4 (3-2-0)
Course Description: Vibrations applied to rotating machinery and structures. SDOF and MDOF systems, mode shapes, vibration measurements and control. Hands-on lab.
Prerequisite: MECH 324.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 431 Metals and Alloys Credits: 3 (3-0-0)
Course Description: Engineering metals and alloys, modification of properties by alloying, plastic deformation, and heat treatment. Fundamentals of physical metallurgy.
Prerequisite: MECH 331.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 432 Engineering of Nanomaterials Credits: 3 (3-0-0)
Course Description: Structure, properties, and processing of extremely small (10 to the minus 9 m) synthetic and natural materials.
Prerequisite: MECH 331.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 437 Internal Combustion Engines Credits: 3 (2-0-1)
Course Description: Application of thermodynamics, heat transfer, and fluid mechanics to internal combustion engines.
Prerequisite: MECH 344.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 460 Aeronautics Credits: 3 (3-0-0)
Course Description: Thermodynamics and fluid mechanics principles applied to the mechanics, aerodynamics, performance, stability, and control of airplanes.
Prerequisite: MECH 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 463 Building Energy Systems Credits: 3 (3-0-0)
Course Description: Comfort, psychrometrics, loads, solar radiation, heating and cooling system design, transport, solar system design, economics.
Prerequisite: MECH 344.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 468 Space Propulsion and Power Engineering Credits: 3 (3-0-0)
Course Description: Orbital mechanics and space missions; chemical, nuclear, and electric rockets; nuclear heat sources; thermoelectric and photovoltaic devices.
Prerequisite: ECE 204 and MECH 337 and MECH 342.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 470 Biomedical Engineering Credits: 3 (3-0-0)
Also Offered As: BIOM 470.
Course Description: Engineering application in human/animal physiology, diagnosis of disease, treatment, rehabilitation, human genome manipulation.
Prerequisite: (MATH 155 or MATH 160) and (PH 141).
Registration Information: Credit not allowed for both MECH 470 and BIOM 470.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 486A Engineering Design Practicum: I Credits: 4 (1-6-0)
Course Description: Capstone engineering design project; transition experience to the mechanical engineering profession in industry and graduate education.
Prerequisite: (MECH 301 or MECH 301B, may be taken concurrently and MECH 301A) and (MECH 307 and MECH 331 and MECH 344) and (MECH 324, may be taken concurrently or MECH 325, may be taken concurrently).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 486B Engineering Design Practicum: II Credits: 4 (1-6-0)
Course Description: Capstone engineering design project; transition experience to the mechanical engineering profession in industry and graduate education.
Prerequisite: MECH 324 and MECH 325 and MECH 338 and MECH 486A.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 498A Engineering Research Practicum: I Credits: 4 (1-6-0)
Course Description: Capstone engineering research project; transition experience to graduate research and education.
Prerequisite: (MECH 301 or MECH 301A and MECH 301B, may be taken concurrently) and (MECH 307 and MECH 331 and MECH 344) and (MECH 324, may be taken concurrently or MECH 325, may be taken concurrently).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 498B Engineering Research Practicum: II Credits: 4 (1-6-0)
Course Description: Capstone engineering research project; transition experience to graduate research and education.
Prerequisite: MECH 324 and MECH 325 and MECH 338 and MECH 498A.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 502 Advanced/Additive Manufacturing Engineering Credits: 3 (3-0-0)
Course Description: Materials, controls, and mechanics applied to additive manufacturing; rapid prototyping; direct digital manufacturing.
Prerequisite: MECH 202 and MECH 331.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 505 Steam Power Plants Credits: 3 (3-0-0)
Course Description: Technology review and application of engineering sciences and economics to the analysis and design of vapor power generation systems. Vapor power cycles, steam generation, and auxiliary systems associated with power plants. Overall design of power plants as well as component design. Fossil fuel and nuclear energy systems are considered.
Prerequisite: MECH 337.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online. Required field trips. Credit not allowed for both MECH 505 and MECH 581A3.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 507 Laser Diagnostics for Thermosciences Credits: 3 (3-0-0)
Course Description: Basics of optics, spectroscopy, and lasers. Physics and applications of laser diagnostic techniques used in thermosciences.
Prerequisite: PH 142.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 509 Design and Analysis in Engineering Research Credits: 3 (3-0-0)
Course Description: Design, model building, analysis and reporting in engineering and manufacturing research and experimentation.
Prerequisite: MATH 340 and STAT 315.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 513 Simulation Modeling and Experimentation Credits: 3 (3-0-0)
Course Description: Logic/analytic modeling in simulations. Event and transient entity-based simulation languages. Simulation design, experimentation and analysis.
Prerequisite: STAT 315.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 515 Advanced Topics in Mechanical Vibrations Credits: 3 (2-2-0)
Course Description: Structural modal analysis, rotordynamics, and torsional vibrations. Lectures are supported with practical application labs.
Prerequisite: MECH 324.
Registration Information: Junior standing. Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 520 Finite Element Analysis in Mechanical Engr Credits: 3 (3-0-0)
Course Description: Application of FEA as a tool to analyze mechanical engineering problems.
Prerequisite: (CIVE 360) and (MATH 340 or MATH 530).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 524 Principles of Dynamics Credits: 3 (3-0-0)
Course Description: Kinematics and dynamics of rigid body motion; Lagrangian and Hamiltonian formulations of mechanics; applications to engineering problems.
Prerequisite: MECH 324.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 525 Cell and Tissue Engineering Credits: 3 (3-0-0)
Also Offered As: BIOM 525.
Course Description: Cell and tissue engineering concepts and techniques with emphasis on cellular response, cell adhesion kinetics, and tissue engineering design.
Prerequisite: BC 351 or BMS 300 or BMS 500 or BZ 310 or NB 501.
Registration Information: Credit only allowed for one of the following: MECH 525, BIOM 525, and CBE 525. Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 527 Hybrid Electric Vehicle Powertrains Credits: 3 (3-0-0)
Course Description: Hybrid powertrains and modeling including vehicle dynamics, internal combustion engine, electric motor, energy storage, and control.
Prerequisite: MECH 307.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 529 Advanced Mechanical Systems Credits: 3 (3-0-0)
Course Description: Modeling, analysis, and synthesis of practical mechanical devices in which dynamic response is dominant consideration.
Prerequisite: MECH 307.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 530 Advanced Composite Materials Credits: 3 (3-0-0)
Course Description: Materials aspects of advanced composite constituents and how their combination yields synergistic results.
Prerequisite: CIVE 360 and MECH 331.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 531 Materials Engineering Credits: 3 (3-0-0)
Also Offered As: BIOM 531.
Course Description: Selection of structural engineering materials by properties, processing, and economics; materials for biomedical and biotechnology applications.
Prerequisite: MECH 331 or MECH 431.
Registration Information: Credit not allowed for both MECH 531 and BIOM 531. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 532 Materials Issues in Mechanical Design Credits: 3 (3-0-0)
Also Offered As: BIOM 532.
Course Description: Failure mechanisms from materials viewpoint with emphasis on use in design. Fracture, creep, fatigue, and corrosion.
Prerequisite: MECH 331.
Registration Information: Credit not allowed for both MECH 532 and BIOM 532. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 533 Composites Product Development Credits: 3 (2-2-0)
Course Description: Practical application of advanced fiber reinforced materials in mechanical design, including composite constituent materials selection, performance, analysis, and manufacturing.
Prerequisite: MECH 331 and CIVE 360.
Registration Information: Graduate standing. Must register for lecture and laboratory. Credit not allowed for both MECH 533 and MECH 580A6.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 534 Energy & Env. Impacts of Transportation Credits: 3 (3-0-0)
Course Description: Energy use and environmental impacts of the transportation sector. Topics include vehicle design, dynamics and efficiency; combustion and emission formation; internal combustion engines, fuel cells, batteries, and powertrains; conventional and alternative fuels; travel demand and modes; and life cycle analysis and criteria pollutant emissions.
Prerequisite: MECH 337.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online. Credit not allowed for both MECH 534 and MECH 580A8.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 538 Mechanical Engineering Thermodynamics Credits: 3 (3-0-0)
Course Description: First and second laws of thermodynamics applied to engineering devices and systems. Introduction to exergy, equilibrium, chemical reactions, thermodynamic relations, and special topics.
Prerequisite: MECH 337.
Restriction: Must be a: Graduate.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 539 Advanced Fluid Mechanics Credits: 3 (3-0-0)
Course Description: Kinematics, Navier-Stokes equations, vorticity, viscous flows, scaling analysis, boundary layers, secondary flows, entropy generation and transport, stability and transition, turbulence.
Prerequisite: CIVE 300 or MECH 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 543 Biofluid Mechanics Credits: 3 (3-0-0)
Course Description: Fluid dynamic concepts for understanding fluid motion in living organs/organisms; advanced research applications.
Prerequisite: (BIOM 421 or CBE 331 or CIVE 300 or MECH 342) and (BMS 300 and PH 121 or PH 141 and BMS 300 or BMS 420).
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 544 Advanced Heat Transfer Credits: 3 (3-0-0)
Course Description: Fundamentals and engineering applications of heat transfer including conduction, convection, and radiation.
Prerequisite: MECH 344.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 551 Physical Gas Dynamics I Credits: 3 (3-0-0)
Course Description: Characteristics of real gases in reacting and nonequilibrium systems; equilibrium air; statistical mechanics, chemical thermodynamics.
Prerequisite: MECH 342.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 552 Applied Computational Fluid Dynamics Credits: 3 (3-0-0)
Course Description: Introductory theory of CFD, formulation of engineering problems for CFD analyses, mesh generation, solver settings, and postprocessing.
Prerequisite: CIVE 300 or CBE 331 or MECH 342.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 557 Turbomachinery Credits: 3 (3-0-0)
Course Description: Application of fundamental principles of thermodynamics and fluid mechanics to turbomachinery.
Prerequisite: MECH 337 and MECH 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 558 Combustion Credits: 3 (3-0-0)
Course Description: Combustion processes: explosions, detonations, flame propagation, ignition, generation of pollutants in moving and stationary energy conversion systems.
Prerequisite: MECH 342.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 564 Fundamentals of Robot Mechanics and Controls Credits: 3 (3-0-0)
Course Description: Kinematics of robots, controls for robots.
Prerequisite: MECH 417.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 567 Broad-Beam Ion Sources Credits: 3 (3-0-0)
Course Description: Physical processes in broad-beam electron-bombardment ion sources for space propulsion and ion machining applications.
Prerequisite: MATH 340.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 568 Computational Methods for Mechanical Eng. Credits: 3 (3-0-0)
Course Description: Fundamental principles which provide the foundation for the software and algorithms used in Mechanical Engineering.
Prerequisite: MATH 450 or MATH 451.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 569 Micro-Electro-Mechanical Devices Credits: 3 (3-0-0)
Also Offered As: ECE 569.
Course Description: Micro-electro-mechanical processes and applications in sensors, optics, and structures.
Prerequisite: MECH 344 with a minimum grade of C or ECE 331 with a minimum grade of C.
Registration Information: Credit not allowed for both ECE 569 and MECH 569. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 570 Bioengineering Credits: 3 (3-0-0)
Also Offered As: BIOM 570.
Course Description: Physiological and medical systems analysis using engineering methods including mechanics, fluid dynamics, control, electronics, and signal processing.
Prerequisite: MECH 307 and MECH 324.
Registration Information: Credit not allowed for both MECH 570 and BIOM 570. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 573 Structure and Function of Biomaterials Credits: 3 (3-0-0)
Also Offered As: BIOM 573.
Course Description: Structure-function relationships of natural biomaterials; application to analysis of biomimetic materials and biomaterials used in medical devices.
Prerequisite: MECH 331.
Registration Information: Credit not allowed for both MECH 573 and BIOM 573. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 574 Bio-Inspired Surfaces Credits: 3 (3-0-0)
Also Offered As: BIOM 574.
Course Description: Analysis of surface functionalities of various biological species; identification of design principles.
Prerequisite: MECH 342 and CHEM 111.
Registration Information: Sections may be offered: Online. Credit not allowed for both BIOM 574 and MECH 574.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 575 Solar and Alternative Energies Credits: 3 (3-0-0)
Course Description: Solar radiation, flat-plate collectors, energy storage, space heating and cooling, power generation, applications, simulation.
Prerequisite: MECH 337 and MECH 342 and MECH 344.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 576 Quantitative Systems Physiology Credits: 4 (4-0-0)
Also Offered As: BIOM 576.
Course Description: Quantitative, model-oriented approach to cellular and systems physiology with design examples from biomedical engineering.
Prerequisite: BMS 300 and CHEM 113 and MATH 340 and PH 142.
Registration Information: Credit not allowed for both BIOM 576 and MECH 576. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 577 Aerosol Physics and Technology Credits: 3 (3-0-0)
Course Description: Aerosols and their applications in science and engineering, air pollution control, atmospheric science, and public health. Topics cover the physical and chemical principles underlying the behavior of particles suspended in air, including particle size, aerodynamics, motion of particles in a force field, particle size statistics, and optical and electrical properties.
Prerequisite: PH 141.
Registration Information: Senior standing. Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 578 Musculoskeletal Biosolid Mechanics Credits: 3 (3-0-0)
Also Offered As: BIOM 578.
Course Description: Application of engineering concepts to quantify the mechanical behavior of load-bearing biological tissues and orthopaedic implant performance.
Prerequisite: CIVE 360.
Registration Information: Graduate standing. Credit not allowed for both BIOM 578 and MECH 578.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 579 Cardiovascular Biomechanics Credits: 3 (3-0-0)
Also Offered As: BIOM 579.
Course Description: Bio-mechanical principles and approaches applied in cardiovascular research.
Prerequisite: MATH 340 and PH 142.
Restriction: Must be a: Graduate.
Registration Information: Graduate students only. Sections may be offered: Online. Credit allowed for only one of the following: BIOM 579, BIOM 581A8, MECH 579, or MECH 581A8.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 628 Applied Fracture Mechanics Credits: 3 (3-0-0)
Course Description: Stress distribution near cracks; energy criteria for fracture; design criteria; fracture toughness testing.
Prerequisite: CIVE 560.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 631 Defects in Crystals Credits: 3 (3-0-0)
Also Offered As: MSE 631.
Course Description: Mechanics, thermodynamics and kinetics of defects in crystalline solids including point defects, dislocations, and grain boundaries.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online. Credit allowed for only one of the following: MECH 631, MSE 631, or MECH 681A2.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 657 Advanced Computational Gas Dynamics Credits: 4 (3-2-0)
Course Description: Advanced computational algorithms for gas dynamics.
Prerequisite: MECH 568.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 658 Advanced Combustion Theory and Modeling Credits: 3 (3-0-0)
Course Description: Asymptotic structure of flames, limit phenomena and multi-phase combustion.
Prerequisite: MECH 558.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 661 Theory/Control of Internal Combustion Engines Credits: 3 (3-0-0)
Course Description: Theory and applications of internal combustion engines. Alternative fuels, engine control, and pollution prevention.
Prerequisite: MECH 437.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 671 Orthopedic Tissue Biomechanics Credits: 3 (3-0-0)
Also Offered As: BIOM 671.
Course Description: Linear elastic, finite deformation, and viscoelastic theories applied to the mechanical behavior of orthopedic tissues (bone, tendon, cartilage).
Prerequisite: CIVE 560.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both BIOM 671 and MECH 671.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 692 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695A Independent Study: Bioengineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695B Independent Study: Energy Conversion Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695C Independent Study: Environmental Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695D Independent Study: Heat and Mass Transfer Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695E Independent Study: Industrial and Systems Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695F Independent Study: Mechanics and Design Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695G Independent Study: Computer-Assisted Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695H Independent Study: Robotics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695I Independent Study: Solar Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695J Independent Study: Computational Fluids Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695K Independent Study: Materials Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695L Independent Study: Plasma Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695M Independent Study: Motorsport Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 699A Thesis: Bioengineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699B Thesis: Energy Conversion Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699C Thesis: Environmental Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699D Thesis: Heat and Mass Transfer Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699E Thesis: Industrial and Systems Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699F Thesis: Mechanics and Design Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699G Thesis: Computer-Assisted Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699H Thesis: Robotics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699I Thesis: Solar Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699J Thesis: Computational Fluids Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699K Thesis: Materials Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699L Thesis: Plasma Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 699M Thesis: Motorsport Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 778 Advanced Computational Modeling of Fluids Credits: 3 (3-0-0)
Course Description: Advanced topics in computational fluid dynamics, finite element methods, and linear/nonlinear engineering optimization techniques.
Prerequisite: MECH 568.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799A Dissertation: Bioengineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799B Dissertation: Energy Conversion Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799C Dissertation: Environmental Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799D Dissertation: Heat and Mass Transfer Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799E Dissertation: Industrial and Systems Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799F Dissertation: Mechanics and Design Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799G Dissertation: Computer-Assisted Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799H Dissertation: Robotics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799I Dissertation: Solar Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799J Dissertation: Computational Fluids Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799K Dissertation: Materials Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799L Dissertation: Plasma Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 799M Dissertation: Motorsport Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Microbio, Immun, Pathology-MIP (MIP)

Courses

MIP 101 Introduction to Human Disease (GT-SC2) Credits: 3 (3-0-0)
Course Description: Survey of human systems and diseases.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

MIP 149 The Microbial World Credits: 3 (3-0-0)
Course Description: Importance of microbiology in daily life, with emphasis on positive and negative roles of microbes, infectious disease, and current microbiology issues.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 150 Introduction to Research Methods Credits: 3 (0-6-0)
Course Description: Undergraduate research experience highlighting fundamental skills of laboratory research while working towards the goal of novel microbial discovery.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 192 Microbiology First-Year Seminar Credits: 2 (0-0-2)
Course Description: Introduction to microbiology major and faculty; academic and career planning; information sources in biomedical sciences.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 250 Eukaryotic Microbiology Credits: 3 (3-0-0)
Course Description: Cell biology topics with emphasis on eukaryotic microbes. Topics include the central dogma of molecular biology, cell structure and function, and cell membranes as they relate to the importance of the host cell as well as parasites. Spotlight microbes will be studied that depict many eukaryotic processes important in cell biology, human health, and scientific models.
Prerequisite: CHEM 111, may be taken concurrently and LIFE 102.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 260 The World of Parasites Credits: 3 (3-0-0)
Course Description: Introduction to parasitology; evolution, ecology, epidemiology, physiology, and morphology of representative parasites of every group.
Prerequisite: (CHEM 111) and (BZ 110 or LIFE 102).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 275 Microcomputing Applications in Microbiology Credits: 2 (1-0-1)
Course Description: Network software on MS-DOS microcomputers will be used to acquire and analyze data and information that are commonly encountered in microbiology.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 298 Introductory Research Credits: Var[1-3] (0-0-0)
Course Description: Freshman/sophomore research experience in a working research environment.
Prerequisite: None.
Registration Information: Written consent of instructor required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 300 General Microbiology Credits: 3 (3-0-0)
Course Description: Structure, function, development, physiology, and molecular biology of microorganisms emphasizing bacteria.
Prerequisite: (BZ 110 or BZ 120 or LIFE 102) and (CHEM 245, may be taken concurrently or CHEM 341, may be taken concurrently or CHEM 345, may be taken concurrently).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 302 General Microbiology Laboratory Credits: 2 (0-4-0)
Course Description: Laboratory skills and techniques for isolating, characterizing, and identifying bacteria.
Prerequisite: MIP 300, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 303 General Microbiology--Honors Recitation Credit: 1 (0-0-1)
Course Description: Research and present topics related to the material presented in MIP 300.
Prerequisite: None.
Registration Information: Participation in the Honors Program required. Must have concurrent registration in MIP 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 315 Pathology of Human and Animal Disease Credits: 3 (3-0-0)
Course Description: Biological systems critical to mammalian physiology and how each is affected by metabolic, genetic, environmental, and infectious agents.
Prerequisite: BZ 110 or LIFE 102.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 334 Food Microbiology Credits: 3 (3-0-0)
Course Description: Microorganisms in production of foods, in preservation and spoilage, and in food-borne diseases. Control of microorganisms in foods.
Prerequisite: LIFE 205 or MIP 300.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 335 Food Microbiology Laboratory Credits: 2 (0-4-0)
Course Description: Laboratory skills and techniques related to the presence of microorganisms in food, production, and preservation.
Prerequisite: (LIFE 206 or MIP 302) and (MIP 334, may be taken concurrently).
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 342 Immunology Credits: 4 (3-0-1)
Course Description: Principles of immunology: components of the immune system, interactions of humoral and cellular elements, and clinical applications of basic concepts.
Prerequisite: (BZ 350 or LIFE 210 or MIP 250) and (CHEM 245, may be taken concurrently or CHEM 341, may be taken concurrently or CHEM 345, may be taken concurrently) and (MIP 300).
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 343 Immunology Laboratory Credits: 2 (0-4-0)
Course Description: Techniques used in research and clinical immunology, including diagnostic problem solving and data analysis.
Prerequisite: MIP 302 and MIP 342, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 350 Microbial Diversity Credits: 3 (3-0-0)
Course Description: Physiological, taxonomic, and phylogenic aspects of microbial diversity. Yeasts and filamentous fungi as microbial entities.
Prerequisite: MIP 300.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 351 Medical Bacteriology Credits: 3 (3-0-0)
Course Description: Bacteria which cause human and veterinary diseases; host-parasite relationships, disease mechanisms, prevention, and therapy.
Prerequisite: MIP 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 352 Medical Bacteriology Laboratory Credits: 3 (0-6-0)
Course Description: Laboratory skills and techniques necessary for identifying medically important bacteria.
Prerequisite: MIP 302 and MIP 351, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of department required. Maximum of 10 credits allowed in course. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 400A Capstone in Microbiology: Medical Microbiology Credits: 2 (2-0-0)
Course Description:
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Written consent of department required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400B Capstone in Microbiology: Biotechnology Credits: 2 (0-0-2)
Course Description:
Prerequisite: (BC 351 or BC 401) and (MIP 300).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400C Capstone in Microbiology: Immunology Credits: 2 (2-0-0)
Course Description:
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400D Capstone in Microbiology: Microbial Diversity/ Ecology Credits: 2 (2-0-0)
Course Description:
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400E Capstone in Microbiology: Microbial Genetics Credits: 2 (2-0-0)
Course Description:
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400F Capstone in Microbiology: Virology Credits: 2 (2-0-0)
Course Description:
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400G Capstone in Microbiology: Service Learning Credits: 2 (2-0-0)
Course Description:
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Written consent of department required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400H Capstone in Microbiology: Prion Biology Credits: 2 (2-0-0)
Course Description: Discussion of literature on a topic of importance to the research community in the discipline.
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Junior standing. Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400I Capstone in Microbiology: Mycobacterial Biology Credits: 2 (2-0-0)
Course Description: Discussion of literature on a topic of importance to the research community in the discipline.
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400J Capstone in Microbiology: Big Data Sets in Microbiology Credits: 2 (2-0-0)
Course Description: Discussion of literature on a topic of importance to the research community in the discipline.
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400K Capstone in Microbiology: Parasitology Credits: 2 (2-0-0)
Course Description: Discussion of literature on a topic of importance to the research community in the discipline.
Prerequisite: (MIP 260 and MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400L Capstone in Microbiology: Microbiome Biology Credits: 2 (2-0-0)
Course Description: Discussion of literature on a topic of importance to the research community in the discipline.
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400M Capstone in Microbiology: Vector Biology Credits: 2 (2-0-0)
Course Description: Discussion of literature on a topic of importance to the research community in the discipline.
Prerequisite: (MIP 342 and MIP 462) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400N Capstone in Microbiology: Environmental Sustainability & Health Science Credits: 2 (2-0-0)
Course Description: Discussion of literature on a topic of importance to the research community in the discipline.
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400O Capstone in Microbiology: Pathology of Infectious Disease Credits: 2 (2-0-0)
Course Description: Discussion of literature on a topic of importance to the research community in the discipline.
Prerequisite: (MIP 315 and MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400P Capstone in Microbiology: Veterinary Microbiology Credits: 2 (2-0-0)
Course Description: Discussion of literature on a topic of importance to the research community in the discipline.
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400Q Capstone in Microbiology: One Health Credits: 2 (2-0-0)
Course Description: Discussion of literature on a topic of importance to the research community in the discipline.
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400R Capstone in Microbiology: Food Microbiology Credits: 2 (2-0-0)
Course Description: Discussion of literature on a topic of importance to the research community in the discipline.
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400S Capstone in Microbiology: Biofilm Biology Credits: 2 (2-0-0)
Course Description: Discussion of literature on a topic of importance to the research community in the discipline.
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 401 Laboratory Research Methods in Microbiology Credits: 4 (0-6-1)
Course Description: Hands-on experience in laboratory research methods for students working individually on a project which stems from a larger research project of a faculty member's laboratory. All students will work in the same facility equipped with appropriate equipment and supplies to conduct the student research project.
Prerequisite: MIP 150 and MIP 300 and MIP 302.
Restriction: Must be a: Undergraduate.
Registration Information: Sophomore standing. Must register for laboratory and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 420 Medical and Molecular Virology Credits: 4 (4-0-0)
Course Description: Principles of animal virology: structure, classification, assay, diagnosis, control, replication, genetics, host-parasite relationships.
Prerequisite: (MIP 342) and (BC 351, may be taken concurrently or BC 401, may be taken concurrently).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 425 Virology and Cell Culture Laboratory Credits: 2 (0-4-0)
Course Description: Isolation and characterization of viruses. Viral diagnostic and cell culture techniques.
Prerequisite: MIP 302 and MIP 420, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 432 Microbial Ecology Credits: 3 (2-0-1)
Also Offered As: ESS 432.
Course Description: Principles of microorganism interactions with their living and non-living environments; implications for the environment, plants, and animals.
Prerequisite: MIP 300.
Registration Information: Must register for lecture and recitation. Credit not allowed for both ESS 432 and MIP 432.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 433 Microbial Ecology Laboratory Credit: 1 (0-3-0)
Also Offered As: ESS 433.
Course Description: Experimental microbial ecology; the design, conduct and interpretation of experiments that illustrate basic principles of microbial ecology.
Prerequisite: MIP 300.
Registration Information: Must be taken concurrently with ESS 432 or MIP 432. Credit not allowed for both ESS 433 and MIP 433.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 436 Industrial Microbiology Credits: 4 (2-4-0)
Course Description: Use of microorganisms for producing commercially valuable products.
Prerequisite: LIFE 206 or MIP 302.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 443 Microbial Physiology Credits: 4 (3-0-1)
Course Description: Structure, function of bacterial constituents; comparison with other organisms. Bacterial growth, energy production, biosynthesis.
Prerequisite: (MIP 300) and (BC 351 or BC 401).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 450 Microbial Genetics Credits: 3 (3-0-0)
Course Description: Principles of genetics at molecular level; mutation, recombination, complementation, suppression, control of gene expression, and recombinant DNA.
Prerequisite: (MIP 300) and (BC 351, may be taken concurrently or BC 401, may be taken concurrently).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 462 Parasitology and Vector Biology Credits: 5 (3-4-0)
Also Offered As: BSPM 462 and BZ 462.
Course Description: Protozoa, helminthes, and insects and related arthropods of medical importance; systematics, epidemiology, host damage and control.
Prerequisite: (BZ 110 or LIFE 103) and (MIP 302 or LIFE 206 or BZ 212).
Registration Information: Credit allowed for only one of the following: MIP 462, BSPM 462, BZ 462. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 492 Senior Professional Development Seminar Credits: 2 (1-0-1)
Course Description:
Prerequisite: MIP 342.
Registration Information: Microbiology majors only. Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: MIP 300.
Registration Information: Written consent of department required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 496 Group Study Credits: Var[1-3] (0-0-0)
Course Description: Faculty-supervised investigation of areas of special interest in microbiology, virology, microbial physiology, or microbial genetics.
Prerequisite: None.
Registration Information: Written consent of instructor required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 498 Research Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: MIP 302.
Registration Information: Written consent of instructor required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 520 Fundamentals of Prion Biology Credit: 1 (1-0-0)
Course Description: Current state of prion research, future research directions, and the relationship of prion disease with other disease systems. Critical reading and synthesis of the literature, with an emphasis on writing skills.
Prerequisite: (BC 351 or MIP 342) and (MIP 300).
Registration Information: Junior standing. Credit not allowed for both MIP 520 and MIP 581A3.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 525 Flow Cytometry for Immunology Credit: 1 (1-0-0)
Course Description: Understand and interpret flow cytometry principles. Background of flow cytometry, experimental design, applications, and brief explanation of cell sorting.
Prerequisite: MIP 342 or MIP 651.
Registration Information: Senior standing. This is a partial semester course. Credit not allowed for both MIP 525 and MIP 581A4.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 530 Advanced Molecular Virology Credits: 4 (3-0-1)
Course Description: Virus-host interactions at the molecular and cellular level.
Prerequisite: (BC 351 or BC 401) and (BC 463 or MIP 450).
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 533 Epidemiology of Infectious Diseases/Zoonoses Credits: 3 (2-0-1)
Also Offered As: VS 533.
Course Description: Epidemiologic features of infectious and parasitic diseases that have a major impact on community medicine.
Prerequisite: MIP 300.
Registration Information: Credit not allowed for both MIP 533 and VS 533. Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 540 Biosafety in Research Laboratories Credits: 2 (2-0-0)
Course Description: Practical applications of biosafety principles, including lab practices and regulatory aspects of research involving infectious microorganisms and rDNA.
Prerequisite: MIP 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 543 RNA Biology Credits: 3 (3-0-0)
Course Description: Gene expression and regulation that occurs at the level of RNA (e.g., splicing, stability, export, translation, RNAi, etc.).
Prerequisite: BC 351, may be taken concurrently or BC 401, may be taken concurrently.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 545 Microbial Metagenomics/Genomics Data Analysis Credits: 2 (2-0-0)
Course Description: Microbiomes, microbes and their genetic material present in a host/environment, are linked to risk of disease in humans, animals, and plants. Metagenomics, including 16S rRNA community survey methods and shotgun metagenomics, use high throughput sequencing technology to provide insight into the composition and potential function of microbiomes. Hands-on experience with using bioinformatics and statistical tools necessary to process and analyze the resulting large datasets.
Prerequisite: None.
Registration Information: Senior standing. This is a partial semester course. Credit not allowed for both MIP 545 and MIP 581A2.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 550 Microbial and Molecular Genetics Laboratory Credits: 4 (2-6-0)
Course Description: Use of both in vivo genetics and in vitro molecular techniques to study gene structure, function, and regulation in bacteria.
Prerequisite: MIP 302 and MIP 450.
Registration Information: Written consent of department required. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

MIP 555 Principles and Mechanisms of Disease Credits: 3 (3-0-0)
Course Description: Principles of disease processes; emphasis on reactivity of the diseased cell, tissue, organ, or organism.
Prerequisite: BMS 300.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 563 Biology of Disease Vectors Credits: 3 (3-0-0)
Course Description: Vector physiology and genomics, new strategies in vector control, and vector/host interactions.
Prerequisite: MIP 462 or BSPM 462 or BZ 462.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 565 Next Generation Sequencing Platform/Libraries Credit: 1 (0-2-0)
Also Offered As: BZ 565.
Course Description: Theoretical and experimental aspects of next generation sequencing experiments with a focus on the Illumina platform. Students will create and sequence metagenomic and 16S rDNA libraries from soil samples and unknown bacterial cultures.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Credit allowed for only one of the following: BZ 565, CM 581A2, or MIP 565.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 570 Functional Genomics Credits: 3 (2-2-0)
Course Description: State-of-the-art genomic tools with applications to studies of pathogenesis and pathophysiology of infectious diseases.
Prerequisite: MIP 300 and MIP 302 and MIP 443 and MIP 450.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 576 Bioinformatics Credits: 3 (3-0-0)
Also Offered As: BSPM 576.
Course Description: Technical computing across platforms using bioinformatics tools in molecular analysis.
Prerequisite: BC 463 or BZ 310 or BZ 350 or CM 501 or CS 155 or ERHS 332 or MIP 275 or MIP 300 or MIP 450 or STAT 307.
Registration Information: Credit not allowed for both MIP 576 and BSPM 576.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 577 Computer Analysis in Population Genetics Credits: 2 (0-4-0)
Also Offered As: BZ 577.
Course Description: Computational and statistical techniques and practical exercises in discrete and quantitative genetics.
Prerequisite: MIP 578, may be taken concurrently or BZ 578.
Registration Information: Credit not allowed for both MIP 577 and BZ 577.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 578 Genetics of Natural Populations Credits: 4 (3-0-1)
Also Offered As: BZ 578.
Course Description: Theoretical and empirical aspects of the genetics of natural populations; current molecular techniques and statistical analysis.
Prerequisite: (BZ 350 or LIFE 201A or LIFE 201B or SOCR 330) and (STAT 201 or STAT 301 or STAT 307 or ERHS 307).
Registration Information: Must register for lecture and recitation. Credit not allowed for both MIP 578 and BZ 578.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 611 Advanced Microbiological Research Methods Credits: 4 (2-0-2)
Course Description: In-depth presentation of the ever-growing arsenal of techniques needed to be an effective experimental microbiologist/molecular biologist.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online. Enrollment in the face-to-face offering of the course requires admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 612 Applied Immunology Credits: 3 (3-0-0)
Course Description: Application of classic and modern principles in immunology currently being used in the medical, biotechnology and basic research fields.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online. Enrollment in the face-to-face offering of the course requires admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 613 Applied Microbiology and Virology Credits: 4 (4-0-0)
Course Description: Application of bacteria, fungi and viruses in translational research, from drug and vaccine development to the generation of clean energy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online. Enrollment in the face-to-face offering of the course requires admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 614 Medical Microbiology Credits: 3 (3-0-0)
Course Description: In-depth examination of the pathogenic mechanisms of medically important bacteria, fungi, parasites and viruses.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online. Enrollment in the face-to-face offering of the course requires admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 615 Ophthalmic Pathology Credit: 1 (1-0-0)
Course Description: Background in normal ocular histology as well as pathologic changes in the eye, taught through a combination of lectures and class discussions.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 616 Modern Molecular Biology for Microbiologists Credits: 4 (3-0-1)
Course Description: Develop a working knowledge in the theory and applications of modern molecular biology to applied and translational research uses in microbiology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B program. Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 617 Principles of Biodefense/Emerging Pathogens Credits: 3 (3-0-0)
Course Description: In-depth analysis of the physiology, biology and epidemiology of biodefense agents and emerging pathogens.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 618 MIP Masters Seminar Series Credit: 1 (0-0-1)
Course Description: Foster the development of MIP master's students by improving communication skills and discussion of cutting edge research.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B program. May be taken twice for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 619 MIP Masters Topics Credits: 2 (1-0-1)
Course Description: Foster the development of MIP master's students by improving communication skills and discussion of cutting edge research.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B program. May be taken twice for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 624 Advanced Topics in Microbial Ecology Credits: 2 (1-0-1)
Course Description: Recent conceptual developments in microbial ecology, emphasizing theoretical aspects of microbial ecology, particularly in an evolutionary context.
Prerequisite: (MIP 300) and (ESS 432 or MIP 432).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 628 Immunity to Infection Credits: 3 (3-0-0)
Course Description: How microorganisms have evolved to counteract the immune system and how the immune system has evolved to resist microbes.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 630 Advances in Microbial Physiology Credits: 3 (3-0-0)
Course Description: Contemporary developments in bacterial structure, function, metabolism, and genetics.
Prerequisite: MIP 443.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 636 Mechanisms of Viral Infection and Disease Credits: 4 (3-0-1)
Course Description: Cytopathic mechanisms, pathogenetic events in viral diseases; host response and antiviral immunity; cancer induction by DNA and RNA viruses.
Prerequisite: MIP 420 or MIP 530.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 643 Grant Writing for Microbiology/Pathology Credit: 1 (1-0-0)
Course Description: To effectively communicate ideas, goals and approaches in a scientific grant proposal.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in an MIP graduate program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 651 Immunobiology Credits: 3 (3-0-0)
Course Description: Structure, function, regulation of immunoglobulins and the immune system. Cellular immunity including transplantation and cancer.
Prerequisite: MIP 342.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 654 Research Policies and Regulations Credit: 1 (1-0-0)
Course Description: Reviews CSU and federal policies, rules, and regulations on integrity, use of humans and animals, authorship, data, genetics, etc., using case studies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 666 Writing Scientific Manuscripts Credits: 3 (0-0-3)
Course Description: Writing biological science manuscripts for publication.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 670 Molecular Immunology and Immunogenetics Credits: 3 (3-0-0)
Course Description: Molecular basis and genetics of immune response. Biochemistry of immunologically mediated diseases.
Prerequisite: MIP 651.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 675 Advanced Bioanalytic Pathology Credits: 2 (2-0-0)
Course Description: Laboratory medicine for post-graduate veterinarians and professional veterinary medical students.
Prerequisite: VM 724.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor or DVM degree required.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in an MIP graduate program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in an MIP graduate program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 700 Topics in Microbiology Credit: 1 (1-0-0)
Course Description: Current literature in bacteriology, virology, genetics, and immunology.
Prerequisite: MIP 300.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 720 Methods of Carbohydrate Analysis Credits: 2 (1-3-0)
Course Description: Structural analysis of complex carbohydrates using gas chromatography, mass spectrometry, and nuclear magnetic resonance.
Prerequisite: CHEM 346.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MIP 730 Principles of Flow Cytometry & Cell Sorting Credits: 2 (1-2-0)
Also Offered As: ERHS 730.
Course Description: Explores the background of flow cytometry, fluorescent molecules, experimental design, Flow Cytometry data Analysis, applications, and principles of cell sorting.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. This is a partial semester course. Credit not allowed for both ERHS 730 and MIP 730.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 740 Microbial and Molecular Genetics Credits: 3 (2-0-1)
Course Description: Molecular biology and genetics of prokaryotic and eukaryotic cells and their viruses; strategies for genetic manipulation.
Prerequisite: MIP 450.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 760 Mechanisms of Bacterial Pathogenesis Credits: 3 (2-0-1)
Course Description: Mechanisms of bacterium-host interaction at molecular and cellular levels in pathogenesis of bacterial disease.
Prerequisite: BC 351 and MIP 342.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 765 Comparative Neuropathology Credits: 2 (1-2-0)
Course Description: Spontaneous diseases of nervous system of domesticated, laboratory, and wild animals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 766 Cytopathology--Clinical Pathology Credit: 1 (0-0-1)
Course Description: Discussion of cytology cases that are diagnostically challenging, medically interesting, or classic case examples. Discussions and microscopic reviews of the cases will be led by a clinical pathologist.
Prerequisite: MIP 786A and MIP 786B and MIP 786C.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MIP 767 Advanced General Pathology Credits: 3 (3-0-0)
Course Description: In-depth, detailed study of general pathology and molecular mechanisms of disease. Help prepare students in the Anatomic and/or Clinical Pathology Residency prepare for the ACVP Board examination. Enhance the pathology knowledge and skills of Professional Veterinary Medicine students and graduate students in related disciplines.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 768 Advanced Clinical Pathology Credits: 2 (2-0-0)
Course Description: In-depth clinical pathology (cytology, hematology, and biochemistry) for post-professional students in CVMBS residency and/or graduate degree programs.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both MIP 768 and MIP 781A2.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 778 Pathobiology of Laboratory Animals Credits: 3 (3-0-0)
Course Description: Unique natural biology and diseases of laboratory animal species emphasizing clinical, diagnostic, morphologic and clinical pathologic features.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 779 Laboratory Animal Pathology Rotation Credit: 1 (1-0-0)
Course Description: Using case material compiled from submissions to the Laboratory Animal Resources necropsy service, the VTH Diagnostic services, the Armed Forces Institute of Pathology, and other resources, analyze selected slides demonstrating histologic pathology in laboratory animals. Prepare a description of the slide, provide a diagnosis and a brief summary of the pathogenesis.
Prerequisite: MIP 778.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both MIP 779 and MIP 780A1.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of department required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 786A Practicum: Comparative Gross and Histologic Pathology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Post-DVM graduate students only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 786B Practicum: Surgical Pathology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Post-DVM graduate students only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 786C Practicum: Clinical Pathology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Post-DVM graduate students only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 786D Practicum: Comparative Medicine Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Post-DVM graduate students only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MIP 792A Seminar: Research/Graduate Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: M.S. and Ph.D. candidates only. Maximum of 3 credits allowed per subtopic.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 792B Seminar: Research/Faculty Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: M.S. and Ph.D. candidates only. Maximum of 3 credits allowed per subtopic.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 792C Seminar: Microscopic and Bioanalytic Pathology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: M.S. and Ph.D. candidates only. Maximum of 3 credits allowed per subtopic.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 792D Seminar: Anatomic Pathology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: M.S. and Ph.D. candidates only. Maximum of 3 credits allowed per subtopic.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 792E Seminar: Clinical Pathology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: M.S. and Ph.D. candidates only. Maximum of 3 credits allowed per subtopic.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of department required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 796 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Ph.D. candidates only. Maximum of 3 credits allowed per subtopic.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Ph.D. candidates only. Maximum of 3 credits allowed per subtopic.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Military Science-MLSC (MLSC)

Courses

MLSC 101 Introduction to the Army Credits: 2 (2-0-0)
Course Description: Basic leadership attributes and the core tactical competencies of an Army officer.
Prerequisite: None.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 102 Foundations of Agile and Adaptive Leadership Credits: 2 (2-0-0)
Course Description: Communication, critical thinking, and related core competencies used to lead small Army units.
Prerequisite: None.
Registration Information: Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 196 Military Science Group Study I Credit: 1 (0-2-0)
Course Description:
Prerequisite: None.
Registration Information: Must have concurrent registration in MLSC 101.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 197 Military Science Group Study II Credit: 1 (0-2-0)
Course Description:
Prerequisite: None.
Registration Information: Must have concurrent registration in MLSC 102.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 201 Leadership and Decision Making Credits: 2 (2-0-0)
Course Description: Principles and theories of adaptive leadership, critical thinking, decision making, and the core tactical competencies used to lead small Army units.
Required field trips.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 202 Army Doctrine and Team Development Credits: 2 (2-0-0)
Course Description: Theories and methods of effective leadership of small units, with a focus on military operations, problem solving, and team building.
Prerequisite: MLSC 201.
Registration Information: If the prerequisite course has not been taken, an instructor override may be considered based on the student's military experience. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 235 Military Tactical Leadership Credit: 1 (0-2-0)
Course Description: Selected topics in physiology, engineering, geology/terrain analysis, and sociology/human behavior; this subject matter will inform the basic military skills needed to train for and compete in the Ranger Challenge. Physical conditioning is a significant component of this class.
Prerequisite: None.
Registration Information: Written consent of instructor. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 250 Basic Camp Leader Internship Credits: Var[2-8] (0-0-0)
Course Description: Practical leadership development and management skills in a military operations environment.
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 294 Independent Study Credits: Var[1-2] (0-0-0)
Course Description:
Prerequisite: MLSC 101 and MLSC 102.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MLSC 295 Independent Study Credits: Var[1-2] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MLSC 296 Military Science Group Study III Credit: 1 (0-2-0)
Course Description:
Prerequisite: None.
Registration Information: Must have concurrent registration in MLSC 201.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 297 Military Science Group Study IV Credit: 1 (0-2-0)
Course Description:
Prerequisite: None.
Registration Information: Must have concurrent registration in MLSC 202.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 301 Adaptive Tactical Leadership Credits: 3 (3-0-0)
Course Description: The study, practice, and application of the fundamentals of Army leadership, officership, Army values and ethics, personal development, and small unit tactics at the platoon level.
Prerequisite: MLSC 202.
Registration Information: Must have concurrent registration in MLSC 396. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 302 Applied Leadership in Small Unit Operations Credits: 3 (3-0-0)
Course Description: Advanced practice and application of the fundamentals of Army leadership, officership, Army values and ethics, personal development, and small unit tactics at the squad and platoon levels.
Prerequisite: MLSC 301.
Registration Information: Must have concurrent registration in MLSC 397. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 357 The American Military Experience Credits: 3 (3-0-0)
Also Offered As: HIST 357.
Course Description: Role of the armed forces in American society; development of military traditions, institutions, and practices.
Prerequisite: HIST 100 or HIST 101 or HIST 115 or HIST 120 or HIST 121 or HIST 150 or HIST 151 or HIST 170 or HIST 171.
Registration Information: Completion of 45 credits. Credit not allowed for both MLSC 357 and HIST 357.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 386 Advanced Camp Practicum Credits: 8 (1-12-1)
Course Description: Leadership principles and skills applied to actual field situations.
Prerequisite: MLSC 301.
Registration Information: Must register for lecture, laboratory and recitation.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 395 Independent Study Credits: Var[1-3] (0-0-0)
Course Description: Leadership theory and skills as applied to the military.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 396 Military Science Group Study V Credit: 1 (0-2-0)
Course Description:
Prerequisite: None.
Registration Information: Must have concurrent registration in MLSC 301.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 397 Military Science Group Study VI Credit: 1 (0-2-0)
Course Description:
Prerequisite: None.
Registration Information: Must have concurrent registration in MLSC 302.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 401 The Army Officer Credits: 3 (3-0-0)
Course Description: Culminating study of Army leadership focuses on building teams, coordinating and synchronizing training, mentoring subordinates, and preparing students for commissioning into the Profession of Arms.
Prerequisite: (MLSC 302) and (MLSC 357 or HIST 357).
Registration Information: Must have concurrent registration in MLSC 496. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 402 Company Grade Leadership Credits: 3 (3-0-0)
Course Description: Culminating study of Army leadership and mission command with emphasis on geographical commands, unified land operations, and the application of leadership and Army principles.
Prerequisite: MLSC 401.
Registration Information: Must have concurrent registration in MLSC 497. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 496 Military Science Group Study VII Credit: 1 (0-2-0)
Course Description:
Prerequisite: None.
Registration Information: Must have concurrent registration in MLSC 401.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 497 Military Science Group Study VIII Credit: 1 (0-2-0)
Course Description:
Prerequisite: None.
Registration Information: Must have concurrent registration in MLSC 402.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Music-MU (MU)

Courses

MU 100 Music Appreciation (GT-AH1) Credits: 3 (3-0-0)
Course Description: Survey of music from a wide range of periods and styles.
Prerequisite: None.
Registration Information: Previous musical training not necessary. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Arts & Humanities 3B, Arts & Expression (GT-AH1).

MU 110 Music and Technology Credits: 3 (2-1-0)
Course Description: Historical and cultural perspectives on the role of technology in music combined with applied skills in digital music production.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B.

MU 111 Music Theory Fundamentals (GT-AH1) Credits: 3 (3-0-0)
Course Description: Basic visual and aural fundamentals of music including intervals, scales, key and time signatures, chord construction, basic harmony, melodic writing.
Prerequisite: None.
Registration Information: For non-music majors and majors needing basic skills.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Arts & Humanities 3B, Arts & Expression (GT-AH1).

MU 117 Music Theory I Credits: 3 (3-0-0)
Course Description: Introduction to diatonic harmony, harmonic analysis, and part-writing/counterpoint.
Prerequisite: None.
Registration Information: Must satisfactorily complete placement exam.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 118 Music Theory II Credits: 3 (3-0-0)
Course Description: Four-part diatonic writing; diatonic sequences and related linear techniques; diatonic modulation.
Prerequisite: MU 117.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 127 Aural Skills I Credit: 1 (0-2-0)
Course Description: Introduction to aural skills, including melodic dictation (one- and two-part), diatonic harmonic dictation; rhythmic dictation in simple and compound meters; prepared singing and sight singing.
Prerequisite: None.
Registration Information: Must have concurrent registration in MU 117.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 128 Aural Skills II Credit: 1 (0-2-0)
Course Description: Further introduction to aural skills, including melodic dictation (one- and two-part), diatonic harmonic dictation; rhythmic dictation in simple and compound meters; prepared singing and sight singing in new clefs.
Prerequisite: MU 127.
Registration Information: Must have concurrent registration in MU 118.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 131 Introduction to Music History and Literature (GT-AH1) Credits: 3 (3-0-0)
Course Description: Landmarks of music history and literature from 1300 to the present.
Prerequisite: None.
Term Offered: Fall. Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Arts & Expression (GT-AH1).

MU 132 Exploring World Music Credits: 3 (3-0-0)
Course Description: Global aspects of music and its meaning with connections to the environment, sound, and world cultures.
Prerequisite: None.
Registration Information: Sections may be offered: Online. Credit not allowed for both MU 132 and MU 380A4.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E.

MU 150 Piano Class I Credit: 1 (0-2-0)
Course Description: Basic piano technique; keyboard harmony.
Prerequisite: None.
Registration Information: Required of all Bachelor of Music majors, except those in the piano or organ performance option. May test out if adequate keyboard skills.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 151A Piano Class II: Music Educators Credit: 1 (0-2-0)
Course Description: Intermediate piano skills for music education.
Prerequisite: MU 150.
Registration Information: Credit allowed for only one of the following: MU 151, MU 151A or MU 151B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 151B Piano Class II: Performance, Composition, and General Studies Credit: 1 (0-2-0)
Course Description: Intermediate Piano Skills for performance, composition, and general studies students.
Prerequisite: MU 150.
Registration Information: Credit allowed for only one of the following: MU 151, MU 151A or MU 151B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 152 Piano Skills for Choral Directors Credit: 1 (0-2-0)
Course Description: Advanced piano skills necessary for choral directing and accompaniment.
Prerequisite: MU 151A.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MU 153 Piano Skills for Music Therapists Credit: 1 (0-2-0)
Course Description: Practical application of functional piano skills for clinical music therapists.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 154 Jazz Piano Class Credit: 1 (0-2-0)
Course Description: Basic jazz piano skills that serve as the foundation for a jazz pianist or composer.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 155 Guitar Class I Credits: 2 (2-0-0)
Course Description: Fundamental techniques for guitar emphasizing chord study and related literature.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 156 Guitar Class II Credits: 2 (2-0-0)
Course Description: Fundamentals of guitar emphasizing solo literature and accompaniment.
Prerequisite: MU 155.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 157 Voice Class I Credits: 2 (2-0-0)
Course Description: Techniques of singing, emphasizing posture, breathing, tone production and diction, as applied to song literature.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 158 Voice Class II Credits: 2 (2-0-0)
Course Description: Techniques of singing, emphasizing resonance, articulation, projection, and repertoire.
Prerequisite: MU 157.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170A Applied Music Instruction: Euphonium Credit: 1 (0-0-1)
Course Description: One-on one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170B Applied Music Instruction: French Horn Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170C Applied Music Instruction: Trombone Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170D Applied Music Instruction: Trumpet Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170E Applied Music Instruction: Tuba Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170G Applied Music Instruction: Harpsichord Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170H Applied Music Instruction: Organ Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170I Applied Music Instruction: Piano Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170J Applied Music Instruction: Percussion Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170L Applied Music Instruction: Harp Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170M Applied Music Instruction: String Bass Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170N Applied Music Instruction: Viola Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170O Applied Music Instruction: Violin Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170P Applied Music Instruction: Violoncello Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170Q Applied Music Instruction: Voice Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170R Applied Music Instruction: Bassoon Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170S Applied Music Instruction: Clarinet Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170T Applied Music Instruction: Flute Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170U Applied Music Instruction: Oboe Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 170V Applied Music Instruction: Saxophone (Alto) Credit: 1 (0-0-1)
Course Description: One-on-one instruction for students pursuing applied music study as a secondary area. 14 half-hour lessons plus one hour of weekly studio class instruction per semester.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of department chair. Successful passing of audition required. Concurrent registration in music ensemble as assigned. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 172A Freshman Voice Studio: English/Italian Credits: 2 (1-2-0)
Course Description: Applied voice study and English/Italian diction in a group setting for freshman voice majors.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 172B Freshman Voice Studio: German, French Credits: 2 (1-2-0)
Course Description: Applied voice study and German/French diction in a group setting for freshman voice majors.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 173 Freshman Voice Studio Credit: 1 (0-2-0)
Course Description: Applied voice study in a group setting for freshmen music majors.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Music majors only. May be taken twice for credit.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 201 Men's Chorus Credit: 1 (0-3-0)
Course Description: Rehearsal and performance of a variety of types and styles of music for men's voices.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 202 University Chorus Credit: 1 (0-3-0)
Course Description: Rehearsal and performance of a variety of types and styles of music for mixed voices.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 204 Marching Band Credit: 1 (0-5-0)
Course Description: Marching routines utilizing popular and jazz musical idioms with performances at all home football games and other athletic events.
Prerequisite: None.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

MU 205 Concert Band Credit: 1 (0-3-0)
Course Description: Rehearsal and performance of basic concert band literature.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 206 Colorado State University Concert Orchestra Credit: 1 (0-3-0)
Course Description: Performance opportunity for music majors and non music majors to perform standard orchestral literature.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 217 Music Theory III Credits: 3 (3-0-0)
Course Description: Introduction to chromatic harmony; analysis of small forms.
Prerequisite: MU 118.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 218 Music Theory IV Credits: 3 (3-0-0)
Course Description: Introduction to sonata form analysis; Introduction to post-tonal music analysis.
Prerequisite: MU 217.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 225 Jazz Theory Credits: 2 (2-0-0)
Course Description: Music theory as it pertains to the jazz idiom; the aural language of jazz.
Prerequisite: MU 118.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 227 Aural Skills III Credit: 1 (0-2-0)
Course Description: Intermediate aural skills, including dictation of chromatic melodies (one- and two-part), diatonic harmonic dictation with chromatic embellishments; rhythmic dictation in simple and compound meters; prepared singing and sight singing in new clefs.
Prerequisite: MU 128.
Registration Information: Must have concurrent registration in MU 217.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 228 Aural Skills IV Credit: 1 (0-2-0)
Course Description: Advanced aural skills for chromatic music; chromatic and atonal melodic dictation; modulating harmonic dictation and atonal pitch patterns; rhythmic dictation of techniques from music since 1900; prepared singing and sight singing of chromatic and atonal melodies.
Prerequisite: MU 227.
Registration Information: Must have concurrent registration in MU 218.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 230 Music of Black Americans Credits: 3 (3-0-0)
Course Description: Music indigenous to or composed by Black Americans.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 231 Women in Music Credits: 3 (3-0-0)
Course Description: Examination of the role of women in music from historical and societal perspectives.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 232 Soundscapes-Music as Human Practice Credits: 3 (3-0-0)
Also Offered As: ANTH 232.
Course Description: Musical communities and soundscapes from around the world provide exploration points for how music and sound inform human life. Study everything from playlists to music of distant lands. Ability to read notated music not required.
Prerequisite: None.
Registration Information: Previous music experience not required. Credit allowed for only one of the following: ANTH 232, MU 232, or MU 280A2.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C.

MU 241 Introduction to Music Therapy Credits: 3 (3-0-0)
Course Description: Overview of music therapy, related helping professions, and problems in human functioning; emphasizes basic skills for managing behavior problems.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 250 Music Therapy Practice Credits: 3 (2-2-0)
Course Description: Development of fundamental interactive and professional skills used in music therapy practice.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 251 Voice Techniques Credit: 1 (0-2-0)
Course Description: Basic voice production, exercises, materials and methods for teaching, including child and adolescent voice concerns.
Prerequisite: None.
Registration Information: Instrumental music education majors only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 252A Instrumental Techniques: Brass Credits: 2 (1-2-0)
Course Description: Tone production, tuning, fingerings, care, materials, and teaching methods for brass instruments.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 252B Instrumental Techniques: Woodwinds Credits: 2 (1-2-0)
Course Description: Tone production, tuning, fingerings, care, materials, and teaching methods for woodwind instruments.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 252C Instrumental Techniques: Strings Credit: 1 (0-2-0)
Course Description: Tone production, tuning, fingerings, care, materials, and teaching methods for string instruments.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 252D Instrumental Techniques: Percussion Credit: 1 (0-2-0)
Course Description: Tone production, tuning, fingerings, care, materials, and teaching methods for percussion instruments.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 254 Beginning Conducting Credits: 2 (2-0-0)
Course Description: Basic conducting patterns and techniques.
Prerequisite: MU 117.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 265A Singers Diction: German/English Credit: 1 (0-2-0)
Course Description: Pronunciation of German and English for singing. Basic vocabulary from German song poetry. Use of the International Phonetic Alphabet (IPA).
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Music major or music minor only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 265B Singers Diction: French/Italian Credit: 1 (0-2-0)
Course Description: Pronunciation of each language for singing, basic vocabulary from song poetry of each language, use of the International Phonetic Alphabet.
Prerequisite: MU 265A.
Restriction: Must be a: Undergraduate.
Registration Information: Music majors and music minors only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272A Applied Music Instruction: Euphonium Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272B Applied Music Instruction: French Horn Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272C Applied Music Instruction: Trombone Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272D Applied Music Instruction: Trumpet Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272E Applied Music Instruction: Tuba Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272G Applied Music Instruction: Harpsichord Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272H Applied Music Instruction: Organ Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272I Applied Music Instruction: Piano Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272J Applied Music Instruction: Percussion Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272K Applied Music Instruction: Guitar Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272L Applied Music Instruction: Harp Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272M Applied Music Instruction: String Bass Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272N Applied Music Instruction: Viola Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272O Applied Music Instruction: Violin Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272P Applied Music Instruction: Violoncello Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272Q Applied Music Instruction: Voice Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272R Applied Music Instruction: Bassoon Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272S Applied Music Instruction: Clarinet Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272T Applied Music Instruction: Flute Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272U Applied Music Instruction: Oboe Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272V Applied Music Instruction: Saxophone (Alto) Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 273 Composition Instruction Credits: Var[1-2] (0-0-0)
Course Description:
Prerequisite: MU 118 and MU 131.
Registration Information: One or two half-hour lessons per week.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 274A Applied Jazz Instruction: Piano Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 274B Applied Jazz Instruction: String Bass Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 274C Applied Jazz Instruction: Trombone Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 274D Applied Jazz Instruction: Trumpet Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 274E Applied Jazz Instruction: Percussion Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 274F Applied Jazz Instruction: Saxophone Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 274G Applied Jazz Instruction: Guitar Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 275A Applied Instruction: Euphonium Credits: 3 (0-0-3)
Course Description: One hour lessons for students with performance concentration.
Prerequisite: None.
Registration Information: Music performance majors only. Written consent of instructor. May be taken up to five times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 286 Practicum-Introduction to Music Education Credits: 3 (1-0-4)
Course Description:
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 300 Women's Chorus Credit: 1 (0-3-0)
Course Description: Rehearsal and performance of a variety of types and styles of music for women's voices.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 302 University Orchestra Credit: 1 (0-5-0)
Course Description: Rehearsal and performance of standard orchestral literature.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 304 Symphonic Band Credit: 1 (0-3-0)
Course Description: Preparation for public performance of full symphonic instrumentation of concert band literature.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 305 Colorado State University Concert Choir Credit: 1 (0-5-0)
Course Description: Rehearsal and performance of choral literature emphasizing extended works with orchestral accompaniment.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 309 Jazz Ensemble Credit: 1 (0-3-0)
Course Description: Rehearsal and performance of jazz ensemble literature of standard and experimental types.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 310 Jazz Combo Credit: 1 (0-2-0)
Course Description: Small group jazz performance practice and standard jazz repertoire.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 317 Music Theory V Credits: 2 (1-2-0)
Course Description: Late 19th and 20th century systems of composition and analysis; chromatic, modal, and atonal sight singing, ear training, and keyboard harmony skills.
Prerequisite: MU 218.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 318 Arranging and Orchestration Credits: 2 (2-0-0)
Course Description: Techniques for writing music for the standard orchestral and band instruments; basic arranging skills for various instrumental and choral ensembles.
Prerequisite: MU 218.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 320 Jazz Improvisation Credit: 1 (0-2-0)
Course Description: Jazz improvisation skills through training in jazz theory, ear training, and improvisatory concepts.
Prerequisite: MU 225.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 325 Jazz Composition/Arranging Credits: 2 (2-0-0)
Course Description: Arranging jazz music for a variety of ensembles; composition of music in the jazz idiom.
Prerequisite: MU 225.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 332 History of Jazz Credits: 3 (3-0-0)
Course Description: Jazz since the 1880s emphasizing its various influences and developments.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 333 History of Rock and Roll Credits: 3 (3-0-0)
Course Description: Historical overview of rock and roll with emphasis on listening skills, musical analysis, the artists, and the industry.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 334 Music History I Credits: 3 (3-0-0)
Course Description: Music of the medieval, Renaissance, and baroque periods.
Prerequisite: (MU 118) and (MU 131).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 335 Music History II Credits: 3 (3-0-0)
Course Description: Music of the classical, Romantic, and contemporary periods.
Prerequisite: MU 131 and MU 118.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 338 Opera History and Literature Credits: 2 (2-0-0)
Course Description: Historical and musical development of opera from its roots through the 20th century.
Prerequisite: MU 131.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 342 Psychology of Music Credits: 3 (3-0-0)
Course Description: Psychological aspects of music: perception, psychoacoustics, aesthetics, musical function, communication, measurement, and affective responses.
Prerequisite: PSY 100.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 343 Research Methods in Music Therapy Credits: 3 (3-0-0)
Course Description: Techniques of observing, measuring, and recording behavior. Basic experimental methods and procedures used in music therapy research.
Prerequisite: STAT 201.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 351A String Pedagogy I: Violin/Viola. Credits: 2 (2-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 351B String Pedagogy I: Violoncello Credits: 2 (2-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 351C String Pedagogy I: String Bass Credits: 2 (2-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 352A String Pedagogy II: Violin/Viola Credits: 2 (1-2-0)
Course Description:
Prerequisite: MU 351A.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 352B String Pedagogy II: Violoncello Credits: 2 (1-2-0)
Course Description:
Prerequisite: MU 351B.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 352C String Pedagogy II: String Bass Credits: 2 (1-2-0)
Course Description:
Prerequisite: MU 351C.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 355 Choral Conducting and Literature Credits: 2 (1-2-0)
Course Description: Basic techniques of choral conducting and analysis of selected works as an aid to interpretation.
Prerequisite: MU 254.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 356 Instrumental Conducting and Literature Credits: 2 (1-2-0)
Course Description: Essentials of instrumental conducting and analysis of selected works.
Prerequisite: MU 254.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 365A Advanced Diction: Italian and English Credit: 1 (0-2-0)
Course Description: Practical application of lyric diction through performance of art song and arias.
Prerequisite: MU 172A and MU 172B.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 365B Advanced Diction: French and German Credit: 1 (0-2-0)
Course Description: Practical application of lyric diction through performance of art song and arias.
Prerequisite: MU 172A and MU 172B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 400 Colorado State University Chamber Choir Credit: 1 (0-5-0)
Course Description: Performance of chamber choral literature from all musical periods ranging from madrigals to music in a contemporary idiom.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 401 Opera Theater Credits: Var[1-2] (0-0-0)
Course Description: Performance of opera and/or operatic scenes emphasizing operatic singing and acting techniques.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 402 Theater/Chamber Orchestra Credit: 1 (0-5-0)
Course Description: Performance of selected operas, musicals, oratorio, orchestral accompaniments, and chamber music.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 404 Symphonic Wind Ensemble Credit: 1 (0-5-0)
Course Description: Performance of wind ensemble and band literature emphasizing most challenging of repertoire, using a select ensemble of performers.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 406 New Music Ensemble Credit: 1 (0-2-0)
Course Description: Chamber ensemble rehearsal and performance of contemporary literature. Explores, performs, and studies new concepts of notation, extended performing techniques, group improvisation and group composition, centered around the latest developments in sonic art. The New Music Ensemble may perform on and off campus each semester.
Prerequisite: None.
Registration Information: Junior standing. Written recommendation from applied instructor required. Approximately two formal performances per year, may be on or off campus. Required field trips. May be repeated up to 9 times for credit.
Grade Mode: Traditional.
Special Course Fee: No.

MU 407 Accompanying Credit: 1 (0-3-0)
Course Description: Practical experience in the interpretation and execution of piano accompaniments.
Prerequisite: MU 272I.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 408 Chamber Music Credit: 1 (0-3-0)
Course Description: Performance literature for small instrumental ensembles: duets, trios, quartets, and quintets.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 412 Music Theory Proficiency Credits: 2 (2-0-0)
Course Description: Review of music theory topics to prepare for graduate studies. Tonal, post-tonal, and formal analysis.
Prerequisite: MU 218.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 415 Advanced Jazz Techniques Credits: 2 (1-2-0)
Course Description: Advanced jazz theory and rhythmic concepts, free improvisation and other modern performance techniques.
Prerequisite: MU 320.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 417 Counterpoint Credits: 3 (3-0-0)
Course Description: Contrapuntal techniques from the Middle Ages through the 20th century; development of compositional skills in counterpoint.
Prerequisite: MU 218.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 418 Advanced Orchestration Credits: 2 (2-0-0)
Course Description: Advanced writing for modern orchestra and related ensembles; advanced study of traditional and contemporary writing for the individual instruments.
Prerequisite: MU 318.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 419 Electronic Music Composition Credits: 2 (2-0-0)
Course Description: Fundamentals of electronic music composition, including hardware, software, digital audio, MIDI, and computer music.
Prerequisite: MU 218.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 420 Marching Band Techniques Credits: 2 (2-0-0)
Course Description: Marching band conducting, design, and performance techniques.
Prerequisite: MU 204.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 421 Orchestral Techniques Credits: 2 (1-3-0)
Course Description: Orchestral conducting and rehearsal techniques.
Prerequisite: MU 252C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 425 Jazz Pedagogy Credits: 2 (2-0-0)
Course Description: Jazz ensemble, instrumentation, literature, performance practice and rehearsal techniques.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 430 20th Century Music Credits: 3 (3-0-0)
Course Description: Musical styles from 1900 to present; major 20th-century movements which reflect a changing society.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 431 American Music Credits: 3 (3-0-0)
Course Description: Sacred, patriotic, popular, and cultivated musical developments from the Pilgrims to 1900 including music on the Western frontier.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 432 Hymnology Credits: 2 (2-0-0)
Course Description: Hymns and congregational singing in the Christian tradition.
Prerequisite: MU 100 or MU 131.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 433 Music and Rites of Christian Liturgy Credits: 2 (2-0-0)
Course Description: History of the music and rites of Christian liturgy from its beginnings to the present.
Prerequisite: MU 100 or MU 131.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 434 Psalms in Music and Liturgy Credits: 2 (2-0-0)
Course Description: Musical traditions of the poetry and psalms of the Hebrew Bible, primarily from the perspective of Jewish and Christian liturgy.
Prerequisite: MU 100 or MU 131.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 435 Contemporary Liturgical Music in America Credits: 2 (2-0-0)
Course Description: History and practice of contemporary liturgical music in America.
Prerequisite: MU 100 or MU 131.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 437 History and Structure of the Organ Credits: 2 (1-2-0)
Course Description: Physical structure, tonal disposition, acoustical surroundings, and historical development.
Prerequisite: MU 472H.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 440 Music Therapy Methods I Credits: 3 (3-0-0)
Course Description: Relation of music to the needs of developmental and aging populations; Techniques for formulating objectives, designing and implementing programs, and evaluation.
Prerequisite: MU 241 and MU 250.
Registration Information: Admission to professional curriculum.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 443 Music Therapy Methods II Credits: 3 (3-0-0)
Course Description: Relation of music to health; current and future music therapy scenes; and emphasis on cognitive, affective, and psychomotor approaches to therapy.
Prerequisite: MU 440.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 444 Music Therapy Methods III Credits: 3 (3-0-0)
Course Description: Music therapy techniques: assessment, formulating objectives, designing and implementing programs, evaluation, problem solving, and creativity.
Prerequisite: BMS 300 and MU 443.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 445 Improvisation Techniques in Music Therapy Credits: 2 (2-0-0)
Course Description: Music/movement improvisation techniques with clinical populations.
Prerequisite: None.
Registration Information: Admission to professional curriculum.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 450 Style and Performance Practice in Singing Credits: 2 (2-0-0)
Course Description: An exploration of period-appropriate stylistic guidelines for singers in both art song and operatic repertoire. Involves both lecture components, and in-class performance, critique, and evaluation. Intended primarily for vocalists.
Prerequisite: MU 472 or MU 672.
Registration Information: Sophomore standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 451A String Pedagogy III: Violin Credits: 2 (1-2-0)
Course Description:
Prerequisite: MU 352A.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 451B String Pedagogy III: Violoncello Credits: 2 (1-2-0)
Course Description:
Prerequisite: MU 352B.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 451C String Pedagogy III: String Bass Credits: 2 (1-2-0)
Course Description:
Prerequisite: MU 352C.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 463 String Chamber Music Literature Credits: 2 (2-0-0)
Course Description: Chamber music literature from 1750 to present.
Prerequisite: MU 335.
Grade Mode: Traditional.
Special Course Fee: No.

MU 464A String Literature: Violin/Viola Credits: 2 (2-0-0)
Course Description:
Prerequisite: MU 272N or MU 272O.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 464B String Literature: Violoncello Credits: 2 (2-0-0)
Course Description:
Prerequisite: MU 272P.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 464C String Literature: String Bass Credits: 2 (2-0-0)
Course Description:
Prerequisite: MU 272M.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 465 Keyboard Literature Credits: 2 (1-2-0)
Course Description: Survey of early keyboard literature from pre-piano to early Romantic period; problems in present-day performance.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 466 Song Literature Credits: 2 (1-2-0)
Course Description: Development of song as an art form from monody to German Lieder, French school, and contemporary songs of England and America.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 467 Vocal Pedagogy Credits: 2 (2-0-0)
Course Description: Pedagogical foundations, techniques, resources, methods, and terminology for teaching singing.
Prerequisite: MU 265A and MU 265B.
Registration Information: Must have concurrent registration in MU 472Q.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 468 Organ Literature Credits: 2 (1-2-0)
Course Description: Survey of literature from earliest known works to present; stylistic content and interpretation.
Prerequisite: MU 437.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 469 Instrumental Literature Credits: 2 (1-2-0)
Course Description: Survey of literature for string, woodwind, and brass ensembles.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 471 Recital Credit: 1 (0-0-1)
Course Description: Demonstration of individual musical proficiency through public performance.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472A Applied Music Instruction: Euphonium Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272A.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472B Applied Music Instruction: French Horn Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272B.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472C Applied Music Instruction: Trombone Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272C.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472D Applied Music Instruction: Trumpet Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272D.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472E Applied Music Instruction: Tuba Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272E.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472G Applied Music Instruction: Harpsichord Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272G.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472H Applied Music Instruction: Organ Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272H.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472I Applied Music Instruction: Piano Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272I.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472J Applied Music Instruction: Percussion Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272J.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472K Applied Music Instruction: Guitar Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272K.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472L Applied Music Instruction: Harp Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272L.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472M Applied Music Instruction: String Bass Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272M.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472N Applied Music Instruction: Viola Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272N.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472O Applied Music Instruction: Violin Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272O.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472P Applied Music Instruction: Violoncello Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272P.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472Q Applied Music Instruction: Voice Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272Q.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472R Applied Music Instruction: Bassoon Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272R.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472S Applied Music Instruction: Clarinet Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272S.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472T Applied Music Instruction: Flute Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272T.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472U Applied Music Instruction: Oboe Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272U.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472V Applied Music Instruction: Saxophone (Alto) Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272V.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 473 Composition Instruction Credits: Var[1-2] (0-0-0)
Course Description: One or two-half hour lessons per week; emphasizing pedagogical methods.
Prerequisite: MU 273.
Registration Information: Must have successful completion of upper-division qualifying exam.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 474 Applied Jazz Instruction Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering advanced aspects of jazz improvisation and performance.
Prerequisite: MU 274A to 274G.
Registration Information: MU 274 (any one subtopic); concurrent registration in any jazz ensemble; successful completion of upper division qualifying exam.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 486A Practicum: Music Therapy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Piano proficiency.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 486B Practicum: Music Education Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to teacher licensure.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 487 Internship Credits: Var[1-18] (0-0-0)
Course Description: Six-month field experience that students must complete to become eligible for registration and board certification.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MU 495A Independent Study: Composition and Theory Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 495B Independent Study: Conducting Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 495C Independent Study: Improvisation Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 495D Independent Study: Music History Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 495E Independent Study: Music Literature Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 495F Independent Study: Music Therapy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 495G Independent Study: Pedagogy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 495H Independent Study: Performance Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

MU 496A Group Study: Composition and Theory Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 496B Group Study: Conducting Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 496C Group Study: Improvisation Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 496D Group Study: Music Education Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 496E Group Study: Music History Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 496F Group Study: Music Literature Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 496G Group Study: Music Therapy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 496H Group Study: Pedagogy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 496I Group Study: Performance Credits: Var[1-3] (0-0-0)
Prerequisite: None.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 498 Research in Music Therapy Credits: Var[1-3] (0-0-0)
Course Description: Participation of undergraduate music therapy majors in departmental research projects.
Prerequisite: MU 241 and MU 286.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 499 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Music majors only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MU 510 Foundations of Music Education Credits: 3 (3-0-0)
Course Description: Cultural, philosophical, psychological, and historical applications of music education.
Prerequisite: MU 630 or EDRM 600.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 511 Advanced Arranging for Educational Ensembles Credits: 3 (3-0-0)
Course Description: Arranging and scoring skills related to elementary, choral, wind band, orchestral, and jazz ensembles in K-12 music classrooms. Publishing concerns and intellectual property rights related to both composing and arranging for educational ensembles.
Prerequisite: MU 318.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 512 Pedagogy of Musical Creativity Credits: 3 (3-0-0)
Course Description: Theory and application of creative musical skills as applied in K-12 music classrooms. Includes pedagogy of improvisation and composition, pedagogy of music theory and aural skills, and the application of original creative works in music classrooms.
Prerequisite: MU 317.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 517 Analytic Techniques I Credits: 2 (2-0-0)
Course Description: Appropriate analytic techniques for Middle Ages, Renaissance, and baroque music.
Prerequisite: None.
Registration Information: Satisfactory completion of placement examination.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 518 Analytic Techniques II Credits: 3 (3-0-0)
Course Description: Appropriate analytic techniques for classical, Romantic, and 20th-century music.
Prerequisite: None.
Registration Information: Satisfactory completion of placement examination. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 519 History of Music Theory Credits: 3 (3-0-0)
Course Description: Important authors, treatises, and texts dealing with acoustics, composition, counterpoint, harmony, notation, orchestration, thoroughbass, and tuning.
Prerequisite: MU 317.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 520 Elementary School Music Credits: 3 (3-0-0)
Course Description: Musical concepts and teaching strategies for grades K-6; contemporary influences on music education.
Prerequisite: EDUC 450.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 521 Junior and Senior High School Music Credits: 3 (3-0-0)
Course Description: Music for grades 7-12. General music classes, choral and instrumental organizations, common problems, practices, and new concepts.
Prerequisite: EDUC 450.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 524 Dalcroze Eurhythmics. Level I Credits: 3 (1-4-0)
Course Description: Musicianship, aesthetics, and pedagogy as studied through the body via movement and gesture.
Prerequisite: None.
Registration Information: Admission to the M.M. Music Education specialization.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MU 525A Orff-Schulwerk Training Program: I Credits: 3 (1-0-2)
Course Description:
Prerequisite: MU 590L.
Registration Information: Must register for lecture and recitation.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 525B Orff-Schulwerk Training Program: II Credits: 3 (1-0-2)
Course Description:
Prerequisite: MU 590L.
Registration Information: Must register for lecture and recitation.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 525C Orff-Schulwerk Training Program: III Credits: 3 (1-0-2)
Course Description:
Prerequisite: MU 590L.
Registration Information: Must register for lecture and recitation.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 526A Kodaly Training Program: Level I Credits: 5 (2-2-2)
Course Description:
Prerequisite: None.
Registration Information: Must register for lecture, laboratory and recitation.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 526B Kodaly Training Program: Level II Credits: 5 (2-2-2)
Course Description:
Prerequisite: None.
Registration Information: Must register for lecture, laboratory and recitation.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 526C Kodaly Training Program: Level III Credits: 5 (2-2-2)
Course Description:
Prerequisite: None.
Registration Information: Must register for lecture, laboratory and recitation.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 527A Conducting Seminar: Level I Credits: 4 (0-0-4)
Course Description: Music score analysis, preparation and conducting problems; various conducting projects to sharpen skills and increase gestures.
Prerequisite: None.
Registration Information: Audition and acceptance into the graduate school. Required field trips.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

MU 527B Conducting Seminar: Level 2 Credits: 4 (0-0-4)
Course Description: Furthers techniques learned in MU 527A; focuses on rehearsal techniques, performance practice, and asymmetrical meters.
Prerequisite: MU 527A.
Registration Information: Required field trips.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

MU 527C Conducting Seminar: Level 3 Credits: 4 (0-0-4)
Course Description: Furthers study from MU 527A-B.
Recitative technique through both operatic and choral examples; final project is a group conducted Broadway musical.
Prerequisite: MU 527B.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

MU 530 Music Through the Middle Ages Credits: 3 (3-0-0)
Course Description: Music in Western civilization from its beginnings through Middle Ages.
Prerequisite: MU 334.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 531 Music of the Renaissance Credits: 3 (3-0-0)
Course Description: Music of 15th and 16th centuries.
Prerequisite: MU 334.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 532 Music of the Baroque Credits: 3 (3-0-0)
Course Description: Style and musical language of baroque from Gabriellis through Johann Sebastian Bach.
Prerequisite: MU 334.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 533 Music of the Classical Era Credits: 3 (3-0-0)
Course Description: Vocal and instrumental music of middle and late 18th century.
Prerequisite: MU 335.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 534 Music of the Romantic Era Credits: 3 (3-0-0)
Course Description: Musical works, philosophies, and related arts of 19th century.
Prerequisite: MU 335.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 535 Music of the Twentieth Century Credits: 3 (3-0-0)
Course Description: Twentieth-century music emphasizing cultural, stylistic, and theoretical concepts.
Prerequisite: MU 335.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 543 Advanced Research Methods in Music Therapy Credits: 3 (3-0-0)
Course Description: Research techniques used in measuring and recording behavior. Advanced methods used in music therapy research.
Prerequisite: MU 241 and MU 250.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 544 Advanced Techniques-Neurologic Music Therapy Credits: 3 (3-0-0)
Course Description: Advanced neurologic music therapy techniques used with various clinical populations.
Prerequisite: BMS 300 and MU 443.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 545 Composition for Music Therapy Practitioners Credits: 3 (2-2-0)
Course Description: Music composition techniques for the music therapy clinician.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 550 Social Psychology of Music Learning Credits: 3 (0-0-3)
Course Description: Sociological and psychological theories and issues related to contemporary music education contexts. Apply theory into practice through observation and practicum assignments with public and private education institutions.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Bachelor's degree required. Admission to the Master of Music Education program.
Grade Mode: Traditional.
Special Course Fee: No.

MU 551 Curriculum and Assessment of Music Learning Credits: 3 (0-0-3)
Course Description: Examine and apply research related to curriculum development and assessment of student learning to contemporary music education contexts. Emphasizes tenets related to human intelligence and learning, measurement of student learning, and educational policy from the world (UNESCO) and local perspectives (school districts/state mandates).
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Written consent of instructor.
Grade Mode: Traditional.
Special Course Fee: No.

MU 555 Choral Techniques, Style, and Interpretation Credits: 3 (3-0-0)
Course Description: Techniques for achieving expressive conducting, problems of tone and diction, musical style and interpretation, and rehearsal techniques.
Prerequisite: MU 355.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 556 Advanced Instrumental Conducting and Techniques Credits: 3 (3-0-0)
Course Description: Score reading and analysis, preparation of instrumental scores for performance; expressive baton techniques, rehearsal methods and procedures.
Prerequisite: MU 356.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 557 Advanced Vocal Pedagogy Credits: 2 (2-0-0)
Course Description: Diagnosis of vocal faults and introduction to performance anxiety barriers and peak performance tactics.
Prerequisite: MU 467.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 564 Collaborative Piano Literature Credits: 3 (3-0-0)
Course Description: Literature and historical performance practices of collaborative piano music.
Prerequisite: None.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 565 Piano Literature-1800 to Present Credits: 2 (2-0-0)
Course Description: Keyboard music representing Romantic and Impressionistic periods, nationalism, twelve-tone, and recent developments including aleatory elements.
Prerequisite: MU 465.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 566 Choral Literature-Renaissance and Baroque Credits: 2 (2-0-0)
Course Description: Analytical and comparative survey of choral literature from Renaissance to 1750.
Prerequisite: MU 355.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 567 Choral Literature-1750 to Present Credits: 2 (2-0-0)
Course Description: Analytical and comparative survey of choral literature from 1750 to present.
Prerequisite: MU 356.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 569 Symphonic Literature Credits: 2 (1-2-0)
Course Description: Symphonic development from early classicism through Impressionism; emphasis on formal structure, thematic sources, and social and historical influence.
Prerequisite: MU 469.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 590A Workshop: Choral Music Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590B Workshop: Conducting Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590C Workshop: Beginning Guitar Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590D Workshop: Humanities Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590E Workshop: Music for Exceptional Children Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590F Workshop: Organ Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590G Workshop: Orff Music Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590I Workshop: Kodaly Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590J Workshop: Beginning Handbells Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590K Workshop: Computers in Music Education Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590L Workshop: Advanced Handbells Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590N Workshop: Neurologic Music Therapy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 592A Seminar: Music Theory Credits: Var[1-3] (0-0-0)
Course Description: Special Topics in Music Theory.
Prerequisite: None.
Registration Information: Graduate standing. May be repeated up to three times for credit.
Grade Mode: Traditional.
Special Course Fee: No.

MU 592D Seminar: Music Education Credits: Var[1-3] (0-0-0)
Course Description: Special Topics in Music Education.
Prerequisite: None.
Registration Information: Graduate standing. May be repeated up to three times for credit.
Grade Mode: Traditional.
Special Course Fee: No.

MU 592E Seminar: Music History Credits: Var[1-3] (0-0-0)
Course Description: Special topics in Music History.
Prerequisite: MU 334 and MU 335.
Registration Information: May be repeated up to three times for credit.
Grade Mode: Traditional.
Special Course Fee: No.

MU 608 Graduate Chamber Music Credit: 1 (0-3-0)
Course Description: Graduate-level performance literature for small instrumental ensembles: duets, trios, quartets, and quintets.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing; audition required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 630 Methods of Music Research Credits: 3 (3-0-0)
Course Description: Research, documentation, and bibliography for music history, literature, performance, theory, acoustics, music education, and quantitative testing.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 647 Historical Foundations of Music Therapy Credits: 3 (3-0-0)
Course Description: Historical foundations of music therapy in the United States from 1750 to the present.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 648 Neuroscience/Music Foundations in Therapy Credits: 3 (3-0-0)
Course Description: Historical and scientific foundations of neurologic music therapy.
Prerequisite: MU 544.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 649 Advanced Practice in Music Therapy Credits: 3 (0-0-3)
Course Description: Group study of advanced music therapy techniques.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Graduate School. Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 669 Instrumental Literature Credits: 2 (2-0-0)
Course Description: Solo and small ensemble literature for string, woodwind, and brass instruments.
Prerequisite: MU 469.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 671 Graduate Recital Credit: 1 (0-0-1)
Course Description: Demonstration of graduate-level applied musical proficiency through public performance.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672A Applied Music Instruction: Euphonium Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472A.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672B Applied Music Instruction: French Horn Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472B.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672C Applied Music Instruction: Trombone Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472C.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672D Applied Music Instruction: Trumpet Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472D.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672E Applied Music Instruction: Tuba Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472E.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672G Applied Music Instruction: Harpsichord Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472G.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672H Applied Music Instruction: Organ Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472H.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672I Applied Music Instruction: Piano Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472I.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672J Applied Music Instruction: Percussion Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472J.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672K Applied Music Instruction: Guitar Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472K.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672L Applied Music Instruction: Harp Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472L.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672M Applied Music Instruction: String Bass Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472M.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672N Applied Music Instruction: Viola Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472N.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672O Applied Music Instruction: Violin Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472O.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672P Applied Music Instruction: Violoncello Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472P.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672Q Applied Music Instruction: Voice Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472Q.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672R Applied Music Instruction: Bassoon Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472R.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672S Applied Music Instruction: Clarinet Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472S.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672T Applied Music Instruction: Flute Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472T.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672U Applied Music Instruction: Oboe Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472U.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672V Applied Music Instruction: Saxophone (Alto) Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472V.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 673 Composition Instruction Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week.
Prerequisite: MU 473.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 684 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Supervised assistance in instruction.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 686 Music Therapy Practicum Credits: 3 (0-6-0)
Course Description: Clinical practicum for graduate music therapy students.
Prerequisite: MU 486A - at least 6 credits.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 692 Seminar Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 692G Seminar: Music Therapy Credits: 3 (0-0-3)
Course Description: Seminar on advanced topics in music therapy methods, techniques, and philosophy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 695A Independent Study: Composition and Theory Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695B Independent Study: Conducting Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695C Independent Study: Improvisation Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695D Independent Study: Music Education Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695E Independent Study: Music History Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695F Independent Study: Music Literature Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695G Independent Study: Music Therapy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695H Independent Study: Pedagogy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696A Group Study: Composition and Theory Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696B Group Study: Conducting Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696C Group Study Improvisation Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696D Group Study: Music Education Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696E Group Study: Music History Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696F Group Study: Music Literature Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696G Group Study: Music Therapy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696H Group Study: Pedagogy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696I Group Study: Performance Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 698 Research Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Natural Resources-NR (NR)

Courses

NR 120A Environmental Conservation (GT-SC2) Credits: 3 (3-0-0)
Course Description: Overview of natural resources environmental concerns including population, pesticides, energy, and pollution.
Prerequisite: None.
Registration Information: Credit not allowed for both NR 120A and NR 120B. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

NR 120B Environmental Conservation Credits: 4 (3-3-0)
Course Description: Overview of natural resources environmental concerns including population, pesticides, energy, and pollution.
Prerequisite: None.
Registration Information: Participation in the University Honors Program required. Must register for lecture and laboratory. Credit not allowed for both NR 120B and NR 120A.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 130 Global Environmental Systems (GT-SC2) Credits: 3 (3-0-0)
Course Description: Studies of the Earth's lithosphere, hydrosphere, atmosphere, and biosphere systems and their interrelations with human dimensions.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

NR 150 Oceanography (GT-SC2) Credits: 3 (3-0-0)
Course Description: Introduction to the geology, physics, chemistry, and biology of the world ocean; oceanic relationships with various human dimensions.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

NR 182C Study Abroad: Oceanography Lab Credit: 1 (0-0-1)
Course Description: Witness first-hand the dynamic interactions between the ocean and land that shape the Baja California peninsula, separating the Sea of Cortez and the Pacific Ocean. The Sea of Cortez is one of the most diverse seas on Earth with a wide range of endemic and migratory species. The nutrient-rich Pacific Ocean is home to kelp beds and sandy beaches. Learn field-sampling techniques and explore various marine ecosystems.
Prerequisite: NR 150.
Registration Information: Written consent of instructor. The students go through an application process for education abroad and consent of the instructor is needed. Students need a minimum of a 2.5 GPA per Education Abroad standards.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 192 First Year Seminar in Environmental Studies Credits: 2 (0-0-2)
Course Description: Introduction to the disciplines involved in natural resources through exposure to current issues.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 193 FRS First Semester Seminar Credit: 1 (0-0-1)
Course Description: A first semester seminar for all new, incoming freshmen and transfer students with a major in the Department of Forest and Rangeland Stewardship. Students will be given an introductory overview of their field of study, while being introduced to departmental policies and processes, university resources with assistance from guest speakers, and possible career paths in their field with current professionals and class field trips.
Prerequisite: None.
Registration Information: Must be enrolled in one of the following majors: Forestry, Natural Resources Management, Rangeland Ecology, Forestry and Rangeland Stewardship, or Restoration Ecology. This is a partial semester course. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 220 Natural Resource Ecology and Measurements Credits: 5 (2-6-0)
Course Description: Ecology of Rocky Mountains ecosystems. Basic measurements and integrated management of natural resources.
Prerequisite: (BZ 110 and BZ 111 or BZ 120 or LIFE 103) and (MATH 118 or MATH 141 to 161 or MATH 229 to 499).
Registration Information: Required residence at CSU Mountain Campus. Must register for lecture and laboratory.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

NR 300 Biological Diversity Credits: 3 (3-0-0)
Course Description: Biological diversity examined in context of species; extinction. Principles, techniques of conservation biology utilized to understand and resolve issues.
Prerequisite: NR 120A or NR 120B or BZ 100 to 499 - at least 1 course or LIFE 100 to 499 - at least 1 course.
Registration Information: Credit allowed for only one of the following: FW 455, FW 555, or NR 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

NR 310 Ecosystem Services and Human Well-Being Credits: 3 (3-0-0)
Course Description: Life-supporting and life-fulfilling benefits that nature provides to humans; theory, case studies, and policy.
Prerequisite: AREC 202 or ECON 202 or LAND 220 or LIFE 220 or ESS 211.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 319 Geospatial Applications in Natural Resources Credits: 4 (2-4-0)
Course Description: Introduction to global positioning systems (GPS), geographic information systems (GIS) and remote sensing (RS) with natural resource applications.
Prerequisite: None.
Restriction: Must be a: Junior.
Registration Information: Junior standing. Must register for lecture and laboratory. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 320 Natural Resources History and Policy Credits: 3 (3-0-0)
Course Description: History, values and institutions, and policy process guiding natural resources management and conservation.
Prerequisite: None.
Registration Information: Junior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 322 Introduction to Geographic Information Systems Credits: 4 (2-4-0)
Course Description: Fundamental concepts of spatial data handling and computer-assisted map analysis.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both NR 322 and GR 420.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 323 Remote Sensing and Image Interpretation Credits: 3 (2-2-0)
Also Offered As: GR 323.
Course Description: Remote sensing systems and applications; characteristics of photographic, scanner and radar images; imagery interpretation.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: NR 323, NR 503, GR 323, GR 503.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 326 Forest Vegetation Management Credits: 3 (3-0-0)
Course Description: Ecologically-based management to restore and manage forests.
Prerequisite: NR 220.
Registration Information: Credit not allowed for both NR 326 and F 325.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 330 Human Dimensions in Natural Resources Credits: 3 (3-0-0)
Course Description: Social, political, cultural, and economic considerations in natural resource management.
Prerequisite: NR 120A or NR 120B.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 353 Global Change Ecology, Impacts and Mitigation Credits: 3 (3-0-0)
Also Offered As: BZ 353.
Course Description: Ecological impacts of human-induced global change, and the strategies that can/are being used to adapt to and mitigate these impacts.
Prerequisite: LIFE 320 or LIFE 220 or LAND 220.
Registration Information: Credit not allowed for both NR 353 and BZ 353.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 355 Contemporary Environmental Issues Credits: 3 (3-0-0)
Course Description: Fundamental concepts of energy, population, and ecology applied to range of contemporary environmental issues.
Prerequisite: BIO 100 to 481 - at least 1 course or BZ 100 to 481 - at least 1 course or LIFE 100 to 481 - at least 1 course.
Registration Information: Written consent of instructor can substitute for biology course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 365 Environmental Education Credits: 3 (3-0-0)
Course Description: Principles of interpretation related to natural resource management and public informal education.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 367 Concepts in Vertebrate Nutrition Credits: 3 (3-0-0)
Course Description: Concepts in suborganismal and organismal vertebrate nutrition; introduction to nutritional ecology.
Prerequisite: CHEM 245.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 370 Coastal Environmental Ecology Credits: 3 (3-0-0)
Course Description: Sensitive and complex coastal area environments and the effects of accelerated change on and offshore caused by human activities.
Prerequisite: CHEM 107 or CHEM 113.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 375 Environment and Natural Resources Leadership Credit: 1 (1-0-0)
Course Description: Environment and natural resources leadership history, skills, and styles. Creation of leadership path and organization prescriptions.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 377 Pre-Internship Credit: 1 (1-0-0)
Course Description: Designed to prepare majors in Natural Resource Tourism and Human Dimensions of Natural Resources for experiential learning.
Prerequisite: None.
Registration Information: Sophomore standing. Sections may be offered: Online. Credit not allowed for both NR 377 and NR 387.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 380 Spatial Analysis of Social Data Credits: 3 (2-2-0)
Course Description: Spatial analysis and analysis of socio-economic data; common themes related to land use and landscape change, parks & protected areas, and global tourism.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 382A Travel Abroad: Social-Ecological Field Methods in Kenya Credits: 5 (0-0-5)
Course Description: Social and ecological field methods commonly used in natural resource management.
Prerequisite: (BZ 110 and BZ 111 or BZ 120 or LIFE 103) and (MATH 118 or MATH 141 to 161 - at least 1 course or MATH 229 to 99999 - at least 1 course).
Registration Information: Study Abroad in Kenya.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 382B Travel Abroad: Social-Ecological Field Methods in Belize Credits: 5 (0-0-5)
Course Description: Social and ecological field methods commonly used in natural resource management.
Prerequisite: (BZ 110 and BZ 111 or BZ 120 or LIFE 103) and (MATH 118 or MATH 141 to 161 - at least 1 course or MATH 229 to 99999 - at least 1 course).
Registration Information: Study Abroad in Belize.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 383 U.S. Travel-Integrated Resource Management Credits: 2 (0-2-1)
Also Offered As: AGRI 383.
Course Description: Evaluation of integrated ranch management decision alternatives in conjunction with professional resource managers.
Prerequisite: None.
Registration Information: Must register for laboratory and recitation. Credit not allowed for both NR 383 and AGRI 383. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 400 Public Communication in Natural Resources Credits: 3 (1-0-2)
Course Description: Examine how public communication shapes opinion and understanding of natural resource issues. Combines study of key communication concepts with experiential projects, including critique of a public hearing and creation of media products. Through readings, case studies, and assignments, analyze approaches for effective public communication. Design brochures, websites, videos, etc., eventually collaborating in teams with real-life 'clients'.
Prerequisite: CO 300 or CO 301B or CO 301C or JTC 300 or LB 300.
Registration Information: Junior standing. Must register for lecture and recitation. Sections may be offered: Online or Mixed Face-to-Face.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 401 Techniques in Public Relations Credits: 2 (0-4-0)
Course Description: Effective communications methods related to natural resource professions; preparation of graphics, organization of programs using slide show format.
Prerequisite: SPCM 200.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

NR 420 Integrated Ecosystem Management Credits: 4 (3-3-0)
Course Description: Natural resource management exercises; quantitative integration techniques, group dynamics.
Prerequisite: (LAND 220 or LIFE 220 or LIFE 320) and (NR 220) and (NR 319 or NR 322) and (NR 320).
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

NR 421 Natural Resources Sampling Credits: 3 (3-0-0)
Course Description: Designs, techniques, problems in sampling natural resource populations; analysis, interpretation of data.
Prerequisite: (STAT 201 or STAT 301) and (NR 220).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 422 GIS Applications in Natural Resource Management Credits: 4 (2-4-0)
Course Description: Development and implementation of GIS projects and problems in spatial data analysis.
Prerequisite: NR 322 or NR 319.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 423 Applications of Global Positioning Systems Credit: 1 (.5-1-0)
Course Description: Introduction to concepts and use of global positioning systems with applications to natural resources.
Prerequisite: NR 322 or NR 505.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 425 Natural Resource Policy and Sustainability Credits: 3 (3-0-0)
Course Description: Principles, concepts, and operating examples of sustainable resource management with a concentration on forest policies and practices.
Prerequisite: NR 320.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 426 Programming for GIS I Credits: 2 (2-0-0)
Course Description: Fundamentals and applications of programming techniques for geospatial data management and analysis. Introduction to basic computer programming concepts used in a GIS environment. Develop the programming skills needed to create scripts for automating GIS data management and analysis. Emphasize best practices for writing code, error handling, and demonstrates how to share and publish scripts.
Prerequisite: GR 420 or NR 319 or NR 322.
Registration Information: This is a partial semester course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 427 Programming for GIS II Credits: 2 (2-0-0)
Course Description: Applications and advanced topics in programming techniques for geospatial data management and analysis.
Prerequisite: NR 426, may be taken concurrently.
Registration Information: This is a partial semester course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 432 Foundations of National Forest Lands Program Credit: 1 (0-0-1)
Course Description: History of U.S. public land law and evolution of National Forests. Nature, policy, trend, and needs of lands program; its integration into management.
Prerequisite: None.
Registration Information: Written consent of instructor. Offered as correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 433 Special Uses Management Credits: 4 (0-0-4)
Course Description: Authorities, application, and administration; agriculture, aviation, community, public information, industrial, water, treasure trove, and cultural uses.
Prerequisite: None.
Registration Information: Written consent of instructor required. Offered as correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 434 Linear Uses and FERC Licenses Credits: 3 (0-0-3)
Course Description: Rights-of-way authorities and management; road and trail grants and easements; communication uses; Federal Energy Regulatory Commission licenses.
Prerequisite: None.
Registration Information: Written consent of instructor. Offered as correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 435 Valuation and Landownership Adjustment Credits: 5 (0-0-5)
Course Description: Authorities, coordination, valuation, title; land purchase, donation, exchange, interchange, transfers, sales, condemnation, and negotiation.
Prerequisite: None.
Registration Information: Written consent of instructor. Offered as correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 436 Right-of-Way Acquisition Credits: 3 (0-0-3)
Course Description: Need, authority, policy, planning, acquiring, negotiating, and managing rights-of-way; cost-share agreements.
Prerequisite: None.
Registration Information: Written consent of instructor required. Offered as correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 437 Boundaries, Status, Claims, and Withdrawals Credits: 3 (0-0-3)
Course Description: Administration of landownership status, title encumbrances, withdrawals, title claims, Native American rights and claims, property boundary management.
Prerequisite: None.
Registration Information: Written consent of instructor. Offered as correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 440 Applications in Conservation Planning Credits: 3 (2-0-1)
Course Description: Conservation planning method applications that integrate natural resources by conservation organizations and government agencies.
Prerequisite: NRRT 340.
Registration Information: Required field trips. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 444 Fire Economics and Policy Credits: 3 (3-0-0)
Course Description: Development of wildlife and fuel management economics integrated with critical federal policies.
Prerequisite: ECON 202 or AREC 202.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 460 Wilderness Management Credits: 3 (3-0-0)
Course Description: Management of wilderness in the U.S. National Wilderness Preservation System and equivalent international wildlands.
Prerequisite: (LAND 220 or LIFE 220) and (NRRT 231).
Registration Information: Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 479 Restoration Case Studies Credits: 2 (0-2-1)
Course Description: Analysis and evaluation of ecological restoration projects.
Prerequisite: (LAND 220 or LIFE 220 or LIFE 320) and (F 311 or NR 326 or RS 300).
Registration Information: Written consent of instructor required. Must register for laboratory and recitation. Field trips occur one week prior to first day of semester. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

NR 482A Study Abroad--Chile: Energy Transition Credits: 3 (0-0-3)
Course Description: Understanding energy transition in a middle income country. Consideration of historical and current energy transitions.
Prerequisite: None.
Registration Information: Sophomore standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 484 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

NR 492 Seminar on Environmental Conservation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NR 493 Seminar on GIS and Remote Sensing Applications Credit: 1 (0-0-1)
Course Description: Techniques, use of remote sensing, GIS technologies for forest, range, wildlife, water, geology, recreation, and other resource management applications.
Prerequisite: NR 322 or NR 323.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

NR 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NR 501 Leadership and Public Communications Credits: 3 (0-0-3)
Course Description: Two-way communication skills used to involve publics, write for various media, and understand role of leadership within natural resources profession.
Prerequisite: (NR 100 to 481 - at least 1 course) and (CO 100 to 481 - at least 1 course or JTC 100 to 481 - at least 1 course or SPCM 100 to 481 - at least 1 course).
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 503 Remote Sensing and Image Analysis Credits: 4 (3-3-0)
Also Offered As: GR 503.
Course Description: Interpretation and analysis of photographic, multispectral scanner, and radar data; sensor systems; applications to resource management.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: GR 323, GR 503, NR 323, or NR 503.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 504 Computer Analysis of Remote Sensing Data Credits: 4 (2-6-0)
Course Description: Computer-aided analysis techniques for extracting resource information from aerial and satellite remote sensing data.
Prerequisite: NR 323 or NR 503.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 505 Concepts in GIS Credits: 4 (2-4-0)
Course Description: Concepts of geographic information systems and spatial data analysis.
Prerequisite: STAT 301 or STAT 511A.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 506 GIS Methods for Resource Management Credits: 4 (2-4-0)
Course Description: Current methods in applied geographic information systems and spatial data analysis.
Prerequisite: NR 505.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 510 Ecosystem Services--Theory and Practice Credits: 3 (3-0-0)
Course Description: Theory and application of ecosystem services drawing upon ecological, economic, and institutional analysis.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 512 Spatial Statistical Modeling-Natural Resources Credits: 3 (3-0-0)
Course Description: Statistical techniques used to model natural and environmental resources; GIS, remote sensing, and spatial statistics.
Prerequisite: STAT 301 and NR 322 and NR 323.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 515 Natural Resources Policy and Biodiversity Credits: 3 (0-0-3)
Course Description: Review evolution of natural resource policy, administration, and law emphasizing interdisciplinary concept of managing for biodiversity.
Prerequisite: POLS 100 to 481 - at least 1 course and NR 100 to 281 - at least 1 course.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 522 Wilderness Ecosystem Planning Credits: 3 (0-6-0)
Course Description: Expertise developed in preparing effective implementation plans for park and wilderness ecosystems.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 523 Quantitative Spatial Analysis Credits: 3 (3-0-0)
Also Offered As: STAT 523.
Course Description: Techniques in spatial analysis: point pattern analysis, spatial autocorrelation, trend surface and spectral analysis.
Prerequisite: ERHS 307 or STAT 301 or STAT 307.
Registration Information: Credit not allowed for both NR 523 and STAT 523.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 525 World Natural Resources Credits: 3 (3-0-0)
Course Description: Interdisciplinary approach to overview global problems and solutions in natural resources.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

NR 527 Methods-Human Dimensions of Natural Resources Credits: 3 (2-0-1)
Course Description: Human dimensions research in areas of problem identification, research process, survey methods, sampling, validity and reliability.
Prerequisite: None.
Registration Information: Required: B.S. degree; participant in Advancing Human Dimensions Expertise Among Fish and Wildlife Agencies training program. Must register for lecture and recitation.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 528 Analysis: Human Dimensions-Natural Resources Credits: 3 (2-2-0)
Course Description: Human dimensions analysis techniques: codebook development and data entry, univariate statistics, and bivariate/multivariate statistics.
Prerequisite: STAT 301 or STAT 307 or ERHS 307 or STAT 311 or STAT 315.
Registration Information: Required: B.S. degree; participant in Advancing Human Dimensions Expertise Among Fish and Wildlife Agencies training program. Must register for lecture and laboratory.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 529 Concepts: Human Dimensions-Natural Resources Credits: 2 (2-0-0)
Course Description: Concepts guiding human dimensions research: motivations/satisfactions, attitudes, values, attitude/behavior change and norms.
Prerequisite: None.
Registration Information: Required: B.S. degree; participant in Advancing Human Dimensions Expertise Among Fish and Wildlife Agencies training program.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 530 Human Dimensions Application Credit: 1 (1-0-0)
Course Description: Application of human dimensions information; incorporate information into decision-making process.
Prerequisite: None.
Registration Information: Required: B.S. degree; participant in Advancing Human Dimensions Expertise Among Fish and Wildlife Agencies training program.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 531 Public Participation Credit: 1 (1-0-0)
Course Description: Diagnostic tools for public involvement; appropriate methods for specific situations, issues, and stakeholders.
Prerequisite: None.
Registration Information: Required: B.S. degree; participant in Advancing Human Dimensions Expertise Among Fish and Wildlife Agencies training program.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 535 Action for Sustainable Behavior Credits: 3 (0-0-3)
Course Description: Review sustainability issues and develop solutions considering environments; economics; psychology; sociology; law and politics; and administration.
Prerequisite: None.
Registration Information: Graduate or senior standing; 1 course in human dimensions; 1 course in science. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 540A Environmental Issues: Water Resources Credits: 2 (1-2-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership Program; must have concurrent registration in NR 540A-D.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 540B Environmental Issues: Biological Diversity Credits: 2 (1-2-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership Program; must have concurrent registration in NR 540A-D.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 540C Environmental Issues: Ecologic Reconciliation Credits: 2 (1-2-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership Program; must have concurrent registration in NR 540A-D.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 540D Environmental Issues: Ecosystem Services Credits: 2 (2-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership Program; must have concurrent registration in NR 540A-D.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 541 Conservation Policy, Finance, and Governance Credits: 2 (2-0-0)
Course Description: Overview of conservation policy, finance and governance issues at the local, national, and international levels.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 542 Global Change and Conservation Credits: 2 (2-0-0)
Course Description: Potential ecological, societal, and economic impacts of global change across scales in the context of conservation.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 543A Catalyzing Change: Conflict and Conservation Credits: 2 (2-0-0)
Course Description: Communication, conflict management, group decision-making theories and tools to effectively create change in the field of conservation.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 543B Catalyzing Change: Collaborative Conservation Credits: Var[2-3] (0-0-0)
Course Description: Collaborative communication theories, methods and tools to effectively create change in the field of conservation.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 544A Conservation Methods: Watershed Sciences Credit: 1 (1-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 544B Conservation Methods: Ecological Sciences Credit: 1 (1-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 544C Conservation Methods: Social Sciences Credit: 1 (1-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 544D Conservation Methods: Spatial Information Credit: 1 (1-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 544E Conservation Methods: Integrative Field Work Credits: Var[2-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 545A Multilevel Views: Society and Conservation- Mexico Credits: 2 (2-0-0)
Course Description: Myriad and often opposing views of societal and environmental problems across cultures and across scales.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 545B Multilevel Views: Society and Conservation- Global Credits: 3 (3-0-0)
Course Description: Myriad and often opposing views of societal and environmental problems across cultures and across scales.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 546A Socioecological Context: Mexico Credits: 2 (2-0-0)
Course Description: Background for field site-specific conservation: ecosystems, peoples, politics, and development.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program. Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 546B Socioecological Context: Global Credits: 3 (3-0-0)
Course Description: Background for field site-specific conservation: ecosystems, peoples, politics, and development.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program. Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 547 Poverty and Sustainable Development Credits: 2 (2-0-0)
Course Description: Theoretical and methodological tools to analyze the interactions between poverty and sustainable development in the field site country.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 548A Conservation Planning and Management: Mexico Credits: 2 (2-0-0)
Course Description: Fundamental theories and management practices of protected areas in a global context.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 548B Conservation Planning and Management: Global Credits: 3 (3-0-0)
Course Description: Fundamental theories and management practices of protected areas in a global context.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program. Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 549A Conservation and Systems Leadership Credits: Var[1-3] (0-0-0)
Course Description: Conservation leadership development by exposure to leadership models, theories, case studies, assessments and trainings.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 549B Conservation and Systems Leadership: Field Credits: Var[1-3] (0-0-0)
Course Description: Effective environmental leadership across cultures through exposure to leadership models, theories, case studies, assessments and trainings.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 550 Sustainable Military Lands Management Credits: 3 (3-0-0)
Course Description: Overview of military lands in the U.S.–historical, geographical, environmental–and evolution of military lands as part of the federal lands system.
Prerequisite: None.
Registration Information: Completed undergraduate degree. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 551 Cultural Resource Management on Military Lands Credits: 3 (3-0-0)
Course Description: Intro to cultural resource laws and policies for broad range of heritage resources, prehistoric and historic, with emphasis on tools and techniques.
Prerequisite: NR 550.
Registration Information: Graduate standing. Offered as an online only course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 552 Ecology of Military Lands Credits: 3 (3-0-0)
Course Description: Landscape ecology of military lands with emphasis on ecological processes and principles as related to militarily-induced disturbances.
Prerequisite: NR 550.
Registration Information: Graduate standing. Offered as an online only course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 553 DoD Sustainable Building and Infrastructure Credits: 3 (3-0-0)
Course Description: Major components of sustainability and sustainable design on U.S. military installations.
Prerequisite: NR 550.
Restriction: Must be a: Graduate.
Registration Information: Bachelor's degree. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 554 Ecological and Social Agent-based Modeling Credits: 3 (2-2-0)
Also Offered As: ANTH 554.
Course Description: Exploring the use and making of agent-based models featuring interacting individuals in ecological and social simulation, with examples and projects.
Prerequisite: None.
Restriction: .
Registration Information: Junior or senior standing. Credit not allowed for both NR 554 and ANTH 554.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

NR 555 Preparation of Grant Proposals Credits: 2 (2-0-0)
Course Description: Idea development, preparation, writing, and presentation of research proposals in natural resources.
Prerequisite: (STAT 301) and (LAND 220 or LIFE 320 or NR 220 or LIFE 220).
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

NR 561 Habitat Evaluation Procedures Credits: 2 (2-0-0)
Course Description: Rationale, philosophy, and use of habitat as a mechanism for conducting environmental impact assessments.
Prerequisite: None.
Registration Information: General biological, natural resources, or planning course work.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NR 562 Ecosystem Services in a Changing World Credits: 3 (3-0-0)
Course Description: Understanding of ecosystem services and global change.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 563 Research Methods in Conservation--Global Credits: 4 (4-0-0)
Course Description: Reviews the contribution of fieldwork/research in addressing conservation issues, social and ecological data collection, and analysis methods.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 564 Systems Thinking and Biodiversity Credits: 3 (3-0-0)
Course Description: Social-ecological systems and the implication of social-ecological systems thinking for biological diversity conservation efforts.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership master's degree program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 565 Principles of Natural Resources Ecology Credits: 3 (3-0-0)
Course Description: Overview of ecological fundamentals examined from the perspective of forest, rangeland, wildlife and fisheries science and management.
Prerequisite: None.
Registration Information: Admission to the Master of Natural Resources Stewardship or written consent of instructor. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 566 Natural Resource Inventory and Data Analysis Credits: 3 (3-0-0)
Course Description: Sampling designs, implementation and analysis for inventory and monitoring of forests, rangelands, wetlands and streams.
Prerequisite: STAT 301 or STAT 311 or STAT 312.
Registration Information: Admission to the Master of Natural Resources Stewardship or written consent of instructor. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 567 Analysis of Environmental Impact Credits: 3 (3-0-0)
Course Description: Preparation and evaluation of environmental impact statements under NEPA.
Prerequisite: None.
Registration Information: Admission to the Masters of Natural Resources Stewardship degree program. Written consent of instructor can substitute for degree program requirement. Credit not allowed for both NR 567 and NR 622. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 568 Economics of Forests, Restoration and Fire Credits: 3 (3-0-0)
Course Description: Overview of basic microeconomics principles as applied to forestry, restoration, and wildland fire management.
Prerequisite: None.
Registration Information: Admission to the Master of Natural Resources Stewardship or written consent of instructor. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 569 Conservation Communication Fundamentals Credits: 2 (2-0-0)
Course Description: Communications and public relations theory as they relate to conservation issues and professionals. Successful conservation communication programs are outlined and discussed. Roles for communicators in conservation organizations are examined, including the relevance of outreach and education for conservation management. Audience analysis and diversity are emphasized for achieving goals in conservation communications planning.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 570 Conservation Managers – Media Communications Credits: 2 (2-0-0)
Course Description: Conservation communication roles, activities, and practices of the media are examined and analyzed. Critical relationships between the media and conservation practitioners and organizations are also examined. New directions and strategies in conservation communications are analyzed, including ways that conservation professionals can develop and take advantage of opportunities for collaboration with mass media outlets.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 571 New Media Communications for Conservation Credits: 2 (2-0-0)
Course Description: Fundamentals of new media, including digital and social media, and popular applications are introduced and evaluated with regard to their relevance for conservation communications. New and emerging digital media channels are discussed and evaluated relating to their use and relevance for conservation organizations and management outcomes. Conservation organizations and practitioners' use of social media for public information, education, and advocacy are also analyzed.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 572 Strategic Communications for Conservation Credits: 2 (2-0-0)
Course Description: Examines relevant conservation communications principles, research, and best practices for the development of strategic communications plans for conservation management programs and organizations.
Prerequisite: NR 569, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 573 Conservation Crisis Communications Credits: 2 (2-0-0)
Course Description: Examining and developing appropriate conservation communication strategies for conservation/environmental crisis response and recovery. Media, personal and other communications during near- and long-term planning scenarios are examined. Conservation management organizations' and practitioners' use of different messages and media platforms are also analyzed.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 574 Advanced Communications for Conservation Credits: 2 (2-0-0)
Course Description: Advanced communications responsibilities and strategies within conservation planning. Project-based conservation planning processes and mandated public planning processes are both examined.
Prerequisite: NR 569, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 577 Wetland Ecology and Restoration Credits: 3 (3-0-0)
Course Description: Wetland hydrology, ecology and soils; assessing conditions and identifying common disturbances; restoration techniques, planning and implementation.
Prerequisite: NR 565 or NR 578 or NR 678 or RS 500 or RS 630.
Registration Information: Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 578 Ecology of Disturbed Lands Credits: 3 (3-0-0)
Course Description: Analysis of basic and applied ecological principles involved in the restoration of drastically disturbed lands.
Prerequisite: (LAND 220 or LIFE 220 or LIFE 320 or NR 565) and (SOCR 240).
Registration Information: Sections may be offered: Online. Credit not allowed for both NR 578 and RS 578.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 579 Evidence-Based Conservation Credits: 3 (1-0-2)
Course Description: There is increasing emphasis in the fields of conservation and natural resources management on evidence-based practice and policy. Explore the rise and adoption of evidence-based practice and policy in conservation and natural resources management, focusing on its usefulness for designing, evaluating, and adapting conservation strategies such as protected areas, financial incentive programs, and community-based conservation.
Prerequisite: None.
Registration Information: Senior standing. Must register for lecture and recitation. Credit not allowed for both NR 579 and NR 581A5.
Grade Mode: Traditional.
Special Course Fee: No.

NR 586 Conservation Leadership Capstone Credits: Var[1-6] (0-0-0)
Course Description: Apply knowledge and skills to a project under the supervision of a conservation organization. These applied experiences facilitate learning, and help advance the goals of the conservation organization.
Prerequisite: NR 549A and NR 549B.
Restriction: Must be a: Graduate.
Registration Information: Admission to the Master of Conservation Leadership program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 592 Seminar in Natural Resources Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NR 600 Advanced Public Relations in Natural Resources Credits: 2 (1-0-1)
Course Description: Public relations aspects of current natural resource management programs; case history approach.
Prerequisite: NR 400.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 625 Community-Based Natural Resource Management Credits: 3 (0-0-3)
Course Description: History, theory, practice, and evaluation of community-based natural resource management.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: One upper division course in natural resource ecology, management, or social science.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 676 Ecological Models Credits: 4 (3-2-0)
Course Description: Model development for ecosystems, subsystems; deterministic, stochastic models; validation, sensitivity analysis.
Prerequisite: NR 575.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 678 Advanced Ecological Restoration Credits: 4 (3-0-1)
Course Description: Analysis of environmental factors influencing restoration of disturbed lands and practices for successful restoration of disturbed ecosystems.
Prerequisite: (BZ 450 or F 311 or LAND 220 or LIFE 220) and (SOCR 240).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Admission to the Master of Natural Resource Stewardship program can substitute for coursework. Credit not allowed for both NR 678 and RS 478. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 684 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

NR 687 Natural Resources Internship Credits: Var[1-8] (0-0-0)
Course Description: Field experience and exercises in international natural resources management.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NR 693 Natural Resources Stewardship Seminar Credits: 2 (0-0-2)
Course Description: Invited speakers will present different perspectives on natural resources.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Master of Natural Resources Stewardship or written consent of instructor. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

NR 793 Seminar on Remote Sensing and GIS Credit: 1 (0-0-1)
Course Description: Techniques, use of remote sensing, GIS technologies for forest, range, wildlife, water, geology, recreation, and other resource management applications.
Prerequisite: NR 322 or NR 323 or NR 503 or NR 505.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

Natural Rsrce Rec + Trsm-NRRT (NRRT)

Courses

NRRT 231 Principles-Parks/Protected Area Management Credits: 3 (3-0-0)
Course Description: Provide a broad but comprehensive understanding of the history, challenges, and practices of parks and protected areas management.
Prerequisite: None.
Registration Information: Sections may be offered: Online. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 262 Principles of Environmental Communication Credits: 3 (3-0-0)
Course Description: Principles of environmental communication, education, and interpretation for managing natural and cultural resources.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 270 Principles of Natural Resource Tourism Credits: 3 (3-0-0)
Course Description: Tourism and private commercial outdoor recreation industry in America.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 301 Conservation Leadership Credits: 3 (3-0-0)
Course Description: Approaches to conservation leadership.
Prerequisite: NRRT 262 and NRRT 231.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 320 International Issues-Recreation and Tourism Credits: 3 (3-0-0)
Course Description: History, development, and preservation of international parks, preserves, tourist and historical sites.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 321 Travel Abroad-Marine Ecotourism-Bahamas Credits: 3 (1-3-1)
Course Description: Environmental and socio-cultural aspects of marine ecotourism in the Bahamas.
Prerequisite: None.
Registration Information: Minimum GPA 2.500; 3 credits in natural sciences. Passport and ability to swim will be required.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 330 Social Aspects of Natural Resource Management Credits: 3 (3-0-0)
Course Description: Review social science concepts and research important to the way humans use and manage natural resources. Using lectures and readings on social theory and management frameworks, dissect current natural resource management issues. Case study presentations, exercises, and discussions will connect various social science approaches and theoretical frameworks to their natural resource applications.
Prerequisite: None.
Registration Information: Sophomore standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 331 Management of Parks and Protected Areas Credits: 3 (2-3-0)
Course Description: Comprehensive assessment of problems confronted by park professionals and the techniques and tools applied to their solution.
Prerequisite: NRRT 231 and NRRT 330.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 340 Principles in Conservation Planning and Mgmt Credits: 3 (3-0-0)
Course Description: Social, economic, legal, and ecological concepts that shape planning and management frameworks within conservation.
Prerequisite: NRRT 231.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 350 Wilderness Leadership Credits: 3 (2-2-0)
Course Description: Practical and philosophical aspects of wilderness usage including safety, group dynamics, and backcountry skills.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

NRRT 351 Wilderness Instructors Credits: 3 (2-2-0)
Course Description: Preparation to safely lead and instruct groups in outdoor wilderness programs; further refine skills including judgement and leadership.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

NRRT 362 Environmental Conflict Management Credits: 3 (3-0-0)
Course Description: Theoretical, critical and practical approaches to negotiation, mediation and conflict management strategies related to natural resources.
Prerequisite: NRRT 262.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 371 Techniques in Interpretation Credits: 3 (2-1-0)
Course Description: Intermediate techniques in interpretation including exhibit design and construction, personal program development and visitor studies.
Prerequisite: NRRT 262.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 372 Tourism Promotion Credits: 3 (3-0-0)
Course Description: Explores different approaches for tourism marketing in order to develop a sound background in the field. Addresses the forces that drive change in the tourism marketplace; how marketing managers can most effectively position their services, destination and products, through a systems approach to capture today's traveler. Basic concepts and skills in tourism marketing are examined through problems and characteristics specific to tourism.
Prerequisite: NRRT 270.
Registration Information: Sophomore standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 376 Human Dimensions Research and Analysis Credits: 3 (2-2-0)
Course Description: Applies human dimensions (recreation) research and analysis techniques to natural resource issues. Predicated on the assumption that the best way to learn research methodology and statistics is to become directly involved in the process of scientific inquiry. Consequently, a considerable amount of time is devoted to conducting research tasks (e.g., developing surveys, analyzing data).
Prerequisite: STAT 201.
Registration Information: Sophomore standing. Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 384 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 400 Environmental Governance Credits: 3 (3-0-0)
Course Description: Theory and practice of prevalent environmental governance approaches in diverse social and environmental contexts.
Prerequisite: NRRT 231.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 401 Collaborative Conservation Credits: 3 (3-0-0)
Course Description: Guiding principles and practices for effectively engaging stakeholders in conservation issues and natural resource management.
Prerequisite: NRRT 231 or NRRT 262.
Registration Information: Required field trips. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

NRRT 425 Communication for Tourism Credits: 3 (3-0-0)
Course Description: Exploration and practical application of communication theories, concepts, and techniques for successful communication in the context of tourism industry practice.
Prerequisite: NRRT 372.
Registration Information: Junior standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 431 Integrated Planning for Conservation Credits: 3 (3-0-0)
Course Description: Integrated planning practices within public and private lands that work at the interface of social and ecological dimensions of conservation.
Prerequisite: (NRRT 231) and (LAND 220 or LIFE 220).
Restriction: Must be a: Undergraduate.
Registration Information: Junior standing. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 439 Open Space and Natural Area Management Credits: 3 (3-0-0)
Course Description: Acquisition of, planning for, and management of local government and private open space and natural areas.
Prerequisite: NR 440 or NRRT 331.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 440 Applications in Environmental Communication Credits: 3 (3-0-0)
Course Description: Application of tools and techniques for communicating to audiences about issues related to conservation, environment and sustainability.
Prerequisite: NRRT 262.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 441 Spatial Analysis of Protected Areas Credits: 3 (2-2-0)
Course Description: Spatial analytical techniques used in planning and managing protected areas, including locating, managing, and assessing parks.
Prerequisite: NRRT 231.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 442 Tourism Planning Credits: 3 (3-0-0)
Course Description: Examines the relationship among tourists, tourist developments and the planning of tourist attractions and services. Focuses on the planning of tourist resources and programs within a geographic region, as well as at a destination and site level. Planning tools and design concepts are reviewed and analyzed. A regional strategic planning process is applied to the development of a regional tourism plan in Colorado.
Prerequisite: NRRT 270.
Registration Information: Junior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 460 Tourism Event and Conference Planning Credits: 3 (3-0-0)
Course Description: Foundation in planning, organizing, and producing tourism special events and conferences. Functions and strategies necessary for effective tourism event management.
Prerequisite: NRRT 270.
Registration Information: Junior standing. Sections may be offered: Online. Credit not allowed for both NRRT 460 and RRM 460.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 462 Environmental Communication-Natural Resources Credits: 3 (3-0-0)
Course Description: Exploration and application of theories, concepts, and techniques for successful environmental communication in natural resources.
Prerequisite: NRRT 262.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 463 Non-Profit Administration in Conservation Credits: 3 (3-0-0)
Course Description: Role of NGOs in protected-area management and conservation education; models for development, including grant writing, in conservation.
Prerequisite: NRRT 231 and NRRT 262.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 470 Tourism Impacts Credits: 3 (3-0-0)
Course Description: Examine the impacts of tourism from several distinct, but interrelated perspectives: social, political, economical, environmental, and technological. Limits to future tourism growth are discussed and possible strategies to mitigate impacts are detailed. Case studies are used to highlight issues discussed.
Prerequisite: NRRT 270.
Registration Information: Junior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 471 Starting and Managing Tourism Enterprise Credits: 3 (3-0-0)
Course Description: Concepts surrounding the starting, planning, and managing of a tourism business with a small business creation and management approach. Focus is given to: (1) connections between commercial recreation/tourism and entrepreneurship, (2) starting and managing a business including selecting the form of business, raising funds, financial/marketing management, and (3) legal aspects including identifying and minimizing risks, supervision of workers and employment laws.
Prerequisite: NRRT 231 or NRRT 270.
Registration Information: Junior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 473 Ski Area Management Credits: 3 (3-0-0)
Course Description: Ski area management; history and trends, ski area operations, human resource management, environmental issues, liability, resort planning and design.
Prerequisite: NRRT 270.
Registration Information: Senior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 483 Off-Campus Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

NRRT 487 Internship Credits: Var[4-12] (0-0-0)
Course Description:
Prerequisite: NR 377.
Registration Information: Junior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 495A Independent Study: Administration Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 495B Independent Study:Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 495C Independent Study:Interpretation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 499 Senior Thesis Credits: Var[1-18] (0-0-0)
Course Description: Independent research project culminating in thesis presented to faculty mentor.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

NRRT 505 Environmental Education History and Theory Credits: 3 (3-0-0)
Course Description: History and theories, planning and instruction; outcomes, historical events; ecological literacy; experiential learning models.
Prerequisite: None.
Registration Information: Upper-division course in natural resources. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 506 Methods in Environmental Education Research Credits: 3 (3-0-0)
Course Description: Research methods and designs; literature reviews, needs assessments and program evaluation of environmental education in informal settings.
Prerequisite: None.
Registration Information: Upper-division course in natural resources. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 507 Environmental Education Planning Credits: 3 (3-0-0)
Course Description: Informal learning theory; evaluation models focused on education in informal settings such as nature centers, zoos, etc.
Prerequisite: None.
Registration Information: One upper-division course in natural resources, biological sciences, or ecology. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 508 Current Issues in Environmental Education Credits: 3 (3-0-0)
Course Description: Impact of current events, legislation, demographic changes, and other events on informal environmental education.
Prerequisite: None.
Registration Information: One upper-division course in natural resources, biological sciences, or ecology. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 520 Perspectives on Ski Area Management Credits: 2 (2-0-0)
Course Description: Introduction to the history of skiing, the ski industry, and ski area management around the world.
Prerequisite: None.
Registration Information: Bachelor's degree required. This is a partial semester course. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 521 Sustainable Ski Area Management Credits: 2 (2-0-0)
Course Description: Examines sustainability issues that relate specifically to ski resort development and management.
Prerequisite: NRRT 520, may be taken concurrently.
Registration Information: This is a partial semester course. Sections may be offered: Online. Offered every Spring term and every other Fall term.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 522 Ski Area Operations and Human Resources Credits: 2 (2-0-0)
Course Description: Examines ski area operations and services.
Prerequisite: NRRT 520, may be taken concurrently.
Registration Information: This is a partial semester course. Sections may be offered: Online. Offered every Spring term and every other Fall term.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 523 Strategic Ski Area Marketing and Management Credits: 2 (2-0-0)
Course Description: Examines strategic management and marketing concepts within a ski area context.
Prerequisite: NRRT 520, may be taken concurrently.
Registration Information: This is a partial semester course. Sections may be offered: Online. Offered every Spring term and every other Fall term.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 524 Ski Area Finance and Investment Credits: 2 (2-0-0)
Course Description: Examines finance and investment considerations relevant to ski area operations and management.
Prerequisite: NRRT 520, may be taken concurrently.
Registration Information: This is a partial semester course. Sections may be offered: Online. Offered every Spring term and every other Fall term.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 525 Ski Area Planning and Development Credits: 2 (2-0-0)
Course Description: Examines the various planning and design considerations for ski area development and expansion.
Prerequisite: NRRT 520, may be taken concurrently.
Registration Information: This is a partial semester course. Sections may be offered: Online. Offered every Spring term and every other Fall term.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 530 Insight into the Adventure Tourism Industry Credits: 2 (2-0-0)
Course Description: Definitions of adventure tourism, and relevant leisure, outdoor education, and tourism theories and frameworks are discussed and critically examined. Key stakeholders are identified, along with current and future trends, opportunities, and challenges. The need for sustainable practices and cross-cultural understanding and communication within adventure tourism is also emphasized.
Prerequisite: None.
Registration Information: This is a partial semester course. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 531 Building an Adventure Tourism Enterprise Credits: 2 (2-0-0)
Course Description: Entrepreneurial skills and know-how to successfully build an adventure tourism enterprise. As most adventure tourism businesses are small-to-medium enterprises, there is a need for students to understand the fundamentals of how to develop an adventure tourism concept and turn it into a successful business.
Prerequisite: None.
Registration Information: This is a partial semester course. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 532 Leading the Adventure Tourism Experience Credits: 2 (2-0-0)
Course Description: Skills and knowledge to successfully plan and lead an adventure tourism experience. Focus is given to leadership and facilitation strategies, guiding standards and best practices, and the importance of environmental and cultural education and interpretation for guests. This is in addition to quality programming and logistics, ensuring guest safety through risk mitigation, emergency planning and crisis management, public relations, and guest management.
Prerequisite: NRRT 530, may be taken concurrently.
Registration Information: This is a partial semester course. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 533 Adventure Tourism Policy and Planning Credits: 2 (2-0-0)
Course Description: Key stakeholders and policies that influence the adventure tourism industry. This involves a detailed examination of adventure tourism standards and regulations, in addition to broader government policies that influence the environment within which the adventure tourism industry is situated. As many adventure tourism ventures operate on public lands, the role of public land agencies and their relationships with adventure tourism operators are also closely examined.
Prerequisite: NRRT 530, may be taken concurrently.
Registration Information: This is a partial semester course. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 534 Applications in the Outdoor Products Industry Credits: 2 (2-0-0)
Course Description: Outdoor products industry and the various steps involved in developing an outdoor product and bringing it to market. Focus is placed on identifying and understanding the outdoor products consumer, product development processes, product aesthetics and functionality, the unique characteristics of branding, selling, and distributing outdoor products, current and future trends, and the diverse career opportunities that exist within the outdoor products industry.
Prerequisite: NRRT 530, may be taken concurrently.
Registration Information: This is a partial semester course. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 541 Overview & Trends of Agritourism Management Credits: 2 (2-0-0)
Course Description: Introductory agritourism sector concepts and emerging business opportunities. Identify and assess agritourism sector data describing industry supply and demand attributes and examine key distinguishing aspects of agritourism enterprise. Regulatory frameworks and policy, community and economic development dimensions, and relevant case studies specific to new agritourism oriented opportunities.
Prerequisite: None.
Registration Information: Graduate standing. This is a partial semester course. Offered as an online course only. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 542 Spatial & Community Dimensions of Agritourism Credits: 2 (2-0-0)
Course Description: Advanced analysis methodology and the use of data in enterprise valuation, market analysis and the assessment of the agritourism sector. Distinguishing aspects of agritourism supply and economic development dimensions that target tourism demand enhancement. Creative market assessment methods are employed to illustrate concepts and analysis, including spatial, economic impact and trip evaluation techniques.
Prerequisite: None.
Registration Information: Graduate standing. This is a partial semester course. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 545 Culinary Tourism Credits: 2 (2-0-0)
Course Description: Aspects of tourism concepts and assessment of the culinary sector in relation to the supply and demand experience attributes. Explores frameworks related to the culinary community, policy, and training dimensions, and reviews case studies specific to new and ongoing culinary tourism oriented opportunities.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Offered as an online course only. Sections may be offered: Online. Credit not allowed for both NRRT 545 and NRRT 580A2.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 548 Agritourism Enterprise Management Credits: 2 (2-0-0)
Course Description: Examines the role of agritourism in the agricultural economy and provides students with frameworks to identify and assess opportunities for agritourism development. Focusing on determinants of business success and the role and importance of comprehensive business planning. Students will develop and present a comprehensive business plan for a prototype agritourism business as a requirement of this course.
Prerequisite: None.
Registration Information: Graduate standing. This is a partial semester course. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 550 Ecotourism Credits: 3 (3-0-0)
Course Description: Concept of ecotourism, impacts associated with ecotourism, and role of education/interpretation in mitigating these impacts.
Prerequisite: NRRT 470.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 565 Research-Human Dimensions Natural Resources Credits: 3 (3-0-0)
Course Description: Theory, research, literature review, hypothesis development, scientific writing, proposal development.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 600 Tourism Industry Concepts and Practices Credits: 2 (2-0-0)
Course Description: Fundamental tourism theories and concepts that lay the groundwork for understanding tourists and the tourism industry. Based on the interdisciplinary nature of tourism studies, covers the broad range of fundamental theories and interrelated concepts that guide decision-making in the tourism industry. Focuses on several key themes aimed to capture the primary areas of conceptual thinking and analysis in contemporary tourism.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections offered as Mixed Face-to-Face or Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 601 Tourism Quantitative Analysis I Credits: 2 (1-2-0)
Course Description: Statistical techniques used by researchers to inform and support tourism decision-making. Emphasis is placed on understanding data manipulation techniques and what statistics are appropriate for addressing applied decision–making problems.
Prerequisite: STAT 312.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered as Mixed Face-to-Face or Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 602 Tourism Quantitative Analysis II Credits: 2 (2-0-0)
Course Description: Quantitative analysis methods to specific tourism problems. Students explore visitor intercept techniques and identify other local, regional, national and international institutional data sources, including "Big Data" analytic engines. Using these sources, students estimate destination demand, supply and economic impact as well as perform competitive analysis in a variety of settings.
Prerequisite: NRRT 601, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered as Mixed Face-to-Face or Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 605 Human Dimensions of Natural Resources Theory Credits: 3 (3-0-0)
Course Description: Application of theories and conceptual approaches from social sciences to study of recreation behavior and natural resource issues.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 610 Natural Resource Management and Tourism Credits: 2 (2-0-0)
Course Description: Explores nature-based tourism and the planning and management of experiences and impacts. Review the tourism system as it is applied in the natural resource setting, define and describe outdoor recreation motivations, describe the covenants and institutions that govern international development globally, and apply the measurement of supply, demand, and economic impact in the natural-based tourism realm. Apply these techniques in comprehensive planning and compliance activities.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered as Mixed Face-to Face or Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 615 Sustainable Tourism Development Foundation Credits: 2 (2-0-0)
Course Description: Theory, practice, history, terminology and issues surrounding sustainable tourism development. Sustainable tourism planning and management are examined in the context of sustainable livelihoods. A comprehensive survey of sustainable tourism components – including indicators of sustainability, community participation, poverty alleviation, alternative tourism, governance and power, and socio-environmental responsibility – will be covered from a systems thinking perspective.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections offered as Mixed Face-to-Face or Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 620 Organizational Management in Tourism Credits: 2 (2-0-0)
Course Description: Application of management concepts to tourism organizations. Topics include managing ethics, diversity, and globalization; planning, decision-making, and competitive advantage; organizational structure and design; leading individuals and groups, and controlling communication and information technology. Discussions, exercises, and case studies will allow students to apply management principles to the tourism organizations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections offered as Mixed Face-to-Face or Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 625 Communication/Conflict Management in Tourism Credits: 2 (2-0-0)
Course Description: Managerial communication skills and negotiation tools and their implications for effective organizational communication and management of potential conflicts faced by managers in the tourism industry.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections offered as Mixed Face-to-Face or Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 650 Financial Management in Tourism Credits: 2 (2-0-0)
Course Description: Apply financial concepts to the management of tourism businesses. Financial accounting aspects of finance, including development and analysis of financial statements are covered. Management accounting aspects of finance include forecasting and budgeting; analysis of profit, and profitability; and working capital management. Application of capital budgeting techniques, time value of money, and business valuation are emphasized.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections offered as Mixed Face-to-Face or Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 655 Tourism Marketing Concepts and Applications Credits: 2 (2-0-0)
Course Description: Marketing theories and concepts and their application within a travel and tourism organizational context. The travel and tourism industry has unique characteristics that create a variety of problems and opportunities specific to that industry and important for tourism marketing professionals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections offered as Mixed Face-to-Face or Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 660 Law and Legal Liability in Tourism Credits: 2 (2-0-0)
Course Description: Concepts of legal liability, business law, and risk management to travel, tourism, and hospitality organizations. Topics include contract law; agency law; business organization and formation; torts and legal liability; employment law and labor-management relations, and the protection of organization assets through risk management.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections offered as Mixed Face-to-Face or Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 662 Global Tourism Policy Credits: 2 (2-0-0)
Course Description: Major international policies, trends, and challenges facing tourism. Provides an understanding of policies, programs, and regulations and how international tourism is affected.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered as Mixed Face-to-Face or Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 665 Survey Research and Analysis Credits: 3 (2-2-0)
Course Description: Survey research, design, and analysis in human dimensions of natural resources.
Prerequisite: NRRT 565 and STAT 301.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 666 Qualitative Research in NRRT Credits: 3 (3-0-0)
Course Description: Qualitative approaches to tourism research and techniques from a range of disciplinary backgrounds; methodological aspects.
Prerequisite: NRRT 565.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 671 Strategic Management for Travel and Tourism Credits: 2 (2-0-0)
Course Description: Factors, tools, and techniques for strategic management of a travel and tourism business or organization.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered as Mixed Face-to-Face or Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 679A Current Topics in Nature Based Tourism Credit: 1 (0-0-1)
Course Description: Current topics in nature-based travel and tourism.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Students will enroll for this course during both the Fall and Spring semesters.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 679B Current Topics in Nature Based Tourism Credit: 1 (0-0-1)
Course Description: Current topics in nature-based travel and tourism.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Students will enroll for this course during both the Fall and Spring semesters.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 695A Independent Study: Administration Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 695B Independent Study: Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 695C Independent Study: Interpretation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 695D Independent Study: Landscape Planning Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 765 Applied Multivariate Analysis Credits: 3 (2-2-0)
Course Description: Application and interpretation of multivariate statistics to human dimensions in natural resources, recreation, and tourism.
Prerequisite: NRRT 665.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Natural Sciences-NSCI (NSCI)

Courses

NSCI 170 Perspectives and Communication in Science Credit: 1 (1-0-0)
Course Description: Exploration of personal stories and development as science students through writing assignments, dialogue, and outreach activities. Topics will include effective communication of science principles with a variety of audiences (including K-12) and a diverse group of learners, exploration of how experiences and perspectives affect how individuals perceive and influence the scientific process and learning science concepts.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Written consent of instructor. Credit not allowed for both NSCI 170 and NSCI 180A2.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NSCI 192 Introductory Seminar Credits: 2 (0-0-2)
Course Description: Introduction to the culture and values of science and the College of Natural Sciences.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NSCI 193 College of Natural Sciences Career Seminar Credit: 1 (0-0-1)
Course Description: Guidance for students in exploring who they are individually, how they might fit into a career or a graduate program in the sciences, how to develop their career path to be competitive in the selection process, and preparation of their marketing materials to be used in the future. Helps students gain a better understanding of their individual abilities, strengths, and interests imperative to being successful in a career search.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Undergraduate majors in the College of Natural Sciences only. This is a partial semester course. Credit not allowed for both NSCI 181A1 and NSCI 193.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NSCI 295 Independent Study-Natural Sciences Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of Natural Sciences Dean's Office required.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

NSCI 296 Group Study-Natural Sciences Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of Natural Sciences Dean's Office required.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

NSCI 298 Undergraduate Research-Natural Sciences Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of Natural Sciences Dean's Office required.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

NSCI 384 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Supervised experience in a computer lab.
Prerequisite: None.
Registration Information: Written consent of instructor required. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

NSCI 487 Internship-Natural Sciences Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of Natural Sciences Dean's Office required.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

NSCI 495 Independent Study-Natural Sciences Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of Natural Sciences Dean's Office required.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

NSCI 496 Group Study-Natural Sciences Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of Natural Sciences Dean's Office required.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

NSCI 498 Undergraduate Research-Natural Sciences Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of Natural Sciences Dean's Office required.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

NSCI 575 Ethical Issues in Big Data Research Credit: 1 (1-0-0)
Course Description: Examines big data research through an applied interdisciplinary approach to ethical issues surrounding collection, use, reporting, and preservation of big data. Incorporates a wide range of transferable skills training, so students are well equipped to engage and lead data-centric research within or outside academia.
Prerequisite: None.
Registration Information: Senior standing. This is a partial semester course. Credit not allowed for NSCI 575 and NSCI 580A2.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NSCI 579 Animal Behavior in Captive Populations Credits: 3 (3-0-0)
Also Offered As: VS 579.
Course Description: How animals learn, perceive their work, and behave, and how all of those intersect to alter behavior in captive settings.
Prerequisite: BZ 300.
Registration Information: Enrollment in the M.P.N.S., Zoo, Aquarium, and Shelter Management specialization can be used in place of BZ 300. Credit not allowed for both NSCI 579 and VS 579.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NSCI 590A Workshop in Instruction: Science Instruction in Rural Colorado Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

NSCI 590B Workshop in Instruction: Mathematics Instruction in Rural Colorado Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

NSCI 590C Workshop in Instruction: Small Scale Science-Teachers as Researchers Credits: 4 (2-4-0)
Course Description:
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NSCI 590D Workshop in Instruction: Colorado Science Teacher Enhancement Project Credits: 7 (0-0-7)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NSCI 590E Workshop in Instruction: Summer Mathematics Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NSCI 590G Workshop in Instruction, Small Scale Chemistry Credits: 2 (1-2-0)
Course Description:
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NSCI 596 Small Scale Science Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

NSCI 601 Master of Profess. Natural Sciences Ethics Credit: 1 (0-0-1)
Also Offered As: PHIL 601.
Course Description: Ethical issues involving the care and treatment of animals in captive environments. Lectures, case studies, discussions, and student presentations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in the Master of Professional Natural Sciences program. Credit not allowed for both NSCI 601 and PHIL 601. This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NSCI 610 Team Research in Quantitative Ecology Credits: 3 (2-2-0)
Course Description: Interdisciplinary team-based research aimed at studying real-life models in quantitative ecology using mathematical and statistical tools.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NSCI 611 Leadership in Animal Organizations Credits: 3 (3-0-0)
Course Description: Management training and specific leadership tools aimed at future professionals leading an animal organization.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission in the PSM program. All PSM students will need to register for the first fall semester to complete the course as a cohort class. Sections may be offered: Online. Credit not allowed for both NSCI 611 and NSCI 680A3.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NSCI 612 Myth Busters – Science/Controversy/Evaluation Credits: 3 (3-0-0)
Course Description: Development and practice of western science; understanding how conflicts between science and culture create controversy; and evaluating claims.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in MNSE programs. Written consent of instructor. Offered as an online course only.
Grade Mode: Traditional.
Special Course Fee: No.

NSCI 619A Physics for Educators: Optics Credits: 3 (3-0-0)
Course Description: Ray, wave, and particle models of light, with diverse applications. Introduction to special relativity and quantum physics via light. Includes regular at-home, hands-on activities.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to MNSE program. Offered as an online course only. Credit not allowed for both NSCI 619 and NSCI 619A.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

NSCI 619B Physics for Educators: Mechanics Credits: 3 (3-0-0)
Course Description: Classical kinematics and dynamics, with particular attention to phenomena that can be explored using an integrated sensor system for weekly at-home labs.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to MNSE program. Offered as an online course only. Credit not allowed for both NSCI 619B and NSCI 680A5.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

NSCI 620 Chemistry for Science Educators Credits: 3 (0-0-3)
Course Description: Theoretical and experimental chemistry for grade 6-12 science teachers, with emphasis on water chemistry.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Master of Professional Natural Sciences program. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NSCI 621 Workplace Wellness - Animal Organizations Credits: 3 (2-0-1)
Course Description: Professional training, specifically tailored communication skills, and ways to engage personnel designed to meet the needs of animal professionals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Admission to the PSM program. Sections may be offered: Online. Credit not allowed for both: NSCI 621 and NSCI 680A2.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NSCI 630 Spectroscopy for Science Educators Credits: 3 (0-0-3)
Course Description: Theory and applications of spectroscopy for grade 6-12 science teachers.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Master of Professional Natural Sciences program. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NSCI 631 Marketing for Animal Organizations Credits: 3 (3-0-0)
Course Description: Marketing skills designed to meet the needs of animal professionals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the PSM program. Sections may be offered: Online. Credit not allowed for both NSCI 631 and NSCI 680A4.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NSCI 640 Energetics for Science Educators Credits: 3 (0-0-3)
Course Description: Production and use of energy for grade 6-12 science teachers, with emphasis on chemical and biological systems.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Master of Professional Natural Sciences program. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NSCI 650 Pollution and Environmental Biology for Educators Credits: 3 (0-0-3)
Course Description: Biological consequences of energy production and consumption for grade 6-12 science teachers.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Master of Professional Natural Sciences program. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NSCI 660 Evolutionary Biology for Educators Credits: 3 (0-0-3)
Course Description: Evolutionary theory, with an emphasis on innovative methods for teaching evolutionary biology in grades 6-12.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Master of Natural Sciences Education (M.N.S.E.) degree program. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NSCI 670 Earth Sciences for Educators Credits: 3 (3-0-0)
Course Description: Provides a foundation in the Earth Sciences for secondary science teachers, emphasizing their societal relevance and context. Topics include earth science methods and thinking, plate tectonics, minerals and mineral resources, rock formation and identification, geologic time, systems, the hydrologic cycle and water resources, climate, carbon and energy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to MNSE program. Offered as an online course only. Credit not allowed for both NSCI 670 and NSCI 680A6.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NSCI 677 Microscopic Image Collection & Processing Credits: 2 (2-0-0)
Course Description: Modern microscopes generate terabytes of data presenting challenges for acquisition, long-term storage and extracting meaningful information to present it in an appropriate way for publication. This course covers fundamentals of data collection, storage and processing. Students will learn different software applications, ranging from commercial to technical computing languages and will develop their own data processing algorithms to synthesize publication-quality images from large data sets.
Prerequisite: (CS 156) and (STAT 511A, may be taken concurrently or STAT 511B, may be taken concurrently) and (GRAD 510, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NSCI 687A MPNS Internship: Preparation Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Master of Natural Sciences Education (M.N.S.E.) degree program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NSCI 687B MPNS Internship: Project Credits: Var[1-8] (0-0-0)
Course Description:
Prerequisite: NSCI 687A - at least 4 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NSCI 687D Internship: Microscopy Credits: Var[1-8] (0-0-0)
Course Description: Internship in microscopy within the CSU Microscope Imaging Network Foundational Core Facility or within other organizations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

NSCI 693 Seminar--MPNS Credit: 1 (0-0-1)
Course Description: Students will present and discuss current research relevant to their specialization(s) and present results of their internships and group projects.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in MPNS program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NSCI 693C Graduate Seminar: Biological Data Analytics Credit: 1 (1-0-0)
Course Description: Presentation and discussion of current research in the analysis of large data applications in the biological sciences, as relevant to a student's specialization and associated with their internship experience.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor's degree required. Admission to Professional Science Master's in Natural Science Biological Data Analytics Specialization.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NSCI 693D Graduate Seminar: Microscopy Credit: 1 (0-0-1)
Course Description: Presentation and discussion of current microscopy research relevant to a student's specialization and associated with their internship experience.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

NSCI 695 Independent Study for the MNSE Credits: 3 (0-0-3)
Course Description: Independent study based on review of the primary scientific literature in biology, chemistry, or physics.
Prerequisite: NSCI 698.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NSCI 696D Group Study: Microscopy Proposal Credits: Var[1-6] (0-0-0)
Course Description: Design of an experiment utilizing microscopic imaging to collect quantitative data to test a hypothesis, which may include preparation of specimens, design and construction of a custom microscope, or the writing of software to control the microscope and acquire data. Images will be analyzed to extract quantitative data that tests the hypothesis.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NSCI 696E Group Study: Analysis of High-Throughput Sequencing Data Credit: 1 (0-0-1)
Course Description: Hands-on experience in analysis of a variety of high throughput sequencing data done in small groups under the supervision of a faculty mentor.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor's degree required. Written consent of instructor.
Grade Mode: Instructor Option.
Special Course Fee: No.

NSCI 696F Group Study: Biological Data Analytics Project Proposal Credits: Var[1-6] (0-0-0)
Course Description: Design hypothesis and method(s) to analyze data from genomic, proteomic, metabolomic, or other -omics experiments; or write software to facilitate analysis of data from -omics experiments.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor's degree required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NSCI 698 Research Experience in Natural Sciences Credits: 6 (0-0-6)
Course Description: Research experience in biology, chemistry, or physics.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Nine credits MNSE program coursework.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Neurobiology-NB (NB)

Courses

NB 192 Introductory Neuroscience Seminar Credit: 1 (0-0-1)
Course Description: Introduction to neuroscience; discussion of concentrations, career paths and research opportunities. Group activities and strategies for success.
Prerequisite: None.
Registration Information: Written consent of instructor required.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

NB 292 Research Topics in Neuroscience Credit: 1 (0-0-1)
Course Description: A discussion of current research interests of neuroscience faculty.
Prerequisite: None.
Registration Information: Neuroscience majors only. May only be taken once for credit.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

NB 399 Thesis Preparation Credit: 1 (0-0-1)
Course Description: Preparation for senior thesis in Neuroscience.
Prerequisite: (CO 300 or CO 301B) and (BMS 300).
Registration Information: Junior standing in Neuroscience major.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

NB 475 Mentored Research in Neuroscience Credits: 3 (0-6-1)
Course Description: Mentored research with final written report required.
Prerequisite: CHEM 344, may be taken concurrently and LIFE 212.
Registration Information: May be taken twice for a maximum of 6 credits. Maximum of 12 credits toward degree for any combination of NB 475, NB 487, NB 495, NB 496.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NB 487 Internship in Neuroscience Credits: Var[1-12] (0-0-0)
Course Description: Work experience with an approved preceptor outside of CSU.
Prerequisite: CHEM 344 and LIFE 212.
Registration Information: Approval by undergraduate program director of preceptor and project. Maximum of 12 credits toward degree for any combination of NB 475, NB 487, NB 495, NB 496.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

NB 493 Senior Seminar Credit: 1 (0-0-1)
Course Description: Topics of current interest in neuroscience.
Prerequisite: None.
Registration Information: Senior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NB 495 Independent Study Credits: Var[1-4] (0-0-0)
Course Description: Instructor mentored projects performed independently.
Prerequisite: None.
Registration Information: Written consent of Neuroscience undergraduate program director. Maximum of 12 credits toward degree for any combination of NB 475, NB 487, NB 495, NB 496.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

NB 496 Group Study in Neuroscience Credits: Var[1-4] (0-0-0)
Course Description: Faculty-directed exploration of areas of special interest in neuroscience.
Prerequisite: None.
Registration Information: Written consent of Neuroscience undergraduate program director. Maximum of 12 credits toward degree for any combination of NB 475, NB 487, NB 495, NB 496.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

NB 499 Senior Thesis Credits: 3 (0-0-3)
Course Description: Interpreting research results (experiential or from the literature) and writing a thesis; oral presentation required; supervised by a faculty mentor.
Prerequisite: NB 399 and NB 493, may be taken concurrently.
Registration Information: Senior standing in the Neuroscience major.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NB 500 Readings in Cellular Neurobiology Credit: 1 (0-0-1)
Course Description: Membrane properties of nerve and muscle; molecular mechanisms of synaptic function; neuro-muscular units.
Prerequisite: (BZ 100 to 481 - at least 1 course or BIO 100 to 481 - at least 1 course or LIFE 100 to 481 - at least 1 course) and (BC 100 to 481 - at least 1 course and PH 100 to 481 - at least 1 course) and (MATH 141 or MATH 155 or MATH 160 to 161 - at least 1 course or MATH 255 or MATH 261) and (NB 501, may be taken concurrently or BMS 500, may be taken concurrently).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NB 501 Cellular and Molecular Neurophysiology Credits: 2 (2-0-0)
Course Description: Membrane properties of nerve and muscle; molecular mechanisms of synaptic function; neuromuscular units.
Prerequisite: (BZ 100 to 481 - at least 1 course or BIO 100 to 481 - at least 1 course or LIFE 100 to 481 - at least 1 course) and (BC 100 to 481 - at least 1 course and PH 100 to 481) and (MATH 141 or MATH 155 or MATH 160 to 161 - at least 1 course or MATH 255 or MATH 261).
Registration Information: Credit not allowed for both NB 501 and BMS 500.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NB 502 Techniques in Molecular & Cellular Biology Credits: 2 (1-3-0)
Also Offered As: CM 502.
Course Description: Current methods in molecular and cellular neurobiology.
Prerequisite: (BIO 100 to 481 - at least 4 credits or BZ 100 to 481 - at least 4 credits or LIFE 100 to 481 - at least 4 credits) and (BC 100 to 481 - at least 4 credits and PH 100 to 481 - at least 4 credits).
Registration Information: Written consent of instructor. Must register for lecture and laboratory. Credit not allowed for both CM 502 and NB 502.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NB 503 Developmental Neurobiology Credits: 3 (3-0-0)
Also Offered As: BMS 503.
Course Description: Molecular mechanisms involved in development of nervous system including differentiation, growth, pathfinding, and synaptogenesis.
Prerequisite: (BIO 100 to 481 - at least 1 course or BZ 100 to 481 - at least 1 course or LIFE 100 to 481 - at least 1 course) and (BC 100 to 481 - at least 1 course and PH 100 to 481 - at least 1 course) and (MATH 141 or MATH 155 or MATH 160 to 161 - at least 1 course or MATH 255 or MATH 261).
Registration Information: Credit not allowed for both NB 503 and BMS 503.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NB 505 Neuronal Circuits, Systems and Behavior Credits: 3 (3-0-0)
Also Offered As: BMS 505.
Course Description: Anatomical and physiological organization of the nervous system.
Prerequisite: BMS 325 or BMS 500 or NB 501.
Registration Information: Credit not allowed for both BMS 505 or NB 505.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NB 586 Practicum-Techniques in Neuroscience II Credit: 1 (0-2-0)
Course Description: Current research projects in the laboratories of neuroscience faculty.
Prerequisite: NB 501 and NB 502.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

NB 600 Advanced Psychology-Sensation and Perception Credits: 3 (3-0-0)
Also Offered As: PSY 600D.
Course Description: Neural mechanisms of human perception; color and depth perception, pitch, loudness, and the effects of aging.
Prerequisite: PSY 456 and PSY 100 to 799 - at least 15 credits.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both NB 600 and PSY 600D.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NB 650 Computer Analysis of Neuronal Proteins Credit: 1 (1-0-0)
Course Description: Theory and practice of using computers to study proteins.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

NB 750 Physiology of Ion Channels Credits: 2 (2-0-0)
Course Description: Physiological and structural analysis of membrane ion channels.
Prerequisite: BMS 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor required.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

NB 771 Writing, Submitting, and Reviewing Grants Credit: 1 (1-0-0)
Course Description: Preparation of NRSA fellowship proposals; proposal review; possible submission to NIH for funding.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NB 793 Neuroscience Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

NB 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

NB 796A Group Study: Ion Channels Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

NB 796B Group Study: Neuronal Growth and Regeneration Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

NB 796C Group Study: Topics in Neuroscience Credits: Var[1-4] (0-0-0)
Also Offered As: BMS 796A.
Course Description: Faculty-directed exploration of areas of special interest in neuroscience.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. May not be taken concurrently with BMS 796A.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

NB 796D Group Study: Seizures and Epilepsy Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

NB 796E Group Study: Neuroendocrine Mechanisms Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

Occupational Therapy-OT (OT)

Courses

OT 110 Introduction to Occupational Therapy Credits: 3 (3-0-0)
Course Description: Roles and activities in occupational therapy.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

OT 215 Medical Terminology Credit: 1 (0-0-1)
Course Description: Definition and use of medical terms.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

OT 355 The Disability Experience in Society Credits: 2 (1-0-1)
Course Description: Description and exploration of disabling conditions; review of support systems including legal and financial implications.
Prerequisite: PSY 100 or SOC 100.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 450 Biomechanics of Human Occupation Credits: 3 (0-2-2)
Course Description: Exploration of performance of the activities of daily living in context as impacted by function/dysfunction of the human musculoskeletal system.
Prerequisite: None.
Registration Information: Must register for laboratory and recitation. Minimum of 4 credits of either combined anatomy and physiology or human anatomy at the 200-level or higher. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

OT 590 Workshop Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 597 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 601 Occupation and Rehabilitation Science I Credits: 3 (1-0-2)
Course Description: Multidisciplinary perspectives on human performance and participation in everyday occupations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to master's degree program in occupational therapy.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

OT 610 Professional Decision Making Credits: 3 (0-2-2)
Course Description: Exploration of the thought processes occupational therapists use when determining how best to address clients' needs.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to master's degree program in occupational therapy.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

OT 611 Reflective and Evidence-Based Practice Credits: 3 (0-0-3)
Course Description: Development of reflective and evidence-based practice skills through integrating and synthesizing fieldwork experiences in OT practice.
Prerequisite: OT 687A to 687Z.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

OT 620 Research to Practice I Credits: 3 (3-0-0)
Course Description: Critically evaluate qualitative and quantitative research processes pertaining to individuals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to master's degree program in occupational therapy.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

OT 621 Occupational Performance: Infancy-Childhood Credits: 4 (2-2-1)
Course Description: Optimizing occupational performance and participation for infants and children within a contextual framework.
Prerequisite: OT 687A to 687Z.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of the Occupation Therapy Department can be substituted for OT 687.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

OT 630 Occupational Performance: Adult to Old Age I Rec Credits: 3 (0-0-3)
Course Description: Optimizing occupational performance for adults and older adults with attention to roles, satisfaction, competence and activities.
Prerequisite: OT 610 and OT 620 and OT 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in OT 636; must have concurrent registration in OT 660; must have concurrent registration in OT 665; must have concurrent registration in OT 686C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 631 Program Assessment and Development Credits: 3 (0-0-3)
Course Description: Assessment of program strengths and needs, followed by development of proposals to support occupational performance and participation.
Prerequisite: OT 687A to 687Z.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of the Occupational Therapy Department can substitute for OT 687A-Z.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

OT 636 Occupational Performance: Adult/Old Age I Lab Credits: 2 (0-4-0)
Course Description: Optimizing occupational performance for adults and older adults with attention to roles, satisfaction, competence, and activities.
Prerequisite: OT 601 and OT 610 and OT 620.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in OT 630; Must have concurrent registration in OT 660; Must have concurrent registration in OT 665; Must have concurrent registration in OT 686C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 640 Research to Practice II Credits: 3 (3-0-0)
Course Description: Critically evaluate qualitative and quantitative research processes pertaining to groups and systems.
Prerequisite: OT 620.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 641 Occupation and Rehabilitation Science II Credits: 3 (1-0-2)
Course Description: Explore historical evolution of topics and the link to future implications for and growth of occupation and rehabilitation science.
Prerequisite: OT 601 and OT 611 and OT 631 and OT 687 to 687*.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 656 Topics on Brain Plasticity and Performance Credits: 3 (2-0-1)
Course Description: Multidisciplinary viewpoints on brain plasticity and its relationship to performance across the lifespan.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Occupational Therapy graduate student or written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 660 Occupational Performance:Adult/Old Age II Rec Credits: 3 (0-0-3)
Course Description: Foundations of occupational performance for adults and older adults with attention to abilities, skills, and developed capacities.
Prerequisite: OT 610 and OT 620 and OT 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in OT 630; must have concurrent registration in OT 636; must have concurrent registration in OT 665; must have concurrent registration in OT 686C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 661 Occupational Performance: Adolescent-Young Adult Credits: 3 (1-2-1)
Course Description: Optimizing occupational performance and participation for youth and young adults within a contextual framework.
Prerequisite: OT 621.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, laboratory, and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 665 Adult to Old Age II Lab Credits: 2 (0-4-0)
Course Description: Optimizing occupational performance for adults and older adults with attention to abilities, skills, and developed capacities.
Prerequisite: OT 601 and OT 610 and OT 620.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in OT 630; must have concurrent registration in OT 636; must have concurrent registration in OT 660; must have concurrent registration in OT 686C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 666 Optimizing Occupation through Technology Credits: 3 (0-0-3)
Course Description: Use of technology-based resources and/or strategies (current and emerging) to meet client needs in their everyday occupations and contexts.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Occupational Therapy M.O.T., M.S., or Ph.D. program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 676 Pathokinesiological Conditions and Assessment Credits: 3 (3-0-0)
Course Description: Various musculoskeletal imbalances and injuries that present as difficulties in function and participation in everyday activity.
Prerequisite: OT 450.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 686A Fieldwork I: OT Process Credits: Var[1-4] (0-0-0)
Course Description: Level I fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to occupational therapy master's degree program; evidence of professional liability insurance required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

OT 686B Fieldwork I: Seminar Credits: 3 (0-2-2)
Course Description: Level I fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of all first year OT courses; admission to occupational therapy master's degree program; evidence of professional liability insurance required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

OT 686C Fieldwork I: Adult to Old Age Credits: Var[1-4] (0-0-0)
Course Description: Level I fieldwork in various settings.
Prerequisite: OT 686A and OT 610.
Restriction: Must be a: Graduate, Professional.
Registration Information: Concurrent registration in OT 630 and OT 660; evidence of professional liability insurance required.
Terms Offered: Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 686D Fieldwork I: Infancy to Young Adult Credits: Var[1-4] (0-0-0)
Course Description: Level I fieldwork in various settings.
Prerequisite: (OT 687A to 687Z) and (OT 621, may be taken concurrently or OT 661, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Registration Information: Evidence of professional liability insurance required.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

OT 686E Fieldwork I: Special Interest Credits: Var[1-4] (0-0-0)
Course Description: Level I fieldwork in various settings.
Prerequisite: OT 686A.
Restriction: Must be a: Graduate, Professional.
Registration Information: Evidence of professional liability insurance required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 687A Fieldwork IIA: Acute In-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687B Fieldwork IIA: Rehab In-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687C Fieldwork IIA: SNF/Acute LTC Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687D Fieldwork IIA: General Rehab Out-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687E Fieldwork IIA: Hand Therapy Hospital Out-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687F Fieldwork IIA: Hand Therapy Private Out-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687G Fieldwork IIA: Psych In-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687H Fieldwork IIA: Combined Practice Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687M Fieldwork II: Behavioral Health Community Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687N Fieldwork II: Older Adult Community Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687O Fieldwork II: Older Adult Day Program Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687P Fieldwork II: Adult Day Program Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687Q Fieldwork II: Home Health Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687T Fieldwork II: Other Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688A Fieldwork IIB: Acute In-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688B Fieldwork IIB: Rehab In-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688C Fieldwork IIB: SNF/Acute LTC Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688D Fieldwork IIB: General Rehab Out-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688E Fieldwork IIB: Hand Therapy Hospital Out-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688F Fieldwork IIB: Hand Therapy Private Out-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688G Fieldwork IIB: Psych In-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688H Fieldwork IIB: Combined Practice Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688I Fieldwork IIB: Pediatric Hospital/Unit Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688J Fieldwork IIB: Pediatric Hospital/Out-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688K Fieldwork IIB: Pediatric Community Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688L Fieldwork IIB: Pediatric Out-Patient Clinic Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688M Fieldwork IIB: Behavioral Health Community Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688N Fieldwork IIB: Older Adult Community Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688O Fieldwork IIB: Older Adult Day Program Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688P Fieldwork IIB: Adult Day Program Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688Q Fieldwork IIB: Home Health Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688R Fieldwork IIB: School Early Intervention Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688S Fieldwork IIB: School (PK-12) Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688T Fieldwork IIB: Other Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 690 Workshop Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 692 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 694 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 701 Occupation and Rehabilitation Science III Credits: 3 (0-0-3)
Course Description: Investigation of the intersection of occupational science and rehabilitation science research situated in various paradigms.
Prerequisite: OT 640 and OT 641.
Restriction: Must be a: Graduate, Professional.
Registration Information: Three credits of research must be in quantitative research and three credits must be in qualitative research.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

OT 710 Teaching Occupation and Rehab Science Credits: 3 (0-0-3)
Course Description: Design and implementation of teaching and learning philosophies and approaches in occupation and rehabilitation science contexts.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

OT 784 Supervised College Teaching Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission into a PhD program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 786 Practicum Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: OT 620, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Concurrent enrollment in OT 620 or 3 credits of qualitative research.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 792 Seminar Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission into a PhD program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 794 Independent Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission into a PhD program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 796 Group Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission into a PhD program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 799 Dissertation Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Philosophy-PHIL (PHIL)

Courses

PHIL 100 Appreciation of Philosophy (GT-AH3) Credits: 3 (3-0-0)
Course Description: Basic issues in philosophy including theories of knowledge, metaphysics, ethics, and aesthetics.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Ways of Thinking (GT-AH3).

PHIL 103 Moral and Social Problems (GT-AH3) Credits: 3 (3-0-0)
Course Description: Contemporary ethical issues in the United States, such as abortion, euthanasia, and genetic engineering.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Ways of Thinking (GT-AH3).

PHIL 104 Values, Culture, and Food Animal Agriculture Credits: 3 (3-0-0)
Also Offered As: ANEQ 104.
Course Description: Evolution of the social values and cultural understandings shaping modern animal agriculture; current problems in animal agriculture.
Prerequisite: None.
Registration Information: Non-Animal Science majors with freshman or sophomore standing. Credit not allowed for both PHIL 104 and ANEQ 104.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 110 Logic and Critical Thinking (GT-AH3) Credits: 3 (3-0-0)
Course Description: Identify, analyze, and evaluate real arguments in everyday life, politics, the sciences, and the professions.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Ways of Thinking (GT-AH3).

PHIL 112 Reasoning and Problem Solving Credits: 3 (3-0-0)
Course Description: Creative and critical techniques in problem solving and decision making.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 120 History and Philosophy of Scientific Thought (GT-AH3) Credits: 3 (3-0-0)
Course Description: Historical case studies designed to illuminate methods, theory choice, and progress in scientific disciplines.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Ways of Thinking (GT-AH3).

PHIL 130 Bioethics and Society Credits: 2 (2-0-0)
Course Description: Major issues in bioethics.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 145 Environmental Justice and Sustainability Credits: 3 (3-0-0)
Course Description: Introductory philosophical examination of the idea of fairness through an exploration of environmental justice and sustainability.
Prerequisite: None.
Registration Information: Credit not allowed for both PHIL 145 and PHIL 180A1.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 170 World Philosophies (GT-AH3) Credits: 3 (3-0-0)
Course Description: Survey of world philosophical traditions.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Ways of Thinking (GT-AH3).

PHIL 171 Religions of the West Credits: 3 (3-0-0)
Course Description: Major religions of the Near East and West emphasizing their classical development; Judaism, Zoroastrianism, Christianity, Islam.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 172 Religions of the East Credits: 3 (3-0-0)
Course Description: Major religions of India and the Far East emphasizing their classical development; Hinduism, Buddhism, Confucianism, Taoism.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 173 Philosophy of Traditional Judaism Credits: 3 (3-0-0)
Course Description: Concepts and essentials of Jewish philosophy and Judaism, including overview of Jewish lifecycle, history, law, literature, ethics, and mysticism.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 174 World Religions Credits: 3 (3-0-0)
Course Description: Philosophical survey of several major world religions in terms of their historical development, worldviews, and practices.
Prerequisite: None.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 205 Introduction to Ethics Credits: 3 (3-0-0)
Course Description: Problems and theories concerning values and standards, right action, and the good life.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 206 Knowledge and Existence-An Introduction Credits: 3 (3-0-0)
Course Description: Problems and theories concerning knowledge, being, nature of the world.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 210 Introduction to Formal Logic Credits: 3 (3-0-0)
Course Description: Elementary principles, techniques in propositional and predicate logic.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 240 Philosophies of Peace and Nonviolence Credits: 3 (3-0-0)
Course Description: Classic and contemporary religious and philosophical work on peace and nonviolence.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 270 Issues in the Study of Religion Credits: 3 (3-0-0)
Course Description: Contemporary religion, its nature, types, forms of expression.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 295 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 297 Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 300 Ancient Greek Philosophy Credits: 3 (3-0-0)
Course Description: Philosophy of ancient Greece emphasizing Plato and Aristotle.
Prerequisite: PHIL 205 or PHIL 206 or PHIL 210.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 301 17th and 18th Century European Philosophy Credits: 3 (3-0-0)
Course Description: Philosophy from the scientific revolution through Kant.
Prerequisite: PHIL 206 or PHIL 210 or PHIL 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 302 19th Century Philosophy Credits: 3 (3-0-0)
Course Description: Major figures, movements, concepts in Europe and America from about 1800 to early 20th century.
Prerequisite: PHIL 301.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 303 Medieval Philosophy Credits: 3 (3-0-0)
Course Description: In the Medieval period, philosophers in the Pagan, Jewish, Christian, and Islamic traditions simultaneously influenced and opposed one another. Focus on the important debates in these traditions and determine to what extent the cross-cultural philosophical dialogues of the Medieval period can serve as models for cross-cultural philosophical dialogue in our own time.
Prerequisite: PHIL 100 to 499 - at least 3 credits.
Registration Information: Credit not allowed for both PHIL 303 and PHIL 380A2.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 305A Philosophical Issues in the Professions: Business Ethics Credits: 3 (3-0-0)
Course Description: Philosophical problems, theories relevant to business.
Prerequisite: None.
Registration Information: May be repeated for credit with consent of department chair.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 305B Philosophical Issues in the Professions: Medical Life Science Credits: 3 (3-0-0)
Course Description: Philosophical problems, theories relevant to medical-life science professions.
Prerequisite: None.
Registration Information: May be repeated for credit with consent of department chair.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 305C Philosophical Issues in the Professions: Caring Professions Credits: 3 (3-0-0)
Course Description: Philosophical problems, theories related to caring professions.
Prerequisite: None.
Registration Information: May be repeated for credit with consent of department chair.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 305D Philosophical Issues in the Professions: Engineering Credits: 3 (3-0-0)
Course Description: Philosophical problems, theories relevant to engineering.
Prerequisite: None.
Registration Information: May be repeated for credit with consent of department chair.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 305E Philosophical Issues in the Professions: Animal Science Credits: 3 (3-0-0)
Course Description: Philosophical problems, theories relevant to professions in animal science.
Prerequisite: None.
Registration Information: May be repeated for credit with consent of department chair.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 305F Philosophical Issues in the Professions: Information Science Credits: 3 (3-0-0)
Course Description: Philosophical problems, theories relevant to professions in information science.
Prerequisite: None.
Registration Information: May be repeated for credit with consent of department chair.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 305G Philosophical Issues in the Professions: Research Ethics Credits: 3 (3-0-0)
Course Description: Philosophical problems, theories relevant to professions in information science.
Prerequisite: None.
Registration Information: May be repeated for credit with consent of department chair.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 310 Writing and Reasoning Credits: 3 (3-0-0)
Course Description: Logic-based, analytic and critical writing and reading of complex argument and explanation types.
Prerequisite: (CO 150) and (PHIL 110 or PHIL 210).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 312 Philosophy of Law Credits: 3 (3-0-0)
Course Description: Philosophical concepts, theories, and problems concerning the law.
Prerequisite: None.
Registration Information: Sophomore standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 315 Philosophy of Language Credits: 3 (3-0-0)
Course Description: Basic concepts and principles in the theory of language.
Prerequisite: PHIL 205 or PHIL 206 or PHIL 210 or PHIL 300 to 481 - at least 1 course.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 318 Aesthetics-Visual Arts Credits: 3 (3-0-0)
Course Description: Central, traditional, and contemporary theories of the nature of visual arts.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 320 Ethics of Sustainability Credits: 3 (3-0-0)
Course Description: Ethical and conceptual issues surrounding creation of sustainable societies and lifestyles.
Prerequisite: None.
Registration Information: Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 322 Biomedical Ethics Credits: 3 (3-0-0)
Course Description: Assorted topics at the intersection of ethics, the biological sciences, medicine, and health policy. Topics may include ethical problems at the beginning and end of life (e.g., abortion, euthanasia), cloning, research ethics, genetic engineering, human enhancement, informed consent, disability, justice in health care, the doctor-patient relationship, conflicts of interest, and others.
Prerequisite: None.
Registration Information: Sophomore standing.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 325 Philosophy of Natural Science Credits: 3 (3-0-0)
Course Description: Structure of theories; basic concepts and assumptions; methods of explanation and confirmation; emphasis varies between physical and life sciences.
Prerequisite: PHIL 210.
Registration Information: PHIL 210; one course in natural sciences. May be repeated for credit with consent of department chair.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 327 Philosophy of Behavioral Sciences Credits: 3 (3-0-0)
Course Description: Structure of theories; basic concepts; explanation and confirmation; reductionism and values; emphasis varies between psychology and social sciences.
Prerequisite: PHIL 120 or PHIL 205 or PHIL 206 or PHIL 210 or PHIL 300 to 481 - at least 1 course.
Registration Information: May be repeated for credit with consent of department chair.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 330 Agricultural and Food System Ethics Credits: 3 (3-0-0)
Also Offered As: AGRI 330.
Course Description: Basic concepts in ethics and their application to agriculture and the food system.
Prerequisite: CO 150.
Registration Information: Credit not allowed for both PHIL 330 and AGRI 330.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 333 Latin American Philosophy Credits: 3 (3-0-0)
Course Description: Major figures, problems, and traditions in Latin American philosophy.
Prerequisite: PHIL 100 to 499 - at least 3 credits.
Registration Information: Sophomore standing.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 335 Islam: Cosmology and Practice Credits: 3 (3-0-0)
Course Description: Cosmological, spiritual, ritual, and practical aspects of Islam.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 345 Environmental Ethics Credits: 3 (3-0-0)
Course Description: Scientific, philosophical, and religious concepts of nature as they bear on human conduct; an ecological perspective.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 348 Philosophy of Literature and the Arts Credits: 3 (3-0-0)
Course Description: Aesthetic and philosophical issues in literature and the arts.
Prerequisite: None.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 349 Philosophies of East Asia Credits: 3 (3-0-0)
Course Description: Philosophical traditions of East Asia, including Confucianism, Daoism, and Zen Buddhism.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 350 Social and Political Philosophy Credits: 3 (3-0-0)
Course Description: Moral relationships between persons and institutions.
Prerequisite: PHIL 205 or PHIL 206 or PHIL 300 to 499 - at least 1 course.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 351 Interpreting the New Testament Credits: 3 (3-0-0)
Course Description: Contemporary methods of New Testament interpretation.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 353 Feminist Philosophies Credits: 3 (3-0-0)
Course Description: Conceptual, moral, and social analysis of women's issues from a variety of philosophical feminist perspectives.
Prerequisite: None.
Registration Information: Sophomore standing or higher.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 354 Philosophy and Science Fiction Credits: 3 (3-0-0)
Course Description: Science fiction offers students the chance to consider difficult philosophical questions with real-world relevance. Students will read science fiction to stimulate thinking about three questions: (1) What does it mean for human technology to be natural or unnatural, and how should technology and nature be related? (2) What constitutes possession of rationality and/or intelligence? (3) What are space and time, and how should humans understand the spatiality and temporality of our own lives?
Prerequisite: CO 150.
Registration Information: Sophomore standing.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 355 Philosophy of Religion Credits: 3 (3-0-0)
Course Description: Philosophical analysis of nature of religion and structure of meaning in religious discourse.
Prerequisite: PHIL 000 to 99999 - at least 3 credits.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 359 Philosophy of Human Nature Credits: 3 (3-0-0)
Course Description: Philosophical study of theories of human nature.
Prerequisite: PHIL 205 or PHIL 206 or PHIL 300 to 481 - at least 1 course.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 360 Topics in Asian Philosophy Credits: 3 (3-0-0)
Course Description: Examination of major philosophical topics from ethics, sociopolitical philosophy, metaphysics, aesthetics.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 366 Philosophy of Aging Credits: 3 (3-0-0)
Course Description: Philosophical problems related to experience of growing old.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 370 Contemporary Western Religious Thought Credits: 3 (3-0-0)
Course Description: Contemporary interpretations of significant Western religious traditions.
Prerequisite: PHIL 171 or PHIL 172 or PHIL 270.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 371 Contemporary Eastern Religious Thought Credits: 3 (3-0-0)
Course Description: Transformation of Indian and Chinese religious thought in the modern period.
Prerequisite: None.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 372 Meaning and Truth in Religion Credits: 3 (3-0-0)
Course Description: Nature, variety, functions, interpretation, evaluation of religious language.
Prerequisite: PHIL 171 or PHIL 172 or PHIL 270.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 375 Science and Religion Credits: 3 (3-0-0)
Course Description: Encounter of religious belief with Western science, influences on each other, present relations.
Prerequisite: PHIL 171 or PHIL 172 or PHIL 270.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 379 Mysticism East and West Credits: 3 (3-0-0)
Course Description: Varieties of mystical experience in selected Eastern and Western representatives.
Prerequisite: PHIL 171 or PHIL 172 or PHIL 270.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description: Teaching basic philosophy courses.
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 407 Phenomenology and Existentialism Credits: 3 (3-0-0)
Course Description: Methods, epistemology, metaphysics, axiology, ethics of 20th-century phenomenologists and existentialists.
Prerequisite: PHIL 205 or PHIL 206 or PHIL 300 or PHIL 301.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 409 20th Century Philosophy Credits: 3 (3-0-0)
Course Description: Major figures, trends, and concepts in 20th-century philosophy.
Prerequisite: PHIL 301.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 410 Formal Logic Credits: 3 (3-0-0)
Course Description: Quantification theory; axiomatic systems; rigorous axiomatization of some logical or mathematical theory.
Prerequisite: PHIL 210 or CS 270.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 411 Formal Tools in Philosophy Credits: 3 (3-0-0)
Course Description: Formal methodological tools used in contemporary philosophy. Topics may include modal logic, formal semantics, and decision theory.
Prerequisite: PHIL 210.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 415 Logic and Scientific Method Credits: 3 (3-0-0)
Course Description: Approaches to analysis, assessment of scientific inference, problems of induction; applications to natural, behavioral, social sciences.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 425 Epistemology Credits: 3 (3-0-0)
Course Description: Concepts, problems, and theories of knowledge.
Prerequisite: PHIL 210 or PHIL 300 or PHIL 301.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 435 Metaphysics Credits: 3 (3-0-0)
Course Description: Philosophical problems concerning nature, structure, and basic constituents of reality.
Prerequisite: PHIL 210 or PHIL 300 or PHIL 301.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 438 Philosophy of Mind Credits: 3 (3-0-0)
Course Description: Nature and status of mind, mental states, mental activity; the mind-body problem, mind and human sciences, mind and self, nature of human action.
Prerequisite: PHIL 300 or PHIL 301 or PHIL 302 or PHIL 315 or PHIL 325 or PHIL 327 or PHIL 359.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 447 Ethical Theory Credits: 3 (3-0-0)
Course Description: Fundamental problems and options in ethical theory.
Prerequisite: PHIL 205 or PHIL 300 or PHIL 301.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 455 Islamic Philosophy Credits: 3 (3-0-0)
Course Description: Development of philosophical thought in early, middle, and late Muslim civilization.
Prerequisite: PHIL 206 and PHIL 210.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 460 Seminar in Great Philosophers Credits: 3 (3-0-0)
Course Description: Works of one major figure in the history of philosophy.
Prerequisite: PHIL 300 or PHIL 301 or PHIL 302.
Registration Information: Maximum of 9 credits allowed in course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 461 Seminar in Philosophical Issues and Problems Credits: 3 (3-0-0)
Course Description: Thorough examination of a major philosophical problem or issue.
Prerequisite: PHIL 300 or PHIL 301 or PHIL 302.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 462 Capstone Seminar Credits: 3 (1-0-2)
Course Description: In-depth, integrative study of major topics, texts, and problems in both philosophy and religion.
Prerequisite: PHIL 300 and PHIL 301 or PHIL 300 and PHIL 302 or PHIL 300 and PHIL 409 or PHIL 301 and PHIL 302 or PHIL 301 and PHIL 409 or PHIL 302 and PHIL 409.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing. Two of the following courses are required: PHIL 300, PHIL 301, PHIL 302, PHIL 409. Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 463 Seminar in Religious Studies Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 479 Topics in Comparative Religions Credits: 3 (3-0-0)
Course Description: Comparative study of topics in world religions and philosophy or religion.
Prerequisite: PHIL 171 or PHIL 172 or PHIL 270.
Registration Information: PHIL 171 or PHIL 172 or PHIL 270; 300-level religious studies course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 495 Independent Study Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 497 Group Study Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 499 Thesis Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Registration Information: Written consent of department chair.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 500 Seminar in Major Philosophical Texts Credits: 3 (0-0-3)
Course Description: Intensive study of one or two major works in the history of philosophy.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 501 Seminar: Topics in History of Philosophy Credits: 3 (0-0-3)
Course Description: Selected figures and periods from the history of western philosophy, from ancient to modern. Topics change from semester to semester.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 525 Seminar in Epistemology Credits: 3 (0-0-3)
Course Description: Analysis of contemporary theories of knowledge.
Prerequisite: PHIL 425.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 527 Seminar in Philosophy of Science Credits: 3 (0-0-3)
Course Description: Systematic survey of major 20th-century philosophies of science.
Prerequisite: PHIL 325 or PHIL 327 or PHIL 415.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 535 Seminar in Metaphysics Credits: 3 (0-0-3)
Course Description: Contemporary topics in philosophical metaphysics.
Prerequisite: PHIL 500.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 545 Concept of Natural Value Credits: 3 (3-0-0)
Course Description: Philosophical analysis of nature as a value carrier. Types of value associated with nature, their interrelations.
Prerequisite: PHIL 345.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 547 Seminar in Meta-Ethics Credits: 3 (0-0-3)
Course Description: Systematic and historical overview of contemporary theories of meta-ethics.
Prerequisite: PHIL 447.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 548 Seminar in Normative Ethical Theory Credits: 3 (0-0-3)
Course Description: Major topics in contemporary theories of normative ethics.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 550 Ethics and International Development Credits: 3 (3-0-0)
Also Offered As: IE 550.
Course Description: Ethical reflection applied to development goals, strategies of Third World countries; relations between developed and developing countries.
Prerequisite: None.
Registration Information: Written consent of instructor.
Credit not allowed for both PHIL 550 and IE 550.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 555 Seminar in Philosophical Models of Nature Credits: 3 (0-0-3)
Course Description: Comparative inquiry into the "nature" of nature as viewed by philosophers of the past and present.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 564 Seminar in Animal Rights Credits: 3 (0-0-3)
Course Description: Contemporary issues concerning nature and moral status of nonhuman animals.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 565 Seminar in Environmental Philosophy Credits: 3 (0-0-3)
Course Description: Aesthetic appreciation of nature, duties concerning fauna, flora, endangered species, ecosystem.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 566 Seminar in Applied Philosophy Credits: 3 (0-0-3)
Course Description: Application of philosophical ideas and methods to analyze practical problems such as distributive justice, abortion, human rights conflicts.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 570 Seminar in Contemporary Philosophical Theory Credits: 3 (0-0-3)
Course Description: Major concepts and problems in current philosophical theory.
Prerequisite: PHIL 500.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 593 Seminar Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 601 Master of Profess. Natural Sciences Ethics Credit: 1 (0-0-1)
Also Offered As: NSCI 601.
Course Description: Ethical issues involving the care and treatment of animals in captive environments. Lectures, case studies, discussions, and student presentations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in the Master of Professional Natural Sciences program required. Credit not allowed for both PHIL 601 and NSCI 601. This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 662 Seminar Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 666 Science and Ethics Credits: 3 (3-0-0)
Also Offered As: CM 666.
Course Description: Ethical issues of research on humans and animals; biosafety; fraud and deception in science; genetic engineering.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Credit not allowed for both PHIL 666 and CM 666.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 684 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 695 Independent Study Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 697 Group Study Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 698 Research Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 699 Thesis Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

Physics-PH (PH)

Courses

PH 110 Physics of Everyday Phenomena (GT-SC2) Credits: 3 (3-0-0)
Course Description: Fundamental concepts of physics and elementary quantitative reasoning applied to phenomena in everyday life and beyond.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

PH 111 Physics of Everyday Phenomena Laboratory (GT-SC1) Credit: 1 (0-2-0)
Course Description: Experiments dealing with basic physics concepts including explorations of everyday phenomena.
Prerequisite: PH 110, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

PH 121 General Physics I (GT-SC1) Credits: 5 (3-2-1)
Course Description: Concepts of force, torque, energy, momentum, work used to cover fluids, waves, sound, temperature, heat; biological, physical examples (noncalculus).
Prerequisite: MATH 125, may be taken concurrently or MATH 155, may be taken concurrently or MATH 157, may be taken concurrently or MATH 160, may be taken concurrently.
Registration Information: Must register for lecture, lab, and recitation. Credit not allowed for both PH 121 and PH 141.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

PH 122 General Physics II (GT-SC1) Credits: 5 (3-2-1)
Course Description: Electricity including electrostatics and simple circuits; magnetism; optics; nuclear physics, radiation; biological, physical examples (noncalculus).
Prerequisite: PH 121 or PH 141.
Registration Information: Must register for lecture, lab, and recitation. Credit not allowed for both PH 122 and PH 142.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

PH 141 Physics for Scientists and Engineers I (GT-SC1) Credits: 5 (3-2-1)
Course Description: Forces, energy, momentum, angular momentum, oscillations, waves, heat, thermodynamics (calculus based).
Prerequisite: MATH 126, may be taken concurrently and MATH 155, may be taken concurrently or MATH 155, may be taken concurrently or MATH 159, may be taken concurrently or MATH 160, may be taken concurrently.
Registration Information: Must register for lecture, lab, and recitation. Credit not allowed for both PH 141 and PH 121.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

PH 142 Physics for Scientists and Engineers II (GT-SC1) Credits: 5 (3-2-1)
Course Description: Electricity and magnetism, circuits, light, optics (calculus based).
Prerequisite: (PH 141) and (MATH 161, may be taken concurrently or MATH 255, may be taken concurrently or MATH 271, may be taken concurrently).
Registration Information: Must register for lecture, lab, and recitation. Credit not allowed for both PH 142 and PH 122.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

PH 245 Introduction to Electronics Credits: 3 (2-3-0)
Course Description: AC circuits, physical bases and applications of electronic devices.
Prerequisite: MATH 161 and PH 142.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 293 Selected Topics in Physics Credit: 1 (1-0-0)
Course Description: Selected topics in physics with emphasis on depth of understanding.
Prerequisite: PH 142.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PH 298 Introductory Research Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 314 Introduction to Modern Physics Credits: 4 (4-0-0)
Course Description: Relativity; quantum mechanics; atomic structure; applications to solid-state, nuclear, and elementary particle physics.
Prerequisite: (MATH 261, may be taken concurrently) and (PH 142).
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 315 Modern Physics Laboratory Credits: 2 (0-4-0)
Course Description: Experiments in modern physics.
Prerequisite: PH 314, may be taken concurrently.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 327 Analytical Techniques for Physics Credits: 3 (3-0-0)
Course Description: Applications to physics of curvilinear coordinate systems, line/surface integrals, linear algebra, ordinary/partial differential eqs., probability.
Prerequisite: (MATH 261) and (MATH 340 or MATH 345) and (PH 142 and PH 314).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PH 341 Mechanics Credits: 4 (4-0-0)
Course Description: Particle dynamics, translation and rotation of rigid bodies, moving coordinate systems, Lagrangian mechanics, matrix and tensor methods.
Prerequisite: (MATH 340 or MATH 345) and (PH 141).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 351 Electricity and Magnetism Credits: 4 (4-0-0)
Course Description: Electrostatics, magnetostatics, currents, time-dependent electric and magnetic fields, radiation.
Prerequisite: (MATH 340 or MATH 345) and (PH 142).
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 353 Optics and Waves Credits: 4 (3-3-0)
Course Description: Geometrical optics; wave optics; interference, diffraction, and polarization; quantum optics.
Prerequisite: MATH 261 and PH 142.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 361 Physical Thermodynamics Credits: 3 (3-0-0)
Course Description: Laws of thermodynamics; thermodynamic potentials; applications such as fluids, phase transitions, electrical and magnetic systems, binary mixtures.
Prerequisite: MATH 261 and PH 142.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description: Participation as a physics tutor.
Prerequisite: PH 121 or PH 141.
Registration Information: Written consent of department chair required. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 425 Advanced Physics Laboratory Credits: 2 (0-4-0)
Course Description: Advanced experiments in electricity and magnetism, statistical physics and quantum mechanics.
Prerequisite: PH 315 and PH 451.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 451 Introductory Quantum Mechanics I Credits: 3 (3-0-0)
Course Description: Schrodinger's theory of wave mechanics, potential wells, harmonic oscillators, wave packets, operators, angular momentum.
Prerequisite: (MATH 340 or MATH 345) and (PH 314).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 452 Introductory Quantum Mechanics II Credits: 3 (3-0-0)
Course Description: Approximation techniques, perturbation theory, identical particles and spin, structure and spectra of atoms and molecules, hydrogen atom.
Prerequisite: PH 451.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 462 Statistical Physics Credits: 3 (3-0-0)
Course Description: Maxwell-Boltzmann, Fermi-Dirac, and Bose-Einstein distribution functions; kinetic theory; applications to solids, metals, semiconductors, and gases.
Prerequisite: MATH 340 and PH 314 and PH 361.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 492 Seminar Credit: 1 (0-0-1)
Course Description: Preparation and presentation of seminars on selected modern topics.
Prerequisite: PH 315.
Registration Information: Written consent of instructor required.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 495 Independent Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 498 Research Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 517 Chaos, Fractals, and Nonlinear Dynamics Credits: 3 (3-0-0)
Course Description: Strange attractors, fractal dimensions, Lyapunov exponents, multifractal spectrum, period doubling, universality, intermittency, time-delay embedding.
Prerequisite: (MATH 261 and PH 341) and (MATH 340 or MATH 345).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PH 521 Introduction to Lasers Credits: 3 (3-0-0)
Course Description: Stimulated emission; laser resonators; theory of laser oscillation; specific laser systems; applications.
Prerequisite: (MATH 340 and PH 353) and (CHEM 476 or PH 451).
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 522 Introductory Laser Laboratory Credit: 1 (0-2-0)
Course Description: Experiments providing hands-on experiences with lasers.
Prerequisite: PH 521, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PH 531 Introductory Condensed Matter Physics Credits: 3 (3-0-0)
Course Description: Crystal structures and bonding, electronic levels and vibrations, dielectric, optical and magnetic properties, quasiparticles, superconductivity.
Prerequisite: PH 451 and PH 361.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PH 561 Elementary Particle Physics Credits: 3 (3-0-0)
Course Description: Particle interactions and detection techniques. Quark model, scattering models and standard model of electroweak interactions, physics of colliders.
Prerequisite: PH 451.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PH 571 Mathematical Methods for Physics I Credits: 3 (3-0-0)
Course Description: Vector analysis, eigenvalues and eigenvectors, infinite series, method of Frobenius, complex variables, contour integration.
Prerequisite: MATH 340.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 572 Mathematical Methods for Physics II Credits: 3 (3-0-0)
Course Description: Partial differential equations, Sturm-Liouville theory, special functions, Green's functions, Fourier series, Fourier and Laplace transforms.
Prerequisite: PH 571.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 621 Classical Mechanics Credits: 3 (3-0-0)
Course Description: Central forces, scattering, noninertial reference frames, Coriolis force, Lagrange's and Hamilton's equations, small oscillations, continuum mechanics.
Prerequisite: (PH 341) and (PH 571, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 631 Modern Topics in Condensed Matter Physics Credits: 3 (3-0-0)
Course Description: Selected topics in modern condensed matter physics. Examples include topological phases of matter, superconductivity, heavy fermions, density functional theory, surfaces and interfaces.
Prerequisite: PH 531.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

PH 641 Electromagnetism I Credits: 3 (3-0-0)
Course Description: Electrostatics in a vacuum and a medium, general solution of Laplace's equation, Green's functions, magnetostatics in a vacuum and a medium.
Prerequisite: (PH 351) and (PH 571).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 642 Electromagnetism II Credits: 3 (3-0-0)
Course Description: Maxwell's equations, electromagnetic waves, radiation by accelerated charges, special relativity, Lagrangian formulation of electromagnetism.
Prerequisite: PH 641.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 651 Quantum Mechanics I Credits: 3 (3-0-0)
Course Description: WKB theory, Heisenberg picture, 3D wells, hydrogen atom, time-independent perturbation theory, angular momentum and spin, Clebsch-Gordan coefficients.
Prerequisite: (PH 452) and (PH 571, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 652 Quantum Mechanics II Credits: 3 (3-0-0)
Course Description: Wigner-Eckhart theorem, symmetries, density matrix, identical particles, interaction picture, time-dependent perturbation theory, scattering.
Prerequisite: PH 651.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 671 Statistical Mechanics Credits: 3 (3-0-0)
Course Description: Canonical and grand-canonical ensembles; Maxwell-Boltzmann, Bose-Einstein, and Fermi-Dirac statistics; density operator; Bose-Einstein condensation.
Prerequisite: (PH 452 and PH 462) and (PH 571, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PH 692 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 693 Current Topics in Physics Research Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 722 Quantum Electronics Credits: 3 (3-0-0)
Course Description: One- and two-photon spectroscopy; broadening mechanisms; nonlinear optics; coherent phenomena; experimental methods.
Prerequisite: PH 521.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PH 731 Condensed Matter Theory Credits: 3 (3-0-0)
Course Description: Second quantization; electrons; phonons; electron-phonon interaction; superconductivity; magnetism; spin waves; density-functional methods; symmetry.
Prerequisite: (PH 462) and (PH 531) and (PH 652).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PH 762 Elementary Particle Theory Credits: 3 (3-0-0)
Course Description: Symmetries, electrodynamics, renormalization, and the running coupling constant. Hadron structure, QCD, gauge symmetry and electroweak interaction.
Prerequisite: PH 561 and PH 652.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

PH 770 Quantum Theory Credits: 3 (3-0-0)
Course Description: Formal scattering theory; relativistic quantum mechanics, quantum theory of radiation, symmetries and statistics, many-body theory.
Prerequisite: PH 652.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 784 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description: Supervised teaching of general physics laboratory and recitation sections.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 793A Seminar: Condensed Matter Physics Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 793B Seminar: Laser Spectroscopy/Quantum Electronics Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 793C Seminar: Statistical Mechanics Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 793D Seminar: Mathematical Physics Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 793E Seminar: High Energy Physics Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 795 Independent Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Political Science-POLS (POLS)

Courses

POLS 101 American Government and Politics (GT-SS1) Credits: 3 (3-0-0)
Course Description: Principles, structures, and processes of American national government.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

POLS 103 State and Local Government and Politics (GT-SS1) Credits: 3 (3-0-0)
Course Description: Principles, organization, and operation of American state and local government.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

POLS 131 Current World Problems (GT-SS1) Credits: 3 (3-0-0)
Course Description: Background and nature of international political events.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Economic or Political Systems (GT-SS1).

POLS 232 International Relations (GT-SS1) Credits: 3 (3-0-0)
Course Description: Basic concepts and approaches to international relations.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Economic or Political Systems (GT-SS1).

POLS 241 Comparative Government and Politics (GT-SS1) Credits: 3 (3-0-0)
Course Description: Major foreign political systems stressing cross-national comparison of political forces, parties, ideologies, and institutions.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Economic or Political Systems (GT-SS1).

POLS 302 U.S. Political Parties and Elections Credits: 3 (3-0-0)
Course Description: Foundational, institutional, and behavioral features of American political parties and elections.
Prerequisite: POLS 101.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 303 Politics of Organized Interests Credits: 3 (3-0-0)
Course Description: Role of interests in varied forms: social movements, institutions, associations, and membership groups in American politics.
Prerequisite: POLS 101.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 304 Legislative Politics Credits: 3 (3-0-0)
Course Description: Structure, organization, behavior, processes, and policy implications of U.S. legislatures.
Prerequisite: POLS 101.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 305 Judicial Politics Credits: 3 (3-0-0)
Course Description: Allocation of powers among judicial structures in American federal system.
Prerequisite: POLS 101.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 306 Executive Politics Credits: 3 (3-0-0)
Course Description: Structure, organization, behavior, processes, and policy implications of U.S. executive leadership.
Prerequisite: POLS 101.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 309 Urban Politics Credits: 3 (3-0-0)
Course Description: Governmental structures and political processes in urban government.
Prerequisite: POLS 101 or POLS 103.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 320 Empirical Political Analysis Credits: 3 (3-0-0)
Course Description: Methods of empirical political inquiry.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 321 Empirical Political Analysis Laboratory Credit: 1 (0-2-0)
Course Description: Laboratory applications of empirical research methods.
Prerequisite: None.
Registration Information: Must have concurrent registration in POLS 320.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 331 Politics and Society Along Mexican Border Credits: 3 (3-0-0)
Course Description: Analysis of U.S.-Mexican relations and domestic politics as these affect regional characteristics and development of U.S.-Mexican border region.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 332 International Political Economy Credits: 3 (3-0-0)
Also Offered As: ECON 332.
Course Description: Theories on relations between international politics and economics. Policy implications of different theories and case studies.
Prerequisite: (ECON 202 or AREC 202) and (POLS 232).
Registration Information: Credit not allowed for both POLS 332 and ECON 332.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 341 Western European Government and Politics Credits: 3 (3-0-0)
Course Description: Politics in Western European countries such as Britain, France, and Germany, and countries influenced by European traditions.
Prerequisite: POLS 241.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 345 Russian, Central, and East European Politics Credits: 3 (3-0-0)
Course Description: Political structures and processes in Russia, Central and East Europe, and selected post-Communist countries.
Prerequisite: POLS 241.
Registration Information: Must register for lecture and recitation. Freshman not allowed.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 347 Comparative Authoritarianism Credits: 3 (3-0-0)
Course Description: Explore non-democratic regimes in the world and the dynamics precipitating the emergence and breakdown of authoritarianism.
Prerequisite: POLS 241.
Registration Information: Sophomore standing. Credit not allowed for both POLS 347 and POLS 380A3.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 351 Public Administration Credits: 3 (3-0-0)
Course Description: Government organization and management; decision processes; political and intergovernmental relations in administration.
Prerequisite: POLS 101.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 361 U.S. Environmental Politics and Policy Credits: 3 (3-0-0)
Course Description: Public and contemporary issues relating to U.S. environmental policy.
Prerequisite: POLS 101.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 362 Global Environmental Politics Credits: 3 (3-0-0)
Course Description: Cross-national and international contexts of environmental politics and policy.
Prerequisite: POLS 232.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 364 Air, Climate, and Energy Policy Analysis Credits: 3 (3-0-0)
Course Description: Discussion and analysis of air quality, climate, and energy nexus, with a focus on policy impacts on the economy and the environment under future scenarios.
Prerequisite: POLS 101.
Registration Information: Sophomore standing. Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

POLS 382A Study Abroad: Global Environmental Politics in the Amazon Credits: 3 (0-0-3)
Course Description: Explores global environmental politics in the Brazilian Amazon. Through lectures, site visits, and meetings with local decision-makers, stakeholders and activists, apply international relations theories and concepts to understand various social, economic, political and ecological dimensions of global environmental problems such as biodiversity loss and climate change and efforts to address these problems from the global to local levels.
Prerequisite: POLS 232.
Registration Information: Sophomore standing. Written consent of instructor. Students need a minimum of a 2.5 GPA per Education Abroad standards.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 392 Washington DC Semester Seminar Credits: 3 (0-0-3)
Course Description: Topics vary each semester, but each focuses on some aspect of politics and government in Washington, DC. Offered by The Washington Center which typically offers 25 courses each semester although the specific courses offered each semester varies.
Prerequisite: POLS 101 or POLS 103 or POLS 232 or POLS 241.
Registration Information: Sophomore standing. Requires written consent of program advisor, and the completion of the internal application form for students interested in the program. To be eligible, students should have a 3.000 GPA or greater.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

POLS 405 Race and Ethnicity in U.S. Politics Credits: 3 (3-0-0)
Course Description: Relationships among American racial/ethnic groups, political attitudes, behavior; race and ethnicity roles in elections; implications for public policy.
Prerequisite: POLS 101.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 409 Urban and Regional Politics Credits: 3 (3-0-0)
Course Description: Governance processes and public policies in metropolitan regions.
Prerequisite: POLS 101 or POLS 103.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 410 American Constitutional Law Credits: 3 (3-0-0)
Course Description: Allocation of powers among structures in American federal system.
Prerequisite: POLS 101.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 413 U.S. Civil Rights and Liberties Credits: 3 (3-0-0)
Course Description: U.S. Constitutional provisions and cases pertaining to the rights and liberties of individuals.
Prerequisite: POLS 101.
Terms Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 420 History of Political Thought Credits: 3 (3-0-0)
Course Description: Issues and texts related to tradition of political thought from the ancient through the modern period.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 421 Contemporary Political Theories Credits: 3 (3-0-0)
Course Description: Major political theories and ideologies of contemporary times.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 422 Democratic Theory Credits: 3 (3-0-0)
Course Description: Competing approaches to the theory and practice of democracy, both locally and globally.
Prerequisite: POLS 101.
Registration Information: Sophomore standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 423 American Political Theories Credits: 3 (3-0-0)
Course Description: Major American theories and ideologies: their development and present uses.
Prerequisite: POLS 101.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 431 International Law Credits: 3 (3-0-0)
Course Description: Rules and obligations for conduct of relations among states and other international entities.
Prerequisite: POLS 232.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 433 International Organization Credits: 3 (3-0-0)
Course Description: History, development, structure, process, and activity of selected public international organizations.
Prerequisite: POLS 232.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 435 United States Foreign Policy Credits: 3 (3-0-0)
Course Description: Institutions, responsibilities, processes, and issues in formulation and execution of U.S. foreign policy.
Prerequisite: POLS 232.
Registration Information: Sophomore standing. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 436 Comparative Foreign Policy Credits: 3 (3-0-0)
Course Description: Effect of varying international and domestic contexts on foreign policy choices and outcomes across different countries, cultures, issues, and time.
Prerequisite: POLS 232 and POLS 241.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 437 International Security Credits: 3 (3-0-0)
Course Description: Examines the conditions that make for war and peace in international relations.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 440 Political Geography Credits: 3 (3-0-0)
Also Offered As: GR 440.
Course Description: Examines the meaning of political space; states and nations; competition for territory, including methods and justifications; the structure of political space focusing on states; geopolitics; and the state in an era of globalization. Concepts are illustrated by real-world situations.
Prerequisite: GR 100 or POLS 101.
Registration Information: Sophomore standing. Sections may be offered: Online or Mixed Face-to-Face. Credit not allowed for both GR 440 and POLS 440.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 442 Environmental Politics in Developing World Credits: 3 (3-0-0)
Course Description: Examines environmental politics in developing countries and evaluates climate change, natural resource governance and environmental justice.
Prerequisite: POLS 241.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 443 Comparative Social Movements Credits: 3 (3-0-0)
Course Description: Reviews major works dealing with conceptual and theoretical foundations of social movements and examines a number of cases across regions.
Prerequisite: POLS 241.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 444 Comparative African Politics Credits: 3 (3-0-0)
Course Description: African political systems focusing on precolonial, colonial influences; rise of nationalism; approaches to new political order; influences of development.
Prerequisite: POLS 241.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 445 Comparative Asian Politics Credits: 3 (3-0-0)
Course Description: East and South Asian political systems emphasizing issues of development, political culture, and institutional change.
Prerequisite: POLS 241.
Terms Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 446 Politics of South America Credits: 3 (3-0-0)
Course Description: South American political actors and institutions with emphasis on themes of development, democracy, revolution, and international affairs.
Prerequisite: POLS 241.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 447 Politics in Mexico, Central America, Caribbean Credits: 3 (3-0-0)
Course Description: Mexican politics with comparison to one or more Central American and Caribbean countries.
Prerequisite: POLS 241.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 448 Comparative Racial/Ethnic Politics Credits: 3 (3-0-0)
Course Description: Comparative examination of politics of race and ethnicity and role it plays in formation of nation-states.
Prerequisite: POLS 241.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 449 Middle East Politics Credits: 3 (3-0-0)
Course Description: Political issues of the Middle East, including the Palestinian-Israeli conflict, Islamism, and democratization.
Prerequisite: POLS 241.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 451 Public Policy Design and Governance Credits: 3 (3-0-0)
Course Description: Examination of governance institutions outside the scope of traditional bureaucratic organizations and accountability.
Prerequisite: POLS 101 or POLS 103.
Registration Information: Junior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 459 Program Evaluation for Public Administrators Credits: 3 (3-0-0)
Course Description: An overview of research methods and statistical methods for public administrators.
Prerequisite: POLS 101.
Registration Information: Junior or senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 460 Public Policy Process Credits: 3 (3-0-0)
Course Description: Explanations of U.S. policy formation, implementation, and impact.
Prerequisite: POLS 101.
Registration Information: Junior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 462 Globalization, Sustainability, and Justice Credits: 3 (3-0-0)
Course Description: Public and private policies to promote sustainability and social justice in a globalizing world.
Prerequisite: POLS 232 or POLS 241.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 463 Urban Policy and Management Credits: 3 (3-0-0)
Course Description: Policy choices and management issues associated with urban government.
Prerequisite: POLS 101 or POLS 103.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 465 Public Policy Analysis Credits: 3 (3-0-0)
Course Description: Methods and tools used in the practice of policy analysis and evaluation of current public policy; emphasis on applied analysis.
Prerequisite: POLS 101.
Registration Information: Sophomore standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 482A Study Abroad: Politics and Culture in Turkey Credits: 3 (0-0-3)
Course Description: Politics, history and material culture of Turkey. A study abroad experience.
Prerequisite: POLS 241.
Registration Information: Written consent of instructor. Freshman not allowed.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 482B Study Abroad: Comparative UK and US Policy - London Credits: 3 (0-0-3)
Course Description: Study and practice of public policy and law in the US and UK. In-depth comparative study of the central features of the American and UK policy-making process, administration, and legal system. Review a variety of substantive policy issues and existing public policies from a comparative perspective.
Prerequisite: POLS 101 or POLS 103 or POLS 241.
Registration Information: Sophomore standing. Written consent of instructor. This is a partial semester course. Credit not allowed for both POLS 482B and POLS 482C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 482C Study Abroad: London Experience Credit: 1 (0-0-1)
Course Description: Study and practice of public policy and law in the US and UK. In-depth comparative study of the central features of the American and UK policy-making process, administration, and legal system. Review a variety of substantive policy issues and existing public policies from a comparative perspective.
Prerequisite: POLS 101 or POLS 103 or POLS 241.
Registration Information: Sophomore standing. Written consent of instructor. This is a partial semester course. Credit not allowed for both POLS 482B and POLS 482C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 486A Practicum: Legislative Politics Credits: 6 (0-8-2)
Course Description:
Prerequisite: None.
Registration Information: Must register for laboratory and recitation.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

POLS 486B Practicum: Government Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

POLS 486C Practicum: Civic Engagement Credits: 3 (1-0-4)
Also Offered As: SPCM 486C.
Course Description: Participatory study of civic engagement in public education. Examination of civic engagement pedagogies and their role in public life. Evaluation of and participation in Public Achievement program in partnership with local K-12 schools.
Prerequisite: None.
Registration Information: Must register for lecture and practicum. POLS 486C and SPCM 486C may not be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 487 Internship – Washington DC Semester Credits: Var[6-9] (0-0-0)
Course Description: Students in The Washington Center semester programs will work with an organization in Washington DC. Most internships are for 4 days/week and individually tailored for each student. The Washington Center ensures that all internships are "substantive and challenging." At least 80% of the student's work is non-clerical. Supervised by a professional academic program advisor.
Prerequisite: POLS 101 or POLS 103 or POLS 232 or POLS 241.
Registration Information: Sophomore standing. Requires written consent of program advisor, and the completion of the internal application form for students interested in the program. To be eligible, students should have a 3.000 GPA or greater.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

POLS 492 Capstone Seminar Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Registration Information: Must have taken upper-division course in at least four subfields of political science.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

POLS 496 Washington Semester Colloquium Group Study Credits: 3 (0-0-3)
Course Description: Participating in the Washington DC semester program, groups of more than two students will work together under the supervision of faculty to explore how government and politics occurs in Washington, DC. Interaction with members of the cabinet, ambassadors, leading journalists and CEOs. Participation in small group discussions and attendance at programming related to the internship. Portfolio creation of a student's work documenting and reflecting on their experiences.
Prerequisite: POLS 101 or POLS 103 or POLS 232 or POLS 241.
Registration Information: Sophomore standing. Requires written consent of program advisor, and the completion of the internal application form for students interested in the program. To be eligible, students should have a 3.000 GPA or greater.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

POLS 500 Governmental Politics in the U.S. Credits: 3 (3-0-0)
Course Description: Selected primary source materials on performance of government officials and institutions at federal, state, and local levels.
Prerequisite: None.
Registration Information: Must have taken three upper-division credits in American politics with a grade of B or better.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 501 Citizen Politics in the U.S. Credits: 3 (3-0-0)
Course Description: Selected primary source materials on behavior of individuals and groups in American politics.
Prerequisite: None.
Registration Information: Must have taken three upper-division credits in American politics with a grade of B or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 509 Gender and the Law Credits: 3 (3-0-0)
Course Description: Relationship between gender and the law and the changing nature of that relationship over time.
Prerequisite: POLS 410 or POLS 413.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 520 Theories of Political Action Credits: 3 (3-0-0)
Course Description: Intensive review of primary material on Western political thought.
Prerequisite: POLS 420 or POLS 421.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 530 International Relations Credits: 3 (3-0-0)
Course Description: Theory and methodology utilized in different approaches to international relations.
Prerequisite: None.
Registration Information: Nine credits in international relations or related studies.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 531 International Security Studies Credits: 3 (3-0-0)
Course Description: Theories of international security as applied to different issue areas, both traditional and non-traditional.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Three upper-division credits in international relations with a grade of B or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 532 Governance of the World Political Economy Credits: 3 (3-0-0)
Course Description: Theoretical and practical debates on the organization and governance of the world political economy.
Prerequisite: None.
Registration Information: Nine upper-division credits in international relations with a grade of B or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 540 Comparative Politics Credits: 3 (3-0-0)
Course Description: Theories, methods, and approaches to study of comparative politics.
Prerequisite: None.
Registration Information: Three upper-division credits in comparative politics with a grade of B or better.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 541 Political Economy of Change and Development Credits: 3 (3-0-0)
Course Description: Responses of the state and its institutions to political, economic, and social change.
Prerequisite: None.
Registration Information: Three upper-division credits in comparative politics with a grade of B or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 542 Democracy and Democratization Credits: 3 (3-0-0)
Course Description: Theoretical foundations of democracy and democratization across world regions.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 544 National Identities and Nation Building Credits: 3 (3-0-0)
Also Offered As: ETST 544.
Course Description: How statist conceptions of race and ethnicity have been mobilized in nation-building projects.
Prerequisite: None.
Registration Information: Credit not allowed for both POLS 544 and ETST 544.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 550 Advanced Public Administration Credits: 3 (3-0-0)
Course Description: Overview of study of public administration; recent developments in theory and practice.
Prerequisite: POLS 351.
Registration Information: Written consent of instructor required.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 552A Topics in Public Administration, Personnel Credits: 3 (3-0-0)
Course Description:
Prerequisite: POLS 351.
Registration Information: GPA of 3.00 or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 552B Topics in Public Administration, Budgeting and Finance Credits: 3 (3-0-0)
Course Description:
Prerequisite: POLS 351.
Registration Information: GPA of 3.00 or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 552C Topics in Public Administration, Regulation Credits: 3 (3-0-0)
Course Description:
Prerequisite: POLS 351.
Registration Information: GPA of 3.00 or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 558 Administrative Law Credits: 3 (3-0-0)
Also Offered As: PPA 558.
Course Description: Introduction to the different roles that each branch of the national and state governments play in administrative law, also the politics of administration and regulation. Attention dedicated to the complex ways areas of law interact across administrative decision-making and disputes.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online. Credit allowed for only one of the following: POLS 558, PPA 558, or POLS 580A2.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 587 Internship Credits: Var[1-6] (0-0-0)
Course Description: Supervised work experience in a professional setting related to political science.
Prerequisite: POLS 500 to 99999 - at least 18 credits.
Registration Information: Graduate standing in Political Science.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

POLS 620 Approaches to the Study of Politics Credits: 3 (3-0-0)
Course Description:
Prerequisite: POLS 100 to 481 - at least 15 credits.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 621 Qualitative Methods in Political Science Credits: 3 (3-0-0)
Course Description: Research design, data gathering and organization, ethical issues, and computer applications in qualitative political research.
Prerequisite: SOC 311 or POLS 620, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both POLS 621 and SOC 610.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

POLS 624 Scope and Methods of Political Science Credits: 3 (3-0-0)
Course Description: Graduate survey of the scope of the Political Science discipline and the range of research designs and methods used in the discipline.
Prerequisite: POLS 300 to 9999 - at least 15 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 625 Quantitative Methods of Political Research Credits: 3 (3-0-0)
Course Description: Quantitative approaches and methods for study of political life.
Prerequisite: POLS 320.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 626 Political Research Laboratory Credit: 1 (0-2-0)
Course Description:
Prerequisite: POLS 321.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in POLS 625.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 652 Public Organization Theory Credits: 3 (0-0-3)
Course Description: Theories of behavior of individuals and organizations in government bureaucracies.
Prerequisite: POLS 351.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 660 Theories of the Policy Process Credits: 3 (3-0-0)
Course Description: Recent developments in policy analysis.
Prerequisite: POLS 351 or POLS 460.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 665 Public Policy Analysis Credits: 3 (3-0-0)
Also Offered As: PPA 665.
Course Description: The practice of policy analysis and the tools used to conduct an analysis including: forecasting, cost benefit analysis, cost effectiveness analysis, and policy design.
Prerequisite: PPA 501 or POLS 625.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Sections may be offered: Online. Credit not allowed for both POLS 665 and PPA 665.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 670 Politics of Environment and Sustainability Credits: 3 (3-0-0)
Course Description: Domestic, international, and comparative dimensions of environment and natural resource politics and policy.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 684 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: One year of graduate work.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

POLS 692 Seminar in Environmental Policy Credits: 3 (0-0-3)
Course Description: Topics in domestic and/or global environmental policy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

POLS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

POLS 709 Environmental Politics in the U.S. Credits: 3 (3-0-0)
Course Description: Selected primary materials on governmental performance, groups, and mass public in American environmental politics.
Prerequisite: (POLS 500 or POLS 501) and (POLS 670).
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 729 Political Theory and the Environment Credits: 3 (3-0-0)
Course Description: Political thought applied to questions of the environment.
Prerequisite: POLS 520 and POLS 670.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 739 International Environmental Politics Credits: 3 (3-0-0)
Course Description: Theories and methodologies used in analyzing international environmental politics and policy.
Prerequisite: POLS 530 and POLS 670.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 749 Comparative Environmental Politics Credits: 3 (3-0-0)
Course Description: Application of comparative political theory to analysis of environmental politics.
Prerequisite: (POLS 540 or POLS 541) and (POLS 670).
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 759 Environmental Policy and Administration Credits: 3 (3-0-0)
Course Description: Effects of regulation, intergovernmental relations, and resource availability on federal environmental programs in U.S.
Prerequisite: POLS 670.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

POLS 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Psychology-PSY (PSY)

Courses

PSY 100 General Psychology (GT-SS3) Credits: 3 (3-0-0)
Course Description: Principles of psychology emphasizing empirical approaches; theories and research on learning, individual differences, perception, social behavior.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).

PSY 121 Health and the Mind Credit: 1 (1-0-0)
Course Description: Maintenance of positive mental health.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 152 Science of Learning Credits: 3 (3-0-0)
Course Description: The science of learning and remembering with an emphasis on strategies and methods that students can use to enhance their learning and studying.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C.

PSY 192 Psychology First-Year Seminar Credit: 1 (0-0-1)
Course Description: Introduction to and discussion of topics in the major branches of psychology.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 210 Psychology of the Individual in Context Credits: 3 (3-0-0)
Course Description: Psychological explanations of cultural, social, and individual differences in behavior.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 250 Research Design and Analysis I Credits: 3 (3-0-0)
Course Description: Design, analysis, and reporting of psychological research.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 252 Mind, Brain, and Behavior Credits: 3 (3-0-0)
Course Description: Psychological, physiological, and evolutionary explanations of perception, cognition, and behavior.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 260 Child Psychology Credits: 3 (3-0-0)
Course Description: Description and explanation of development of human behavior emphasizing theory and research concerned with infant and child.
Prerequisite: PSY 100.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 292A Seminar: Industrial/Organizational Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 292B Seminar: Mind, Brain & Behavior Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 292C Seminar: Controversial Issues in Psychology Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 292D Seminar: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 295 Independent Study Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a special topic in psychology under direction of faculty.
Prerequisite: None.
Registration Information: Enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 296 Group Study Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of a special topic in psychology under direction of faculty.
Prerequisite: None.
Registration Information: Enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 300 Positive Psychology Credits: 3 (3-0-0)
Course Description: Current research and theory pertaining to the study of strengths, flourishing, happiness, meaning, and well-being.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 305 Psychology of Religion Credits: 3 (3-0-0)
Course Description: Survey of research on religion from a psychological perspective.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PSY 310 Basic Counseling Skills Credits: 3 (3-0-0)
Course Description: Psychologically-based interpersonal communication skills; rapport building, gathering information and bringing about change in others.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 311A Basic Counseling Skills Laboratory: CACI Credits: 2 (0-4-0)
Course Description: Application of psychologically-based interpersonal communication skills in drug addiction treatment, for students seeking CACI certification.
Prerequisite: PSY 310, may be taken concurrently.
Registration Information: Credit not allowed for both PSY 311A and PSY 311B.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 311B Basic Counseling Skills Laboratory: Non-CACI Credits: 2 (0-4-0)
Course Description: Application of psychologically-based interpersonal communication skills, for students who are not seeking CACI certification.
Prerequisite: (PSY 100) and (PSY 310, may be taken concurrently).
Registration Information: Credit not allowed for both PSY 311B and PSY 311A.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 315 Social Psychology Credits: 3 (3-0-0)
Course Description: Social psychological theory and research findings emphasizing research methodology; applications to contemporary social problems.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 316 Environmental Psychology Credits: 3 (3-0-0)
Course Description: Social psychological theory and research on effects of behavior on the environment; environmental influences on behavior.
Prerequisite: PSY 100.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 317 Social Psychology Laboratory Credits: 2 (0-4-0)
Course Description: Review of research techniques in social psychology. Computer simulations with applications to contemporary social problems.
Prerequisite: PSY 250 and PSY 315, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 320 Abnormal Psychology Credits: 3 (3-0-0)
Course Description: Definition and description of behavior pathology; theory and research on factors in etiology and treatment of behavior disorders.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 325 Psychology of Personality Credits: 3 (3-0-0)
Course Description: Theory and research related to personality as a psychological concept; analytic, phenomenological, and behavioristic views.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 327 Psychology of Women Credits: 3 (2-0-1)
Course Description: Contemporary theory and research focusing on emotional, cognitive, biosocial, and interpersonal contributions to female identity and sex role.
Prerequisite: PSY 100.
Registration Information: Must register for lecture and recitation.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 328 Psychology of Human Sexuality Credits: 3 (3-0-0)
Course Description: Biopsychosocial review of human sexuality including cross cultural analysis, sexual development, social perspectives and values, sexual dysfunction, sexual healing interventions, and intersectional-sexological analysis of the human sexual experience.
Prerequisite: HDFS 101 or PSY 100 or SOWK 105.
Registration Information: Junior standing. Sections may be offered: Online. Credit not allowed for both PSY 228 and PSY 328.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 330 Clinical and Counseling Psychology Credits: 3 (3-0-0)
Course Description: Conceptualization of clients, assessment, intervention techniques for behavior change, research methods, ethical issues.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 335 Forensic Psychology Credits: 3 (3-0-0)
Course Description: The psychology of crime and criminal behavior, including theory on deviance, the criminal mind, and the root causes of violence in society.
Prerequisite: PSY 100.
Registration Information: Junior or senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 340 Organizational Psychology Credits: 3 (3-0-0)
Course Description: Theories and research on interpersonal relations, work group processes, decision making, power, and change strategies within organizations.
Prerequisite: PSY 250.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 341 Organizational Psychology Laboratory Credit: 1 (0-2-0)
Course Description: Application of organizational psychology through simulations and field involvements.
Prerequisite: PSY 340, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 350 Research Design and Analysis II Credits: 3 (3-0-0)
Course Description: Design, analysis, and reporting of psychological research.
Prerequisite: PSY 250.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 352 Learning and Memory Credits: 3 (3-0-0)
Course Description: Research, theory, and applications regarding conditioning, learning, and retention in animals and humans.
Prerequisite: PSY 252.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 354 Human-Computer Interaction Credits: 3 (3-0-0)
Course Description: Theoretical and applied areas of psychology and computer science in the area of human-computer interaction.
Prerequisite: PSY 100.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 360 Psychology of Drug Addiction Treatment Credits: 3 (3-0-0)
Course Description: Psychological theory and method for treating substance use addictions.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 362 Professional Issues in Addiction Treatment Credits: 3 (3-0-0)
Course Description: Diversity, ethno-cultural, and ethical issues in drug addiction treatment.
Prerequisite: PSY 360, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 364 Infectious Diseases and Substance Use Credits: 3 (0-0-3)
Course Description: Infectious disease transmission/progression related to substance use, risk assessment and treatment of substance users in alcohol and drug treatment.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 370 Psychological Measurement and Testing Credits: 3 (3-0-0)
Course Description: Measurement theory including scale properties, reliability, and validity; construction and evaluation of psychological tests.
Prerequisite: PSY 250.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 371 Psychological Measurement and Testing Lab Credit: 1 (0-2-0)
Course Description: Exercises and problems in test administration, norming, reliability, validity, and scale construction.
Prerequisite: PSY 370, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 384 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Supervised teaching, training, and discussion leadership in undergraduate courses.
Prerequisite: PSY 100.
Registration Information: Written consent of department chair. Enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 392 Honors Seminar: Current Topics in Psychology Credits: 2 (0-0-2)
Course Description: Research areas in psychology; reading and discussing current journal articles.
Prerequisite: PSY 100 and PSY 250.
Registration Information: Enrollment in University Honors Program required.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PSY 401 History and Systems of Psychology Credits: 3 (3-0-0)
Course Description: Philosophical and scientific underpinnings of psychology; major historical developments in psychology; schools of psychological thought.
Prerequisite: PSY 250.
Registration Information: Junior or senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 410 Psychobiology of Addictions Credits: 3 (3-0-0)
Course Description: Biological basis of the psychology of addictions.
Prerequisite: PSY 250 and PSY 252.
Restriction: .
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 437 Psychology of Gender Credits: 3 (3-0-0)
Course Description: Psychology of gender in cultural context.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 440 Industrial Psychology Credits: 3 (3-0-0)
Course Description: The application of psychological theories and principles to understand how people behave in the workplace and to improve workers' productivity and well-being.
Prerequisite: PSY 250.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 441 Industrial Psychology Laboratory Credit: 1 (0-2-0)
Course Description: Hands-on experience with concepts such as job analysis, performance appraisals, interviews, and training, designed to supplement information provided in PSY 440.
Prerequisite: PSY 440, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 450 Applied Research Methods in Psychology II Credits: 4 (3-2-0)
Course Description: Interpretation and reporting of psychological research findings.
Prerequisite: PSY 350.
Registration Information: Must register for lecture and laboratory. Enrollment in University Honors Program required.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 452 Cognitive Psychology Credits: 3 (3-0-0)
Course Description: Human thinking processes as related to perception, attention, memory, knowledge representation, reasoning, decision making, and problem solving.
Prerequisite: PSY 252.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 453 Cognitive Psychology Laboratory Credits: 2 (0-4-0)
Course Description: Exercises in laboratory research in perceptual processes, attention, memory, language, problem solving, and decision making.
Prerequisite: PSY 452, may be taken concurrently and PSY 250.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 454 Biological Psychology Credits: 3 (3-0-0)
Course Description: Research and theory on the biological basis of behavior.
Prerequisite: PSY 252.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 455 Biological Psychology Laboratory Credits: 2 (0-4-0)
Course Description: Laboratory exercises in biological psychology.
Prerequisite: PSY 454, may be taken concurrently and PSY 250.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 456 Sensation and Perception Credits: 3 (3-0-0)
Course Description: Review of research on physiological substrates of sensation; methods of scaling sensory experience; role of perception in behavioral adaptation.
Prerequisite: PSY 252.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 457 Sensation and Perception Laboratory Credits: 2 (0-4-0)
Course Description: Review of research on physiological substrates of sensation; methods of scaling sensory experience; role of perception in behavioral adaption.
Prerequisite: PSY 456, may be taken concurrently and PSY 250.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 458 Cognitive Neuroscience Credits: 3 (3-0-0)
Course Description: Review of the human brain and its mediation of cognitive processes.
Prerequisite: PSY 252.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 459 Cognitive Neuroscience Laboratory Credits: 2 (0-4-0)
Course Description: Laboratory exercises in cognitive neuroscience.
Prerequisite: PSY 458, may be taken concurrently and PSY 250.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 460 Child Exceptionality and Psychopathology Credits: 3 (3-0-0)
Course Description: Definition and description of child exceptionality and psychopathology; theory and research in etiology, educational implications, and treatment.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 465 Adolescent Psychology Credits: 3 (3-0-0)
Course Description: Contemporary theory and research on adolescence including physiological and psychological changes, social influences.
Prerequisite: PSY 100.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Advanced supervised teaching, training, and discussion leadership in undergraduate courses.
Prerequisite: PSY 100.
Registration Information: Written consent of department chair required. A maximum of 10 combined credits for all 384 and 484 are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 486 Practicum Credits: Var[1-3] (0-0-0)
Course Description: Supervised work experience in approved psychological setting with periodic consultation of faculty.
Prerequisite: None.
Registration Information: Enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 487 Internship Credits: Var[1-3] (0-0-0)
Course Description: Supervised affiliation with and/or service work in approved psychological setting.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 488 Field Placement Credits: Var[1-3] (0-0-0)
Course Description: Supervised affiliation with and/or service work in approved psychological setting.
Prerequisite: None.
Registration Information: Enrollment restricted to students in the Addictions Counseling Concentration or Counseling/Clinical Concentration. Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

PSY 492A Seminar: Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: Instructor Option, Traditional.
Special Course Fee: No.

PSY 492B Seminar: Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 492C Seminar: Counseling/Clinical Psychology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 492D Seminar: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 492E Seminar: Perceptual and Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 492F Seminar: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 493 Capstone Seminar Credits: 3 (0-0-3)
Course Description: Special, controversial, and emerging topics in psychology, considered in the context of foundational knowledge and principles from the field.
Prerequisite: PSY 210 and PSY 250 and PSY 252.
Registration Information: Senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 495A Independent Study: Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in applied social psychology under direction of faculty.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 495B Independent Study: Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in cognitive psychology under direction of faculty.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 495C Independent Study: Counseling/Clinical Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in counseling/clinical psychology under direction of faculty.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 495D Independent Study: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in industrial/organizational psychology under direction of faculty.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 495E Independent Study: Perceptual and Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of the psychology of perceptual and brain sciences under direction of faculty.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 495F Independent Study: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of topics in psychology under direction of faculty.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 496A Group Study: Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of applied social psychology under direction of faculty.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 496B Group Study: Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of cognitive psychology under direction of faculty.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 496C Group Study: Counseling/Clinical Psychology Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of counseling/clinical psychology under direction of faculty.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 496D Group Study: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of industrial/organizational psychology under direction of faculty.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 496E Group Study: Perceptual and Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of perceptual and brain sciences within psychology under direction of faculty.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 496F Group Study: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of topics in psychology under direction of faculty.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 498A Research: Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in applied social psychology, culminating in a formal research paper.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 498B Research: Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in cognitive psychology, culminating in a formal research paper.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 498C Research: Counseling/Clinical Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in counseling/clinical psychology, culminating in a formal research paper.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 498D Research: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in industrial/organizational psychology, culminating in a formal research paper.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 498E Research: Perceptual and Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in perceptual and brain sciences within psychology, culminating in a formal research paper.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 498F Research: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project on special topics in psychology, culminating in a formal research paper.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 499A Thesis: Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in applied social psychology, culminating in a thesis presented to a faculty committee.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 499B Thesis: Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in cognitive psychology, culminating in a thesis presented to a faculty committee.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 499C Thesis: Counseling/Clinical Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in counseling/clinical psychology, culminating in a thesis presented to a faculty committee.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 499D Thesis: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in industrial/organizational psychology, culminating in a thesis presented to a faculty committee.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 499E Thesis: Perceptual and Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in perceptual/brain sciences within psychology, culminating in a thesis presented to a faculty committee.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 499F Thesis: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in a topic area of psychology, culminating in a thesis presented to a faculty committee.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 515 Women's Health Credits: 3 (3-0-0)
Course Description: Current issues in women's health.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PSY 517 Perspectives in Global Health Credits: 3 (0-0-3)
Also Offered As: IE 517.
Course Description: Science, skills, and beliefs directed at the maintenance and improvement of health for all people.
Prerequisite: None.
Registration Information: Credit not allowed for both PSY 517 and IE 517.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

PSY 550 Responsible Conduct of Psychological Research Credit: 1 (1-0-0)
Course Description: Application of professional norms and research ethics in the conduct of psychological research.
Prerequisite: None.
Registration Information: Graduate standing or consent of instructor. This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 595A Independent Study: Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a topic in applied social psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 595B Independent Study: Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a topic in cognitive psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 595C Independent Study: Counseling/Clinical Psych Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a topic in counseling/clinical psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 595D Independent Study: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a topic in industrial/organizational psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 595E Independent Study: Perceptual/Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a topic in perceptual and brain sciences under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 595F Independent Study: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a special topic in psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 596A Group Study:Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of a topic in applied social psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 596B Group Study:Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of a topic in cognitive psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 596C Group Study:Counseling/Clinical Psych Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of a topic in counseling/clinical psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 596D Group Study:Industrial/Organizational Psych Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of a topic in industrial/organizational psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 596E Group Study:Perceptual/Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of a topic in perceptual and brain sciences under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 596F Group Study:Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of a special topic in psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 600A Advanced Psychology: History Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600B Advanced Psychology: Cognitive Neuroscience Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600C Advanced Psychology: Neuropsychology Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600D Advanced Psychology: Sensation and Perception Credits: 3 (3-0-0)
Also Offered As: NB 600.
Course Description: Neural mechanisms of human perception; color and depth perception, pitch, loudness, and the effects of aging.
Prerequisite: PSY 100 to 799 - at least 15 credits and PSY 456.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both PSY 600D and NB 600.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600E Advanced Psychology: Animal Learning Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600F Advanced Psychology: Human Learning and Memory Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600G Advanced Psychology: Social Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600H Advanced Psychology: Lifespan Development Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600I Advanced Psychology: Personality Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600J Advanced Psychology: Health Psychology Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600K Advanced Psychology: Measurement Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both PSY 600K and PSY 605.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600L Advanced Psychology: Human Performance, Motor and Intellectual Capacities Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600M Advanced Psychology: Cognitive Processes Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 601 Measurement Laboratory Credit: 1 (0-2-0)
Course Description: Laboratory experience using measurement concepts and procedures.
Prerequisite: PSY 600K, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PSY 605 Applied Measurement Theory Credits: 3 (0-0-3)
Course Description: Study and application of measurement theory and methods for test construction and validation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology. Credit not allowed for both PSY 605 and PSY 600K. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 610 Counseling and Clinical Pre-Practicum I Credits: 3 (3-0-0)
Course Description: Basic assessment and intervention skills; accurate observation, conceptualization, and response.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 611 Counseling and Clinical Pre-Practicum II Credits: 3 (3-0-0)
Course Description: Counseling and clinical techniques; assessment and intervention strategies; special applications.
Prerequisite: PSY 610.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 612 Introduction to Addiction Counseling Credits: 3 (3-0-0)
Course Description: Therapies used to treat individuals with substance use disorders, with an emphasis on empirically supported treatments.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Master of Addiction Counseling.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 613 Advanced Addiction Counseling Credits: 3 (3-0-0)
Course Description: Advanced therapies used to treat individuals with substance use disorders, with an emphasis on empirically supported treatments.
Prerequisite: PSY 612.
Restriction: Must be a: Graduate, Professional.
Registration Information: Psychology graduate students.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 643 Industrial/Organizational Psychology I Credits: 3 (3-0-0)
Course Description: Integration of multiple perspectives for examining work organizations, roles, and relationships, and organizational entry and socialization.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both PSY 643 and PSY 647.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 644 Industrial/Organizational Psychology II Credits: 3 (3-0-0)
Course Description: Multiple perspectives for examining individual and organizational development, orientation to organizations, and science and practice in industrial/organizational psychology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 645 Industrial/Organizational Psychology at Work I Credits: 2 (2-0-0)
Course Description: Integrating theory, research, and practice in industrial/organizational settings. Assessment and development of applications of psychology in organizations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 646 Industrial/Organizational Psychology at Work II Credits: 2 (2-0-0)
Course Description: Development and application of scientific, ethical, and professional standards and competencies in applying psychology in industrial/organizational settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 647 Applied Industrial Psychology Credits: 3 (0-0-3)
Course Description: Applications of theory and methods for recruitment, selection, training, and performance management within organizations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology. Credit not allowed for both PSY 647 and PSY 643. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 648 Applied Organizational Psychology Credits: 3 (0-0-3)
Course Description: Study of work behavior, roles, and relationships within organizations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 652 Methods of Research in Psychology I Credits: 4 (3-2-0)
Course Description: Psychological research emphasizing hypothesis testing and simple research designs, introducing general linear model approach.
Prerequisite: STAT 300 to 499 - at least 1 course.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both PSY 652 and PSY 662.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 653 Methods of Research in Psychology II Credits: 4 (3-2-0)
Course Description: Advanced research designs emphasizing general linear model approach.
Prerequisite: PSY 652.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both PSY 653 and PSY 663
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 655A Research Issues and Models in Psychology:Applied Credits: 3 (3-0-0)
Course Description: Generation and development of research ideas, evaluating approaches, interpreting and reporting findings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 655B Research Issues and Models in Psychology: General Experimental Credits: 3 (3-0-0)
Course Description: Generation and development of research ideas, evaluating approaches, interpreting and reporting findings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 660 Applied Cross-Cultural Industrial/Organizational Psychology Credits: 3 (0-0-3)
Course Description: Cultural differences in the application of individual and organizational interventions to improve human and organizational effectiveness.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology; PSY 647 or PSY 648. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 661 Applied Organizational Development Credits: 3 (0-0-3)
Course Description: Techniques and interventions for developing, improving and effecting change in organizations through diagnosis, planned change, and survey feedback.
Prerequisite: PSY 648.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only. Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 662 Applied Psychological Research Methods I Credits: 4 (0-0-4)
Course Description: Psychological research emphasizing hypothesis testing and simple research designs, the general linear model approach with emphasis on application.
Prerequisite: STAT 300 to 499 - at least 1 course.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology. Credit not allowed for both PSY 662 and PSY 652. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 663 Applied Psychological Research Methods II Credits: 4 (0-0-4)
Course Description: Advanced research designs emphasizing general linear model approach with emphasis on application.
Prerequisite: PSY 662.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology. Credit not allowed for both PSY 663 and PSY 653. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 665 Applied Psychological Research Design Credits: 3 (0-0-3)
Course Description: Review of scientific method, generation of hypotheses, and design of laboratory and field research studies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology; any graduate applied statistics course. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 666 Succession Planning and Leadership Development Credits: 3 (0-0-3)
Course Description: Examines modern theories of leadership, strategies for succession planning; training, coaching, mentoring, professional development for leadership.
Prerequisite: PSY 648.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 667 Competency Modeling and Criterion Development Credits: 3 (0-0-3)
Course Description: Conducting job analyses and competency modeling within organizations, application of the results of those processes to criterion development.
Prerequisite: PSY 647.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 668 Workforce Training and Development Credits: 3 (0-0-3)
Course Description: An overview of adult learning theory, emphasizing the role of I/O psychology in identifying, designing, transferring, and evaluating training.
Prerequisite: PSY 647.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 669 Capstone: Practicum and Skills Development Credits: 3 (0-0-3)
Course Description: Refine I/O consulting skills through applied research/consulting projects with actual organizations, working in virtual teams with faculty mentors.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied I/O Psychology; 32 hours of program requirements. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 670 Psychological Measurement-Personality Credits: 3 (3-0-0)
Course Description: Construction, administration, interpretation of objectional measures of personality including aptitudes, abilities, interests.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 672 Psychological Assessment Credits: 3 (3-0-0)
Course Description: Use of test data to determine cognitive functioning and predict behavior; supervised test administration and interpretation.
Prerequisite: PSY 670.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 675 Ethics and Professional Psychology Practice Credits: 3 (3-0-0)
Course Description: Ethical practice of psychology, duty-to-warn statutes, Colorado law, problematic ethical situations.
Prerequisite: PSY 611.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Master of Addiction Counseling.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 677 Psychology of Women, Men, and Gender Credits: 3 (0-0-3)
Course Description: Focuses on the psychology of women, men and gender, by intersectionalities, and in cultural, transnational context. Topics include gendered life paths; gender and the media; gender and relationships; gender and health, gender and work; and gender and globalization.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 684 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Supervised teaching, training and discussion leadership in undergraduate courses.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 686A Practicum: Counseling and Diagnosis I Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 686C Practicum:Industrial/Organizational I Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 692B.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 686D Practicum: School I Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 692B.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 686E Practicum: Applied Social I Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 686F Practicum:Perceptual and Brain Sciences I Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 686G Practicum: Cognitive I Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 692A Seminar: Applied Social Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 692B Seminar: Cognitive Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 692C Seminar: Counseling Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 692D Seminar: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Seminar on advanced topics in industrial/organizational psychology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 692E Seminar: Perceptual and Brain Sciences Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 692F Seminar: Special Topics in Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 699A Thesis: Applied Social Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 699B Thesis: Cognitive Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 699C Thesis: Counseling Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 699D Thesis: Industrial/Organizational Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 699E Thesis: Perceptual and Brain Sciences Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 720 Psychopathology Credits: 3 (3-0-0)
Course Description: Adult and child behavior pathology; theory, research, and methods related to etiology, defining characteristics, and maintaining causes.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Psychology graduate students or admission to the Master of Addiction Counseling.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 722 Empirically Validated Therapies Credits: 3 (3-0-0)
Course Description: Outline of major empirically validated approaches to assessment and treatment including cognitive-behavioral therapies, interpersonal therapy.
Prerequisite: PSY 720.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 724 Motivational Interviewing Credits: 3 (3-0-0)
Course Description: Motivational interviewing in the treatment of individuals with substance use disorders.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Psychology graduate students or admission to the Master of Addiction Counseling.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 726 Neuropharmacology of Addiction Credits: 3 (3-0-0)
Course Description: Neurobiological basis of addiction and how addictive substances affect neurochemistry.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Psychology graduate students or admission to the Master of Addiction Counseling.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 727 Theories of Vocational Development Credits: 3 (3-0-0)
Course Description: Nature and current status of vocational development theory with implications for career counseling.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Psychology graduate students only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 729 Counseling and Psychotherapy II Credits: 3 (3-0-0)
Course Description: Theory and practice of group psychotherapy and counseling.
Prerequisite: PSY 722.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 754 Multivariate Analysis in Behavioral Sciences Credits: 3 (3-0-0)
Course Description: Multivariate analysis, including factor and component analysis, applied to psychological research.
Prerequisite: PSY 653.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

PSY 775 Diversity Issues in Counseling Credits: 3 (3-0-0)
Course Description: Diversity issues in clients and counselors such as gender, race, age, sexual orientation, education, religion, disability, socioeconomic status.
Prerequisite: PSY 611.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 776 Business and Practice of Addiction Counseling Credits: 3 (3-0-0)
Course Description: Business aspects and professional development issues associated with a career in addiction counseling.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Psychology graduate students or admission to the Master of Addiction Counseling.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: Philosophy, approaches, and techniques of college-level instruction; supervised teaching with consultation of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 786A Advanced Practicum: Counseling and Diagnosis II Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 686A.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 786C Advanced Practicum:Industrial/Organizational II Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 686C.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 786D Advanced Practicum: School II Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 686D.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 786E Advanced Practicum: Clinical Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 686A or PSY 686C or PSY 686D or PSY 686E or PSY 686F or PSY 686G.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 786F Advanced Practicum: Supervision Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 686A or PSY 686C or PSY 686D or PSY 686E or PSY 686F or PSY 686G.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 786G Advanced Practicum: Applied Social II Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 686E.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 786H Advanced Practicum: Perceptual and Brain Sciences II Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 686F.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 786I Advanced Practicum: Cognitive II Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 686G.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 786J Advanced Practicum: Vocational Assessment Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 610 and PSY 727.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 787 Internship Credits: Var[1-18] (0-0-0)
Course Description: Supervised work experience under departmental guidelines in approved psychological agency or setting.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 792A Advanced Seminar: Applied Social Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 792B Advanced Seminar: Cognitive Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 792C Advanced Seminar: Counseling Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 792D Advanced Seminar: Industrial/Organizational Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 792E Advanced Seminar: Perceptual and Brain Sciences Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 792F Advanced Seminar: Special Topics in Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 793 Clinical Supervision of Addiction Counseling Credits: 3 (3-0-0)
Course Description: Tools and models in the supervision and treatment of addictions.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Master of Addiction Counseling.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 795A Independent Study: Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent investigation of a topic in applied social psychology under direction of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Primarily for doctoral candidates in psychology.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 795B Independent Study: Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent investigation of a topic in cognitive psychology under direction of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Primarily for doctoral candidates in psychology.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 795C Independent Study: Counseling/Clinical Psych Credits: Var[1-3] (0-0-0)
Course Description: Independent investigation of a topic in counseling/clinical psychology under direction of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Primarily for doctoral candidates in psychology.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 795D Independent Study: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent investigation of a topic in industrial/organizational psychology under direction of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Primarily for doctoral candidates in psychology.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 795E Independent Study: Perceptual/Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description: Independent investigation of a topic in perceptual and brain sciences under direction of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Primarily for doctoral candidates in psychology.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 795F Independent Study: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent investigation of a special topic in psychology under direction of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Primarily for doctoral candidates in psychology.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 799A Dissertation: Applied Social Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 799B Dissertation: Cognitive Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 799C Dissertation: Counseling Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 799D Dissertation: Industrial/Organizational Psych Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 799E Dissertation: Perceptual and Brain Sciences Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Public Health-PBHL (PBHL)

Courses

PBHL 516 Public Health Foundations Credits: 2 (2-0-0)
Course Description: Introduction to public health history, concepts, principles, and current trends.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program.
Registration Information: Graduate standing; Colorado School of Public Health student. Credit not allowed for both PBHL 516 and PSY 516A-C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PBHL 520 Health Systems Policy and Management Credits: 3 (3-0-0)
Course Description: Overview of the organization and financing of U.S. healthcare systems, how health policy is developed and implemented, and key principles of leadership and management for public health professionals.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Graduate student in the Colorado School of Public Health.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PBHL 530 Environmental Public Health and Policy Credits: 3 (3-0-0)
Course Description: Major concepts, methodologies and issues in the field of environmental public health.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program.
Registration Information: Graduate standing; Colorado School of Public Health student. Credit not allowed for both ERHS 520 and PBHL 530.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PBHL 534 Public Health Data Management Using SAS Credits: 3 (1-2-1)
Course Description: Introduction to the basic concepts and skills needed to create programs for data management and analysis using SAS software. Explores how to manipulate and prepare data for analysis in SAS (including inputting, recoding, reformatting, subsetting, and merging data), and perform data analysis and write reports.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Must register for lecture, lab, and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PBHL 540 One Health in Public Health Credits: 3 (3-0-0)
Course Description: One Health history and concepts for public health professionals.
Prerequisite: None.
Registration Information: Bachelor's degree. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PBHL 550 Applied Behavior Change Theory Credits: 3 (3-0-0)
Course Description: Introduction and application of community public health strategies and interventions including systems level changes.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program.
Registration Information: Graduate standing; Colorado School of Public Health student. Credit not allowed for both HES 556 and PBHL 550.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PBHL 560 Quantitative Methods in Public Health Credits: 3 (3-0-0)
Course Description: Introduction to the major concepts and applications in public health data interpretation and analysis.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program.
Registration Information: Graduate standing; enrollment in Colorado School of Public Health. Written consent of instructor required. Credit not allowed for VS 562, EDRM 606 and PBHL 560.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PBHL 570 Epidemiology for Public Health Credits: 3 (3-0-0)
Course Description: Descriptive and analytic methods in epidemiology and their application to research and practice in the field of public health.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PBHL 630 Field Methods for Disease Investigation Credits: 3 (3-0-0)
Course Description: Application of epidemiologic tools to collect, analyze, and interpret data and test results important for disease surveillance and investigation.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: One epidemiology course; Bachelor's degree required. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PBHL 644 Physical Activity and Public Health Credits: 3 (3-0-0)
Course Description: Explore the role of physical activity (PA) in public health (PH). History of physical activity in public health, basic exercise physiology and kinesiology principles, and effectively promote and measure physical activity in a variety of populations. Discuss physical activity in various settings, and explore how programs are effectively planned, implemented and evaluated.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PBHL 686 Public Health Practicum Credits: 2 (0-0-2)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Admission to Master of Public Health program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PBHL 692A Seminar: Animals, People, and the Environment Credits: Var[1-6] (0-0-0)
Course Description: Current public health issues related to interactions among people, animals, and our environment.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Graduate standing. May be taken for credit up to 3 times; maximum of 9 credits allowed in PBHL 692A-692G.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PBHL 692B Seminar: Epidemiology in Public Health Credits: Var[1-6] (0-0-0)
Course Description: Current epidemiological public health issues.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Graduate standing. May be taken for credit up to 3 times; maximum of 9 credits allowed in PBHL 692A-692G.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PBHL 692C Seminar: Global Health & Health Disparities Credits: Var[1-6] (0-0-0)
Course Description: Current public health issues concerning disparate populations and global health trends.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Graduate standing. May be taken for credit up to 3 times; maximum of 9 credits allowed in PBHL 692A-692G.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PBHL 692D Seminar: Health Communication Credits: Var[1-6] (0-0-0)
Course Description: Current issues and trends in health communication.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Graduate standing. May be taken for credit up to 3 times; maximum of 9 credits allowed in PBHL 692A-692G.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PBHL 692E Seminar: Physical Activity & Healthy Lifestyles Credits: Var[1-6] (0-0-0)
Course Description: Current public health issues concerning exercise, the built environment, and health promotion.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Graduate standing. May be taken for credit up to 3 times; maximum of 9 credits allowed in PBHL 692A-692G.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PBHL 692F Seminar: Public Health Nutrition Credits: Var[1-6] (0-0-0)
Course Description: Current issues and trends concerning the impact of nutrition on public health.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Graduate standing. May be taken for credit up to 3 times; maximum of 9 credits allowed in PBHL 692A-692G.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PBHL 692G Seminar: Current Issues in Public Health Credits: Var[1-6] (0-0-0)
Course Description: Current public health issues and trends.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Graduate standing. May be taken for credit up to 3 times; maximum of 9 credits allowed in PBHL 692A-692G.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PBHL 695 Public Health Independent Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Graduate standing; Colorado School of Public Health student. May be taken for credit up to 3 times; maximum of 9 credits allowed.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PBHL 696 Public Health Group Study Credits: Var[1-6] (0-0-0)
Course Description: Group study on current public health issues; topics will vary.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Graduate standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PBHL 698 Public Health Capstone Credits: 2 (0-0-2)
Course Description: Capstone project for Master of Public Health students.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Admission to Master of Public Health program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Public Policy + Administration-PPA (PPA)

PPA 500 Research Methods for Public Policy and Admin Credits: 3 (3-0-0)
Course Description: Introduction to the design, logic, and ethics of research methods appropriate for the evaluation of policies and programs before, during, and after implementation.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PPA 501 Program Evaluation and Quantitative Methods Credits: 3 (3-0-0)
Course Description: Overview of program evaluation and hands-on application to managerial decision making in public administration. Topics include program evaluation, data collection and measurement in public administration, descriptive statistics, measures of association and other bivariate statistics, index variable construction, regression analysis, and an overview of selected other methods applied to problems of public administration and policy.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

PPA 530 Civic Engagement Credits: 3 (3-0-0)
Course Description: Focus on public engagement directed at the tools, theories, and processes relevant to public policy and administration. Introduction to the role citizens play in democracy, decision making, public administration, and public policy. Trends of engagement are explored alongside strategies useful to manage, encourage, and facilitate public participation in public policy and administration. Practice is emphasized.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

PPA 540 International Policy Toolkit Credits: 3 (3-0-0)
Course Description: Provides a valuable toolkit for those interested in working for an intergovernmental organization, international non-governmental organization, or for the U.S. foreign policy-making apparatus. Topics covered include regime change, civil society, political culture, terrorism, and international organizations.
Prerequisite: PPA 500 or PPA 501.
Restriction: Must be a: Graduate.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

PPA 541 Principles & Processes of International Mgmt Credits: 3 (3-0-0)
Course Description: Policy-making and policy-implementation processes of intergovernmental organizations and international non-governmental organizations.
Prerequisite: PPA 500 or PPA 501.
Restriction: Must be a: Graduate.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

PPA 542 Policy Accountability--Non-Democratic Regimes Credits: 3 (3-0-0)
Course Description: Theoretical knowledge and practical, real-world applications that navigate the complex political and economic terrain of non-democratic regimes.
Prerequisite: PPA 500 to 699 - at least 9 credits.
Restriction: Must be a: Graduate.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

PPA 543 Evidence-Based Decision Making Credits: 3 (3-0-0)
Course Description: A survey of evidence-based decision making, including tools, constraints, and opportunities for public servants.
Prerequisite: PPA 500.
Restriction: Must be a: Graduate.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

PPA 544 Ethics and Efficacy--Global Policymaking Credits: 3 (3-0-0)
Course Description: In-depth study of international policymaking success and failure with a focus on ethics and cross-border issues. Provides the expertise and awareness necessary for leadership in international policy and management.
Prerequisite: PPA 500 to 699 - at least 9 credits.
Restriction: Must be a: Graduate.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

PPA 555 Environmental Law and Policy Credits: 3 (3-0-0)
Course Description: Explores different methods of setting environmental goals, economic incentives, and the roles of federal, state, and local governments in protecting the natural environment. Focus on substantive policy areas to connect theory with practice.
Prerequisite: POLS 660 or POLS 665 or PPA 665.
Restriction: Must be a: Graduate.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

PPA 558 Administrative Law Credits: 3 (3-0-0)
Also Offered As: POLS 558.
Course Description: Introduction to the different roles that each branch of the national and state governments play in administrative law, also the politics of administration and regulation. Attention dedicated to the complex ways areas of law interact across administrative decision-making and disputes.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online. Credit allowed for only one of the following: POLS 558, PPA 558, or POLS 580A2.
Grade Mode: Traditional.
Special Course Fee: No.

PPA 587 Internship Credits: Var[1-6] (0-0-0)
Course Description: Supervised professional work experience related to public policy and administration.
Prerequisite: PPA 500 to 699 - at least 18 credits.
Restriction: Must be a: Graduate.
Registration Information: Sections may be offered: Online.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PPA 592 Special Topics in Public Policy and Admin Credits: 3 (0-0-3)
Course Description: Current topics in public policy and administration.
Prerequisite: PPA 500 or PPA 501.
Restriction: Must be a: Graduate.
Registration Information: May only be taken once for credit. Sections may be offfered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

PPA 665 Public Policy Analysis Credits: 3 (3-0-0)
Also Offered As: POLS 665.
Course Description: The practice of policy analysis and the tools used to conduct an analysis including: forecasting, cost benefit analysis, cost effectiveness analysis, and policy design.
Prerequisite: PPA 501 or POLS 625.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online. Credit not allowed for both POLS 665 and PPA 665.
Grade Mode: Traditional.
Special Course Fee: No.

PPA 670 Capstone in Public Policy and Administration Credits: 3 (3-0-0)
Course Description: Opportunity to reflect, integrate, and synthesize what has been learned in the MPPA program. Completing the capstone demonstrates mastery of the knowledge gained in the core curriculum, selected specialization, and internship experience.
Prerequisite: PPA 500 to 699 - at least 21 credits.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

Rangeland Ecosystem Science-RS (RS)

Courses

RS 300 Rangeland Conservation and Stewardship Credits: 3 (3-0-0)
Course Description: Conservation and management of rangeland-ecosystem values using sustainable practices.
Prerequisite: BZ 120 or LIFE 102.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RS 310 Rangeland and Forest Ecogeography Credits: 3 (2-2-0)
Also Offered As: F 310.
Course Description: Distribution of wildland plant communities and identification of important grasses, forbs, shrubs, and trees common to North America.
Prerequisite: BZ 101 or BZ 104 or BZ 110 or BZ 120 or LIFE 102.
Registration Information: Must have concurrent registration in RS 312. Must register for lecture and laboratory. Credit not allowed for both RS 310 and F 310.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RS 312 Rangeland Plant Identification Lab Credit: 1 (0-2-0)
Course Description: Identification of characteristic grasses, forbs, and shrubs common to North American rangelands.
Prerequisite: None.
Registration Information: Must have concurrent registration in RS 310.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

RS 329 Rangeland Assessment Credit: 1 (0-3-0)
Course Description: Five-day intensive field-based course on principles of rangeland ecosystem assessment.
Prerequisite: (F 310 or RS 310) and (RS 300 and SOCR 240).
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

RS 331 Wildland Plants and Plant Communities Credits: 3 (2-2-0)
Course Description: Distribution of non-forested wildland plant communities and important plant species in the western United States.
Prerequisite: BZ 223 or NR 220.
Registration Information: Must register for lecture and laboratory. Required field trips. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RS 351 Wildland Ecosystems in a Changing World Credits: 3 (2-2-0)
Course Description: Understanding and conserving non-forested wildland ecosystems, processes, and services under changing environmental conditions.
Prerequisite: (LIFE 320 or LAND 220 or LIFE 220) and (SOCR 240).
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RS 378 Disturbance Ecology Credits: 2 (2-0-0)
Course Description: Foundational knowledge of ecological disturbances, the role of disturbance in biotic communities and ecosystems, and how various communities and ecosystems recover from disturbances.
Prerequisite: LAND 220 or LIFE 220 or LIFE 320.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RS 400 Rangeland Improvements Credits: 2 (2-0-0)
Course Description: Improvement of rangelands through biological and cultural methods; management of improved rangelands.
Prerequisite: RS 300 or SOCR 320.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RS 420 Grass Taxonomy Credits: 3 (1-4-0)
Course Description: Anatomy, morphology, and identification of grasses.
Prerequisite: BZ 223.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RS 432 Rangeland Measurements and Monitoring Credits: 2 (1-3-0)
Course Description: Vegetation sampling and field measurements emphasizing applications for monitoring and adaptive management.
Prerequisite: (NR 220 and RS 300, may be taken concurrently) and (STAT 201 or STAT 301 or STAT 307).
Registration Information: Credit not allowed for both RS 432 and RS 532.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

RS 452 Rangeland Herbivore Ecology and Management Credits: 3 (3-0-0)
Course Description: Ecology and management of large ungulate herbivores including consumer functions at organismal and ecosystem levels.
Prerequisite: (RS 300) and (LAND 220 or LIFE 220 or LIFE 320).
Registration Information: Voluntary field trips. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RS 470 Rangeland Economics and Analysis Credits: 2 (2-0-0)
Course Description: Economics of rangeland resource use; analytical techniques for allocation of rangeland resources.
Prerequisite: (AREC 202 or ECON 202) and (RS 300).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RS 471 Rangeland Planning and Grazing Management Credits: 2 (2-0-0)
Course Description: Definition of grazing management, grazing systems. Synthesis of animal, plant responses to grazing management. Structure, function of rangeland planning.
Prerequisite: RS 300 or SOCR 320.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RS 472 Rangeland Ecosystem Planning Credits: 4 (1-6-0)
Course Description: Range allotment, ranch, and restoration planning.
Prerequisite: RS 471.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RS 478 Ecological Restoration Credits: 3 (3-0-0)
Course Description: Analysis of environmental factors influencing restoration of disturbed lands and practices for successful restoration of disturbed ecosystems.
Prerequisite: (BZ 450 or LAND 220 or LIFE 220 or LIFE 320) and (SOCR 240).
Registration Information: Credit not allowed for both RS 478 and NR 678.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RS 495 Independent Study-Rangeland Ecosystems Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 496 Group Study-Rangeland Ecosystem Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 500 Advanced Rangeland Management Credits: 3 (3-0-0)
Course Description: Rangeland management concepts.
Prerequisite: LAND 220 or LIFE 320 or NR 220 or LIFE 220.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

RS 531 World Grassland Ecogeography Credits: 3 (2-3-0)
Course Description: Distribution, climate, and structure of the world's major grasslands with emphasis on North America.
Prerequisite: BZ 223.
Registration Information: Must register for lecture and laboratory. Required field trips. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RS 532 Rangeland Ecosystem Sampling Credits: 3 (1-3-1)
Course Description: Measurement, analysis techniques for rangeland vegetation. Applications to management emphasized.
Prerequisite: (STAT 301) and (LAND 220 or LIFE 320 or NR 220 or LIFE 220).
Registration Information: Must register for lecture, lab, and recitation. Required field trips. Credit not allowed for both RS 532 and RS 432.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

RS 552 Range Animal Production and Management Credits: 4 (3-0-1)
Course Description: Biological and ecological basis for production of meat from rangelands.
Prerequisite: LAND 220 or LIFE 320 or NR 220 or LIFE 220.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

RS 565 Riparian Ecology and Management Credits: 3 (2-2-0)
Course Description: Analysis of interactions among biotic and abiotic processes as relates to the ecology and management of riparian systems, emphasizing case studies.
Prerequisite: LAND 220 or LIFE 220 or LIFE 320.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RS 630 Ecology of Grasslands and Shrublands Credits: 3 (3-0-0)
Course Description: Distributions and climatic controls on grassland and shrubland plant communities.
Prerequisite: NR 565 or NR 578.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RS 693 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 695 Independent Study-Rangeland Ecosystem Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 696 Group Study-Rangeland Ecosystem Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 793 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 795 Independent Study-Rangeland Ecosystem Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Real Estate-REL (REL)

Courses

REL 360 Real Estate Principles Credits: 3 (3-0-0)
Course Description: Broad survey of real estate emphasizing land use, urban structure and growth, market analysis, real estate finance and valuation, and property rights.
Prerequisite: AREC 202 or ECON 202.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

REL 367 Real Estate Law Credits: 3 (3-0-0)
Course Description: Legal regulations applicable to real property ownership and transfer, to real estate agents, and to use of real property.
Prerequisite: BUS 205 or BUS 260 or HDFS 403.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

REL 430 Real Estate Market Analysis Credits: 3 (3-0-0)
Course Description: Analysis of real estate markets, including development feasibility and managing risk, and their relation to urban economic trends.
Prerequisite: (FIN 300 or FIN 305) and (REL 360).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

REL 454 Real Estate Appraisal Credits: 3 (3-0-0)
Also Offered As: AREC 454.
Course Description: Theoretical principles that underlie real estate appraisal methods. Procedures and practices used in real estate appraisal.
Prerequisite: (AREC 202 or ECON 202) and (AREC 305 or REL 360).
Registration Information: Sections may be offered: Online. Credit allowed for only one of the following: AREC 453, AREC 454, REL 453, or REL 454.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

REL 455 Real Estate Finance Credits: 3 (3-0-0)
Course Description: Residential mortgage origination, mortgage loan amortization, mortgage decision making, secondary mortgage markets, mortgage backed securities, REITs.
Prerequisite: (FIN 300 or FIN 305) and (REL 360).
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

REL 460 Real Estate Investment Credits: 3 (3-0-0)
Course Description: Financing of real estate assets: real estate markets, policies; use of leverage and real estate investment analysis in real estate investment.
Prerequisite: (FIN 300 or FIN 305) and (REL 360).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

REL 487 Real Estate Internship Credits: Var[1-3] (0-0-0)
Course Description: Internship.
Prerequisite: FIN 300.
Registration Information: Junior standing. Maximum of 3 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

REL 495 Real Estate Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 3 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

REL 496 Real Estate Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 3 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

REL 601 Fundamentals of Real Estate Finance Credit: 1 (1-0-0)
Course Description: Valuation-oriented study of real estate concepts and principles, including legal, regulatory, finance, market and financial analysis.
Prerequisite: BUS 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Social Work-SOWK (SOWK)

Courses

SOWK 110 Contemporary Social Welfare (GT-SS1) Credits: 3 (2-0-1)
Course Description: Principles, values and institutions of U.S. social welfare in context of human need within family, groups, and society.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

SOWK 120 Academic and Career Success Credit: 1 (1-0-0)
Course Description: Skills for general academic success, personal growth, self-management, and knowledge of campus/community resources. Examination of professional opportunities within the field of social work.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Undergraduate social work majors only. This may be offered as a partial semester course. Credit not allowed for both SOWK 120 and SOWK 280A1.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 150 Introduction to Social Work Credits: 3 (3-0-0)
Course Description: Introduction to generalist social work, including the history of social welfare in the U.S. and the knowledge, values, skills, practice settings, and populations served across the profession with special emphasis on vulnerable groups. The broad range of theoretical approaches and intervention strategies required are introduced. Practice roles discussed are advocate, broker, counselor, mediator, researcher, and community change agent.
Prerequisite: (PSY 100, may be taken concurrently) and (SOC 100, may be taken concurrently or SOC 105, may be taken concurrently).
Restriction: Must be a: Undergraduate.
Registration Information: Undergraduate students only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 286A Practicum I Credits: 3 (2-0-2)
Course Description: Introductory social work practice skills in communication, relationship development, and professional behavior in the community setting.
Prerequisite: SOWK 150 with a minimum grade of C, may be taken concurrently.
Restriction: Must be a: Undergraduate.
Registration Information: Social Work majors only. Must register for lecture and practicum.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 286B Practicum II Credits: 3 (2-0-2)
Course Description: Introductory social work practice skills in communication, relationship development, and professional behavior in the community setting.
Prerequisite: SOWK 286A with a minimum grade of C.
Restriction: Must be a: Undergraduate.
Registration Information: Social Work majors only. Must register for lecture and practicum.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 300 Research in Applied Professions Credits: 3 (3-0-0)
Course Description: Basic understanding of the research process and research methodologies, including skill in finding, understanding, interpreting, and applying research findings using critical thinking skills. Major emphasis on the steps and procedures to investigate various social problems and interventions that are central to contemporary social work practice while learning how research can be used to improve social work practice and to foster social and economic justice.
Prerequisite: SOC 210, may be taken concurrently or STAT 100, may be taken concurrently or STAT 201, may be taken concurrently or STAT 301, may be taken concurrently or STAT 311, may be taken concurrently.
Restriction: Must be a: Undergraduate.
Registration Information: Completion of AUCC 1B Quantitative Reasoning requirement.
Terms Offered: Fall. Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 330 Dismantling Privilege and Oppression Credits: 3 (2-0-1)
Course Description: Knowledge and skill in deconstructing one's own identity, privilege and oppression to apply that process of understanding to a client's unique intersecting identities creating culturally sensitive social work practices.
Prerequisite: SOWK 286A with a minimum grade of C, may be taken concurrently.
Restriction: Must be a: Undergraduate.
Registration Information: Must register for lecture and recitation. Social Work majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 333 Human Behavior in the Social Environment Credits: 3 (2-0-1)
Course Description: Historic and contemporary theoretical foundations as contributions to practice knowledge in social work. Uses ecological and systems theory as organizing frameworks with critical thinking as a skill for identifying and challenging assumptions. Understanding human behavior theory relevant to social work practice.
Prerequisite: HDFS 101, may be taken concurrently and SOWK 286A with a minimum grade of C, may be taken concurrently and SOWK 330 with a minimum grade of C, may be taken concurrently.
Restriction: Must be a: Undergraduate.
Registration Information: Must register for lecture and recitation. Credit not allowed for both SOWK 233 and SOWK 333. Social Work majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 340 Generalist Practice-Individuals and Families Credits: 3 (2-0-1)
Course Description: Knowledge and techniques used in applying the generalist planned change process to individual and family system assessments and interventions.
Prerequisite: SOWK 286B with a minimum grade of C, may be taken concurrently.
Restriction: Must be a: Undergraduate.
Registration Information: Must register for lecture and recitation. Progression into the major is required prior to registration.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 341 Generalist Practice-Small Groups Credits: 3 (1-0-2)
Course Description: Knowledge, skills and competencies needed for the planned change process in groups within a generalist framework.
Prerequisite: SOWK 340 with a minimum grade of C, may be taken concurrently.
Restriction: Must be a: Undergraduate.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 343 Generalist Practice-Organizations Credits: 3 (2-0-1)
Course Description: Knowledge, values, and skills for the planned change process with organizations.
Prerequisite: SOWK 340 with a minimum grade of C, may be taken concurrently.
Restriction: Must be a: Undergraduate.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 352 Indigenous Women, Children and Tribes Credits: 3 (3-0-0)
Also Offered As: ETST 352.
Course Description: Historical and contemporary lives of women, children, and tribal communities.
Prerequisite: None.
Registration Information: Credit not allowed for both SOWK 352 and ETST 352.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 370 Addictions - A Social Work Perspective Credits: 3 (2-0-1)
Course Description: Applying a bio-psychosocial lens to the system of addictions and substance abuse from a social work perspective.
Prerequisite: HDFS 101 or PSY 100.
Registration Information: Sophomore standing. Must register for lecture and recitation. Credit not allowed for SOWK 370 and SOWK 371D.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 371A Social Work with Selected Populations: Children and Families Credits: 3 (3-0-0)
Course Description: Application of practice processes with children and families.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 371B Social Work with Selected Populations: Juvenile Offenders Credits: 3 (3-0-0)
Course Description: Application of practice processes with juvenile offenders.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 371C Social Work with Selected Populations: Adult Offenders Credits: 3 (3-0-0)
Course Description: Application of practice processes with adult offenders.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 371E Social Work with Selected Populations: Social Gerontology Credits: 3 (3-0-0)
Course Description: Application of practice processes with selected populations.
Prerequisite: HDFS 101.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description: Assist instructor in teaching selected classes, group training, or discussion group leadership.
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 400 Generalist Practice-Communities Credits: 3 (2-0-1)
Course Description: Knowledge and skills to engage with communities, create culturally sensitive change, and evaluate the planned change process.
Prerequisite: SOWK 343, may be taken concurrently.
Restriction: Must be a: Undergraduate.
Registration Information: Must register for lecture and recitation. Social Work majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 410 Social Welfare - Policy, Issues, and Advocacy Credits: 3 (2-0-1)
Course Description: Issues and processes shaping social welfare institutions; definitions of social welfare policy; analytical framework for policy analysis.
Prerequisite: (POLS 101 or POLS 103) and (SOWK 400 with a minimum grade of C, may be taken concurrently).
Restriction: Must be a: Undergraduate.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 450 International Social Welfare and Development Credits: 3 (2-0-1)
Also Offered As: IE 450.
Course Description: Framework of social welfare and development in international area; social need with focus on cultures/countries in transition.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Credit not allowed for both SOWK 450 and IE 450.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 482A Social Work in Costa Rica Credits: 3 (1-0-2)
Course Description: International social work practice through exposure to culturally diverse communities in Costa Rica. Examine social problems, social action, and social injustice in the context of global interdependence.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Enrollment in Bachelor of Social Work or Master of Social Work degree program. Completed letter of application.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 482B Study Abroad: Social Work in India Credits: 3 (1-0-2)
Course Description: International social work practice through exposure to culturally diverse communities in India. Examine social problems, social action, and social injustice in the context of global interdependence.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Open to all majors. Completed letter of application.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 488 Field Placement Credits: Var[2-10] (0-0-0)
Course Description: Integrate and apply social work competencies (Council on Social Work Education accreditation standards) learned across coursework through direct practice in an agency setting for field education. Demonstrate competency in professional knowledge, values, skills, and affective and cognitive processes for beginning social work practitioners.
Prerequisite: SOWK 300 and SOWK 341 and SOWK 330 and SOWK 410, may be taken concurrently.
Restriction: Must be a: Undergraduate.
Registration Information: Maximum of 10 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

SOWK 492 Seminar Credits: 3 (0-0-3)
Course Description: Integrates the knowledge, values, skills, cognitive and affective processes, and behaviors, that develop social work competency while in field placement.
Prerequisite: SOWK 488, may be taken concurrently.
Restriction: Must be a: Undergraduate.
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 495 Independent Study Credits: Var[1-12] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 496 Group Study Credits: Var[1-12] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 500 Principles and Philosophy of Social Work Credits: 3 (3-0-0)
Course Description: Establish larger framework for graduate social work study, and beginning professional practice. Provide an understanding of the nature, history, values, ethics, and practice contexts for social work. Evaluate their goodness-of-fit with the profession, the knowledge base required, and the diverse people, organizations, and communities served by social work.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Admission to the MSW program. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 511 Small Systems Practice Skills Credits: 3 (1-0-2)
Course Description: Foundational practice knowledge and skills for engagement, assessment, intervention, and evaluation with individuals and families within a systems framework.
Prerequisite: SOWK 500, may be taken concurrently and SOWK 515, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Must register for lecture and recitation. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 515 Theoretical Foundations for Social Work Credits: 3 (2-0-1)
Course Description: Historical and contemporary theoretical foundations for social work practice. Ecological and systems theories are presented as organizing frameworks and critical thinking is developed as a skill for identifying and challenging assumptions.
Prerequisite: SOWK 500, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Must register for lecture and recitation. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 520 Social Welfare Policy and Advocacy Credits: 3 (2-0-1)
Course Description: Analysis of how social welfare policies affect the well-being of people and the tools that can be used to advocate for social change.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program.
Registration Information: Admission to the MSW program. Must register for lecture and recitation. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 530 Anti-Oppressive Social Work Practice Credits: 3 (2-0-1)
Course Description: Developing anti-oppressive practice with a focus on multiculturalism and social justice advocacy. Critically evaluate personal traits, attitudes and values regarding diversity and identity formation while exploring theoretical frameworks for understanding oppression. Analyze the relationships among power, privilege and oppression. Acquiring strategies for combating injustice.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program.
Registration Information: Admission to MSW program. Must register for lecture and recitation. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 550 Animal Assisted Therapy/Human-Animal Bond Credits: 3 (2-0-1)
Course Description: Nature of human-animal bond and animal assisted therapy as an intervention method.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 551 Fundamentals of Mediation Credits: 3 (1-0-2)
Course Description: Knowledge and skills essential to the successful application of mediation for a wide variety of interpersonal conflicts.
Prerequisite: None.
Registration Information: Bachelor's degree. Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 552 Conflict Management: Health and Elder Care Credits: 3 (1-0-2)
Course Description: Knowledge, values and skills necessary for the practice of conflict resolution in healthcare and eldercare settings.
Prerequisite: SOWK 551.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 553 Multi-Party Conflict Resolution Credits: 3 (2-0-1)
Course Description: Theories, models, and skills required for design and guidance of multi-party conflict resolution in group, community and organizational settings.
Prerequisite: SOWK 551.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 554 Conflict Resolution in the Workplace Credits: 3 (1-0-2)
Course Description: Knowledge, values and skills necessary for the practice of conflict resolution in the workplace.
Prerequisite: SOWK 551.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 556 Divorce and Family Mediation Credits: 3 (1-0-2)
Course Description: Knowledge and skills essential to the practice of family mediation including divorce and child custody.
Prerequisite: SOWK 551.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 560 Social Work Practice in Schools Credits: 3 (0-0-3)
Course Description: Knowledge and skills essential to the practice of social work in educational settings. Topics include historical, legal, structural, and cultural context of practice in schools, the impact of disability on an individual and a family including special education processes and law, current issues challenging the practitioner in school settings, specific assessment practices covering Functional Behavior Assessment (FBA) and development of Behavior Intervention Plans (BIP).
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 561 School/Community: People with Disabilities Credits: 3 (0-0-3)
Course Description: Teamwork approach to serving persons with special needs; values, issues and best practices related to creating desirable futures for them.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 588 Field Placement Credits: Var[1-6] (0-0-0)
Course Description: Students integrate and apply professional competencies learned across coursework through direct practice in an agency setting for 270 hours of field education. Students will demonstrate competency in professional knowledge, values, skills, and affective and cognitive processes for beginning social work practitioners.
Prerequisite: SOWK 500 with a minimum grade of C, may be taken concurrently and SOWK 511 with a minimum grade of C, may be taken concurrently and SOWK 515 and SOWK 530, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Maximum of 6 credits allowed.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

SOWK 590 Workshop Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 592 Integrative Foundation Field Seminar Credit: 1 (0-0-1)
Course Description: Integration of field placement experiences with foundation year MSW knowledge to enhance skills and shape social work best practices. Each session will focus on integrating students' field placement experiences with knowledge, values, skills, behaviors, and cognitive and affective processes for professional social work practice.
Prerequisite: SOWK 500 with a minimum grade of C and SOWK 515 with a minimum grade of C and SOWK 588, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 600 Methods of Research Credits: 3 (3-0-0)
Course Description: Emphasis on delivering evidence-based practice as well as conducting research to improve social work practice and policy by being effective consumers of research for social work practice and understanding diverse research types, study designs, sampling, measures, and research ethics.
Prerequisite: SOWK 588 with a minimum grade of C.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Advanced Standing MSW program or SOWK 588 with a grade of C or better. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 601 Methods of Research II Credits: 3 (3-0-0)
Course Description: Data analysis, computer processing in social work research, and methods for evaluating one's own practice.
Prerequisite: SOWK 600.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 603A Direct Practice: Assessment and Evaluation Credits: 2 (0-0-2)
Course Description: Selection and application of techniques for monitoring and evaluating interventions with individuals, families, and groups.
Prerequisite: SOWK 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in SOWK 688.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

SOWK 603B Direct Practice: Assessment and Evaluation Credits: 2 (0-0-2)
Course Description: Selection and application of techniques for monitoring and evaluating interventions with individuals, families, and groups.
Prerequisite: SOWK 603A.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in SOWK 688.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

SOWK 630 Advanced Generalist Practice with Individuals Credits: 3 (2-0-1)
Course Description: Knowledge, values, and skills to engage, assess, intervene, and evaluate individuals using an advanced generalist practice approach.
Prerequisite: SOWK 588 and SOWK 592.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Advanced Standing program or SOWK 588; SOWK 592. Must register for lecture and recitation. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 631 Advanced Community Practice Credits: 3 (1-0-2)
Course Description: Preparing students to engage in and lead community practice that improves the well-being of individuals, families and communities; positively impacts the availability and impact of services and service delivery systems; and seeks to achieve social, economic, and environmental justice.
Prerequisite: SOWK 588.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Advanced Standing MSW program or SOWK 588. Must register for lecture and recitation. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 633 Contemporary Issues in Social Welfare Policy Credits: 3 (1-0-2)
Course Description: Application of social welfare policy analysis models, normative aspects of policy analysis and assessment skills.
Prerequisite: SOWK 520 with a minimum grade of C and SOWK 588.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Admission to the Advanced Standing MSW program or SOWK 520 with a grade of C or better; SOWK 588. Must register for lecture and recitation. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 634 Advanced Practice with Families and Groups Credits: 3 (1-0-2)
Course Description: Apply engagement, assessment, and intervention skills, theoretical models, and evidence-based practice approaches in work with families and groups.
Prerequisite: SOWK 630.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 640 Contemporary Issues in Military Culture Credits: 3 (0-0-3)
Course Description: Exploration of multiple issues informing social work practice with military and veteran populations including ethical decision making in military social work, resources for veterans, challenges faced by women in the military, secondary trauma, and problems veterans face, such as homelessness, addiction, reintegration, mental illness, suicide. Military culture, the different branches of the military, and generational differences among military personnel will be examined.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 641 Military Family Systems Credits: 3 (0-0-3)
Course Description: Exploration of effectively engaging with military families. Strategies to assess and intervene with military and veteran couples, children, and families will be examined. Exploration of topics of integration and reintegration; grief, loss, and bereavement; family-centered programs; support of guard/reserve families; deployment; support of veteran caregivers; and effective interventions through a systems framework.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 642 Clinical Intervention with Military Personnel Credits: 3 (0-0-3)
Course Description: Clinical framework for working with members of the military including active duty, veterans, and military families, applied to examine common diagnoses and effective interventions, including post-traumatic stress disorder, traumatic brain injury, substance abuse, and suicide. Cognitive behavioral therapy, reactive exposure behavioral therapy, exposure therapy, rehabilitation, animal-assisted therapy, and additional therapies will be investigated.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 660 Nonprofit Program Development Credits: 3 (0-0-3)
Course Description: Application of the tools, knowledge, and understanding of how to provide strength-based nonprofit program development and management.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 661 Nonprofit Financial Development Credits: 3 (0-0-3)
Course Description: Application of the tools, knowledge, and understanding of how to provide strength-based nonprofit financial development.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 662 Nonprofit Volunteer Development & Management Credits: 3 (0-0-3)
Course Description: Theoretical framework for understanding volunteerism and practice skills for building and managing an effective volunteer program.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 675 Psychopathology and Community Health Credits: 3 (0-0-3)
Course Description: Foundation for diagnosing mental and emotional disorders relevant to community behavioral health practice with individuals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor degree. This is a partial semester course. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 676 Psychopharmacology and Community Health Credits: 3 (0-0-3)
Course Description: Foundation in psychopharmacology (i.e. prescribed psychotropic drugs) for non-medically trained professionals practicing in behavioral health.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor's degree. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 677 Trauma-Informed Care Credits: 3 (0-0-3)
Course Description: Establishes a foundation for providing trauma mental health services to individuals, families, groups and organizations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor's degree. This is a partial semester course. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 684 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 10 credits allowed.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

SOWK 688 Field Placement Credits: Var[1-10] (0-0-0)
Course Description: Integrate and apply advanced generalist professional competencies learned across coursework through direct practice in an agency setting completing 675 hours. Demonstrate competency in professional knowledge, values, skills, and affective and cognitive processes for advanced generalist social work practitioners.
Prerequisite: SOWK 592 and SOWK 500 with a minimum grade of C and SOWK 511 and SOWK 515 and SOWK 520 and SOWK 530 and SOWK 588 with a minimum grade of S.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Advanced Standing MSW program or SOWK 500 with a C or better; SOWK 511; SOWK 515; SOWK 520; SOWK 530; SOWK 588 with an S grade; SOWK 592. Maximum of 15 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

SOWK 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 698 Advanced Research and Social Work Capstone Credits: 3 (1-0-2)
Course Description: Applied research project designed and implemented in groups to culminate knowledge and skill application. May be conducted with field agency, a community organization, or in alignment with specific School of Social Work faculty research. Groups will evaluate, research, and/or analyze a topic relevant to social work practice at the micro, mezzo, or macro level.
Prerequisite: SOWK 600 with a minimum grade of C.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Sections may be offered: Face-to-Face or Mixed Face-to-Face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 701 Contemporary Issues in Social Work Credits: 3 (1-0-2)
Course Description: Issues and trends currently impacting social work research, professional education, and practice.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Admission to the School of Social Work PhD Program.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 702 Social Welfare Policy Credits: 3 (1-0-2)
Course Description: Social policy analysis and impact on social welfare systems and programs.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 703 Pedagogical Approaches in Social Work Credits: 3 (1-0-2)
Course Description: Pedagogy and practices for teaching social work curriculum.
Prerequisite: SOWK 701.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the School of Social Work PhD Program. Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 704 Theory for Applied Social Sciences Credits: 3 (1-0-2)
Course Description: Nature and processes of theory building in social sciences. Issues of epistemology, logic, political and moral philosophy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 705 Systematic Research for Scientific Inquiry Credits: 3 (1-0-2)
Course Description: Systematic research in areas of interest that summarizes findings from available studies and provides a critique of the current body of evidence in this area.
Prerequisite: SOWK 701.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the School of Social Work PhD Program. Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 784 Supervised College Teaching Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 786 Research Practicum Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOWK 701 and EDRM 700 and EDRM 704.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 792 Seminar Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: SOWK 701.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Sociology-SOC (SOC)

Courses

SOC 100 General Sociology (GT-SS3) Credits: 3 (3-0-0)
Course Description: Analysis of human societies in the U.S. and abroad; major institutions, groups, and interaction patterns from the sociological perspective.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).

SOC 105 Social Problems (GT-SS3) Credits: 3 (3-0-0)
Course Description: Analysis of global and domestic social problems.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).

SOC 192 Civic Culture and Social Responsibility Credits: 3 (0-0-3)
Course Description: Erosion of civility in society with particular emphasis on civic culture on the university campus.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 205 Contemporary Race-Ethnic Relations (GT-SS3) Credits: 3 (3-0-0)
Course Description: People of color and white ethnic groups in the U.S. and internationally.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

SOC 210 Quantitative Sociological Analysis Credits: 3 (3-0-0)
Course Description: Application of quantitative concepts and methodology to investigation of social problems.
Prerequisite: MATH 100 to 199 - at least 1 credit.
Registration Information: Mathematics placement exam can substitute for coursework.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 220 Global Environmental Issues (GT-SS3) Credits: 3 (3-0-0)
Course Description: Relationship between human societies around the world and the larger natural environment.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

SOC 253 Intro to Criminology and Criminal Justice Credits: 3 (3-0-0)
Course Description: Criminal justice as a system. Addresses the concept of crime, how crime is measured, the correlates of crime (such as race, age, gender, and social class), policing, sentencing, prisons, and corrections.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 270 Self in Society Credits: 3 (3-0-0)
Course Description: Understand how we become social creatures and how our everyday interactions with one another make and remake ourselves, our culture, and our social worlds. Explores a variety of social psychological ideas related to formation of the self, socialization, social reference groups, social interaction, and the social construction of reality.
Prerequisite: None.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 271 Body and Society Credits: 3 (3-0-0)
Course Description: Examines the body through the lens of sociology by focusing on its relationship with society. Explores how social structures shape the body, how bodies fit or don't fit into society, and how we understand and experience the body in a social context.
Prerequisite: None.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 275 Introduction to Forensic Anthropology Credits: 3 (3-0-0)
Also Offered As: ANTH 275.
Course Description: Forensic anthropological theory and methods including estimation of age-at-death, sex, stature, ancestry, and trauma analysis.
Prerequisite: None.
Registration Information: Credit not allowed for both ANTH 275 and SOC 275. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

SOC 301 Development of Sociological Thought Credits: 3 (3-0-0)
Course Description: Central themes in sociological thought from Enlightenment to present.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 302 Contemporary Sociological Theory Credits: 3 (3-0-0)
Course Description: Theoretical approaches and models in sociology.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 311 Methods of Sociological Inquiry Credits: 3 (3-0-0)
Course Description: Application of sociological concepts to sociological problems including problem formulation, data gathering, and research design.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 313 Computer Methods in Sociology Credit: 1 (1-0-0)
Course Description: Experimental introduction to typical uses of computers in sociology with emphasis on data analysis.
Prerequisite: SOC 210 or STAT 200 to 499.
Registration Information: Sections may be offered: Online. Credit not allowed for both SOC 313 and SOC 314.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 314 Sociological Approaches to Quantitative Data Credits: 3 (3-0-0)
Course Description: Quantitative data acquisition, cleaning, management and analysis. Using an analytical software package, students will clean, merge, and manage data from various sources, perform quantitative analyses, and present their data and results through tables and figures.
Prerequisite: (SOC 210 or STAT 200 to 499) and (SOC 311, may be taken concurrently).
Registration Information: Sections may be offered: Online. Credit not allowed for both SOC 313 and SOC 314.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 315 Applications of Qualitative Research Credits: 3 (3-0-0)
Course Description: Qualitative research practices in contemporary contexts, including unobtrusive observation, content analysis, in-depth interviewing, and immersive participant observation.
Prerequisite: SOC 311, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 320 Population-Natural Resources and Environment Credits: 3 (3-0-0)
Course Description: Population studies; world growth patterns and their relationship to natural resources and environment.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 321 Soil, Environment, and Society Credits: 3 (3-0-0)
Course Description: Role of soil in our environment and its value as it relates to the social and economic well-being of society.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 322 Introduction to Environmental Justice Credits: 3 (3-0-0)
Course Description: Unequal distribution of environmental risks, benefits, policies, and regulatory practices across different populations.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 323 Soc. of Environmental Cooperation & Conflict Credits: 3 (3-0-0)
Course Description: Roles of government and civil society in creating environmental problems and in developing effective responses to those problems.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 324 Food Justice Credits: 3 (3-0-0)
Course Description: Food justice strives to eliminate exploitation and oppression by challenging the structural drivers within and beyond the food system. As a practice, food justice advocates for the right to healthy food that is justly and sustainably produced, recognizes diverse cultural foodways and histories, and promotes democratic participation and equitable distribution of resources in the food system.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 330 Social Inequality Credits: 3 (3-0-0)
Course Description: Theories of social inequality and mobility and their ramifications in American society.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 332 Comparative Majority-Minority Relations Credits: 3 (3-0-0)
Course Description: Discrimination, ideology, power, policy issues in the U.S. and selected societies; application of basic concepts in student's self appraisal.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 333 Gender and Society Credits: 3 (3-0-0)
Course Description: Analysis of social organization of gender in contemporary society, emphasizing gendered experiences and institutional linkages.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 334 Sociology of Intersectionality Credits: 3 (3-0-0)
Course Description: Multiple and intersecting ways race, class, gender, and sexuality shape society, individual life-chances, and daily social interactions.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 340 Bureaucracy and Modern Organizations Credits: 3 (3-0-0)
Course Description: Structure and function of large-scale organization; coordination of activities between organizations and society.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 341 Sociology of Rural Life Credits: 3 (3-0-0)
Course Description: Rural life in U.S. and third world societies; analysis of sociocultural systems, social differentiation, social institutions, and problems of social change.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 342 Leisure and Society Credits: 3 (3-0-0)
Course Description: Nature and purpose of leisure and work in society; influences of culture and social structure on leisure values and behavior.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 343 Sport and Society Credits: 3 (3-0-0)
Course Description: Analysis of sports as social phenomena with a focus on the social implications of sports in everyday life.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 344 Health, Medicine, and Society Credits: 3 (3-0-0)
Course Description: The impact of sociocultural factors like social class, gender, and race/ethnicity on health and illness in society and the social organization of healthcare delivery. The U.S. health care system.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 352 Criminology Credits: 3 (3-0-0)
Course Description: Crime in contemporary society; behavioral, causation, prevention, and justice issues.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 353 Criminal Investigations Credits: 3 (3-0-0)
Course Description: Examination of the social, organization, and applied facets of the criminal investigation process.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 354 Law Enforcement and Society Credits: 3 (3-0-0)
Course Description: Rise and development of law enforcement as a societal reaction to crime.
Prerequisite: (SOC 100 or SOC 105) and (SOC 253).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 356 Inequality in Criminal Sentencing Credits: 3 (3-0-0)
Course Description: Examines the structure and process involved in the prosecution, adjudication, and sentencing of criminal defendants, and how that structure and process can produce disparities in criminal justice outcomes.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 357 Women, Crime, and Victimization Credits: 3 (3-0-0)
Course Description: Issues related to women as offenders, victims, and professionals in the criminal justice system.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Credit not allowed for SOC 357 and SOC 450.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 358 Punishment and Society Credits: 3 (3-0-0)
Course Description: Social and organizational issues in the administration of punishment and correction.
Prerequisite: (SOC 100 or SOC 105) and (SOC 253).
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 359 Green Criminology Credits: 3 (3-0-0)
Course Description: Environmental offenses, victims, and responses to environmental crimes and harms.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 360 Political Sociology Credits: 3 (3-0-0)
Course Description: Analysis of power as a sociological concept, emphasizing competing theories of the state and power.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 362 Social Change Credits: 3 (3-0-0)
Course Description: Sources of stability and stress in changing societies, consequences of planned and unplanned change; future trends.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 364 Food, Agriculture and Global Society Credits: 3 (3-0-0)
Course Description: Analysis of relationships between global food, agriculture and social change.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 366 Peoples and Institutions of Latin America Credits: 3 (3-0-0)
Course Description: Change in the cultures and institutions of contemporary Latin America.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 371 Symbolic Interaction Credits: 3 (3-0-0)
Course Description: Basic concepts and issues in sociological perspective of social action and interactionism.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 372 Sociology of Deviance Credits: 3 (3-0-0)
Course Description: Description, comparison, and analysis of theories and research of deviance.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 373 Visual Sociology Credits: 3 (3-0-0)
Course Description: Blends theory, methods, and practice to provide grounding in the role of images in sociological inquiry. Applies sociological principles to understanding photographs, from an area of interest, to provide a deeper level of understanding of the role of the photographer, through the focus of the intended audience, and how they contribute to an understanding of society at large.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Offered as an online course only.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 375 Sociology of Religion Credits: 3 (3-0-0)
Course Description: Descriptions and analyses of the roles and relationships of religion as a modern social institution.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 403 Capstone Seminar Credits: 3 (0-0-3)
Course Description: Student demonstration of central concepts and procedures currently employed in sociology discipline.
Prerequisite: (SOC 210 or STAT 200 to 499) and (SOC 301 or SOC 302) and (SOC 311) and (SOC 313 or SOC 314 or SOC 315 or CS 110).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 422 Comparative Legal Systems Credits: 3 (3-0-0)
Also Offered As: ANTH 422.
Course Description: Traditional approaches to law, competing concepts of law in the global system, and experiences of minorities in state legal systems.
Prerequisite: ANTH 100 or SOC 100.
Registration Information: Credit not allowed for both SOC 422 and ANTH 422.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOC 429 Comparative Urban Studies Credits: 3 (3-0-0)
Course Description: World urbanization and metropolitan development, measurement of growth and change in cities, and sociological perspective in planning.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 431 Community Dynamics and Development Credits: 4 (3-2-0)
Course Description: Nature of community; its institutions, problems and processes, including growth, disintegration, and development.
Prerequisite: (SOC 100 or SOC 105) and (SOC 311).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 444 Federal Indian Law and Policy Credits: 3 (3-0-0)
Also Offered As: ETST 444.
Course Description: Indian policy processes and their impact on Native lives and culture, particularly Native sovereignty.
Prerequisite: None.
Registration Information: Credit not allowed for both SOC 444 and ETST 444.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 455 Sociology of Law Credits: 3 (3-0-0)
Course Description: Social origins, functions, and procedures of law in society.
Prerequisite: (SOC 100 or SOC 105) and (SOC 253).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 460 Society and Environment Credits: 3 (3-0-0)
Course Description: Technology as a social phenomenon interacting with social organization and the natural environment.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 461 Water, Society, and Environment Credits: 3 (3-0-0)
Course Description: Social aspects of water resource utilization; interface of social organization with physical environment.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 462 Applied Social Change Credits: 3 (3-0-0)
Course Description: Applied sociology with a focus on research and practice designed to foster social change.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 463 Sociology of Disaster Credits: 3 (3-0-0)
Course Description: Determinants and consequences of behavior and response to environmental extremes including floods, earthquakes, wind, severe storms, and technological emergencies.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 474 Social Movements Credits: 3 (3-0-0)
Course Description: Theory and research on causes, organizational structure, and outcomes of social movements.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 482A Travel Abroad: Comparative Criminal Justice Credits: 3 (0-0-3)
Course Description: International and comparative issues in sociology.
Prerequisite: SOC 482B, may be taken concurrently.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 482B Travel Abroad: Crime and Deviance Credits: 3 (0-0-3)
Course Description: International and comparative issues in sociology.
Prerequisite: SOC 482A, may be taken concurrently.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 487 Internship Credits: 3 (0-0-9)
Course Description: Academic-based work experience with selected organizations or agencies. Supervised application of sociological principles and seminar participation.
Prerequisite: (SOC 210 or STAT 200 to 499) and (SOC 301 or SOC 302) and (SOC 311) and (SOC 313 or SOC 314 or SOC 315 or CS 110).
Registration Information: Must have concurrent registration in SOC 492.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 492 Seminar Credit: 1 (0-0-1)
Course Description: Examination of work-oriented instruction in seminar setting where sociological principles are analyzed using internship experience.
Prerequisite: (SOC 210 or STAT 200 to 499) and (SOC 301 or SOC 302) and (SOC 311) and (SOC 313 or SOC 314 or SOC 315 or CS 110).
Registration Information: Must have concurrent registration in SOC 487.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 500 The Sociological Profession I Credit: 1 (1-0-0)
Course Description: Examination of issues and values affecting sociology as a profession.
Prerequisite: SOC 100 to 481 - at least 15 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 501 The Sociological Profession II Credits: 3 (3-0-0)
Course Description: Examination of the activities and procedures critical to the socialization of professional sociologists.
Prerequisite: SOC 100 to 499 - at least 15 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 502 Foundations of Theoretical Sociology Credits: 3 (3-0-0)
Course Description: Contributions of major sociological theorists prior to mid-20th century.
Prerequisite: SOC 500, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 503 Contemporary Sociological Theory Credits: 3 (3-0-0)
Course Description: Contributions of major sociological theorists since mid-20th century.
Prerequisite: SOC 502.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 510 Sociological Methods I Credits: 3 (3-0-0)
Course Description: Linkage of sociological theory and conceptual models; case studies; data-gathering techniques.
Prerequisite: SOC 210 or SOC 311.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 511 Sociological Methods II Credits: 3 (3-0-0)
Course Description: Linkage of sociological theory and conceptual models; case studies; data-gathering techniques.
Prerequisite: SOC 510.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 540 Community Sociology Credits: 3 (3-0-0)
Course Description: Intellectual roots of community sociology and contemporary community studies.
Prerequisite: SOC 500.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 555 Society, Deviance, and Crime Credits: 3 (0-0-3)
Course Description: Sociological perspectives and research in the areas of deviance and crime, including classical, positivist, and critical approaches.
Prerequisite: SOC 300 to 499 - at least 12 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 562 Sociology of Food Systems and Agriculture Credits: 3 (2-0-1)
Also Offered As: AGRI 562.
Course Description: How agricultural choices generate intended and unintended consequences for human communities and the natural environment.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Credit not allowed for both SOC 562 and AGRI 562.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 564 Environmental Justice Credits: 3 (3-0-0)
Course Description: Unequal distribution of environmental risks, benefits, policies, and regulatory practices across different populations.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 566 Contemporary Issues of Developing Countries Credits: 3 (3-0-0)
Also Offered As: AREC 566.
Course Description: Social, economic, and technological factors in developing countries.
Prerequisite: None.
Registration Information: Must have taken 2 or more courses in SOC or AREC or ECON. Credit not allowed for both SOC 566 and AREC 566.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 610 Seminar in Methods of Qualitative Analysis Credits: 3 (0-0-3)
Course Description: Examination and application of qualitative techniques of analysis.
Prerequisite: SOC 311, may be taken concurrently or POLS 620, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both SOC 610 and POLS 621.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 612 Seminar in Methods of Evaluational Research Credits: 3 (0-0-3)
Course Description: Quantitative and qualitative techniques of evaluating social action programs.
Prerequisite: SOC 511.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 613 Seminar in Multiple Regression and Path Analysis Credits: 3 (0-0-3)
Course Description: Analysis and application of techniques for multiple regression and path analysis.
Prerequisite: SOC 511.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 614 Comparative Sociology Credits: 3 (3-0-0)
Course Description: Examination of problems and prospects in extending and carrying out sociological research across social systems.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 630 Social Stratification Credits: 3 (3-0-0)
Course Description: Theory and research on class structure, status attainment, ideology, and social change.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 631 Sociology of Rural Development Credits: 3 (3-0-0)
Course Description: Rural social organization and development, modernization, and social change as it relates to rural social systems; underdeveloped regions of world.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 633 Theories of Modern Organizations Credits: 3 (3-0-0)
Course Description: Comparison of various theoretical perspectives on functioning of modern large-scale organizations.
Prerequisite: SOC 340.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 639 Technology Assessment and Social Forecasting Credits: 3 (3-0-0)
Course Description: Interrelationship between technology and society emphasizing procedures for evaluating impacts and forecasting alternatives.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 660 Theories of Development and Social Change Credits: 3 (3-0-0)
Course Description: Central concepts, issues, and approaches in sociology of development.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 661 Gender and Global Society Credits: 3 (0-0-3)
Course Description: Gender relations and social change in global society.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 662 Seminar in Sociological Policy Analysis Credits: 3 (0-0-3)
Course Description: Examination of sociological perspectives on formulation and impact of policies to deal with social problems.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 663 Sociology of Sustainable Development Credits: 3 (3-0-0)
Course Description: Social dimensions of sustainable Third World development and implications for policy.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 664 Sociology of Water Resources Credits: 3 (3-0-0)
Course Description: Social organization, conflict, and power in arid environments.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 665 Sociology of Science and Technology Credits: 3 (3-0-0)
Course Description: Examination of connections among science, technology, and social development in national and global context.
Prerequisite: SOC 100.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken 10 credits of undergraduate natural sciences.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 666 Globalization and Socioeconomic Restructuring Credits: 3 (0-0-3)
Course Description: Sociological theories and issues in globalization; socioeconomic restructuring of the world economy.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 667 Theories of State, Economy, and Society Credits: 3 (3-0-0)
Course Description: Major classical and contemporary sociological theories of state-economy-society relations emphasizing development.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 668 Environmental Sociology Credits: 3 (3-0-0)
Course Description: Connections between social organizations, the environment, and science and technology.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 669 Global Inequality and Change Credits: 3 (0-0-3)
Course Description: Major issues in global inequality and change from a historical and contemporary perspective.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 671 Metatheoretical Issues in Sociology Credits: 3 (0-0-3)
Course Description: Analysis of metatheoretical concepts and issues in sociological theory.
Prerequisite: SOC 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 693A Seminar: Structural Theory Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOC 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 693B Seminar: Cultural Theory Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOC 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 693C Seminar: Middle Range Theory Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOC 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 693D Seminar: Metatheory Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOC 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 696 Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 752 Seminar in Utopian Thought Credits: 3 (0-0-3)
Course Description: Sociological analysis of major utopian writings.
Prerequisite: SOC 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 787 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 793A Seminar: Quantitative Data Collection Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOC 511.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 793B Seminar: Quantitative Data Analysis Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOC 511.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 793C Seminar: Advanced Ethnographic Methods Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOC 511.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 793D Seminar: Comparative Methods Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOC 511.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Soil + Crop Sciences-SOCR (SOCR)

Courses

SOCR 100 General Crops Credits: 4 (3-2-0)
Course Description: Production and adaptation of cultivated crops; principles affecting growth, development, management, and utilization.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 171 Environmental Issues in Agriculture (GT-SS3) Credits: 3 (2-0-1)
Also Offered As: HORT 171.
Course Description: Historical development of agriculture; environmental consequences of modern food production and other cultural approaches to agriculture.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Credit not allowed for both SOCR 171 and HORT 171.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

SOCR 177 Applied Information Technology in Agriculture Credit: 1 (1-0-0)
Course Description: Introduction to database and project management, GIS/GPS and remote sensing, as they apply to agriculture, the environment, and business management.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 192 Water in the West Credits: 3 (0-0-3)
Course Description: History and current status of water resources management and policy in the western United States.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 200 Seed Anatomy and Identification Credit: 1 (0-2-0)
Course Description: Principles of seed anatomy including reproduction, identification, and seed characteristics of plant families.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 201 Seed Development and Metabolism Credit: 1 (0-2-0)
Course Description: Basic processes controlling seed development, maturation, dormancy, storage, germination, and how these factors relate to seedling growth.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 240 Introductory Soil Science Credits: 4 (3-2-0)
Course Description: Formation, properties, and management of soils emphasizing soil conditions that affect plant growth.
Prerequisite: CHEM 107 or CHEM 111.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 300 Seed Purity Analysis Credits: 2 (0-4-0)
Course Description: Fundamentals for determining physical purity of a seed lot using established rules and procedures.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 301 Seed Germination and Viability Credits: 2 (0-4-0)
Course Description: Seed viability tests including standard germination and tetrazolium, seed viability, dormancy, parameters of viability and evaluation.
Prerequisite: None.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 310 Agronomic Plant and Seed Identification Credits: 2 (0-4-0)
Course Description: Evaluate characteristics needed to identify agronomic plant and seed species.
Prerequisite: BZ 104 or BZ 110 or BZ 120 or HORT 100 or LIFE 102 or SOCR 100.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 311 Seed Quality--Seed Production and Genetics Credit: 1 (1-0-0)
Course Description: Importance of seed production and genetics to seed quality. The value of seed quality to field crop production.
Prerequisite: None.
Registration Information: Offered as an online course only. Credit not allowed for both SOCR 311 and SOCR 380A2.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 320 Forage and Pasture Management Credits: 3 (3-0-0)
Course Description: Fundamentals of establishment, management, and utilization of cultivated forages including hay, silage, and pasture production.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 322 Principles of Microclimatology Credits: 3 (3-0-0)
Course Description: Principles of microclimatology including energy balance concepts for soil and vegetation surfaces, and their application.
Prerequisite: PH 100 to 499 - at least 3 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 330 Principles of Genetics Credits: 3 (3-0-0)
Course Description: Transmission, population, and molecular genetics; practical applications.
Prerequisite: BZ 110 or BZ 120 or LIFE 102.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 331 Genetics Laboratory Credit: 1 (0-3-0)
Course Description: Experimental techniques in transmission and molecular genetics.
Prerequisite: SOCR 330, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 341 Microbiology for Sustainable Agriculture Credit: 1 (1-0-0)
Course Description: Functional roles and management of soil organisms in organic agriculture, emphasis on ecological interactions with plants and plant pathogens.
Prerequisite: SOCR 240.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 343 Composting Principles and Practices Credit: 1 (1-0-0)
Course Description: Fundamentals of compost production, use, and regulation.
Prerequisite: SOCR 240 and SOCR 350.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 344 Crop Development Techniques Credits: 2 (2-0-0)
Course Description: Conventional and transgenic approaches to crop variety development.
Prerequisite: BZ 120 or LIFE 102 or LIFE 103.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 345 Diagnosis and Treatment in Organic Fields Credits: 2 (0-4-0)
Also Offered As: HORT 345.
Course Description: Field experience in diagnosis of pest and nutrient problems on organic farms and development of treatment recommendations.
Prerequisite: (BSPM 302 or BSPM 308 or BSPM 361) and (HORT 100 or SOCR 100) and (SOCR 240).
Registration Information: Credit not allowed for both SOCR 345 and HORT 345. Required field trips.
Term Offered: Summer (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 350 Soil Fertility Management Credits: 3 (3-0-0)
Course Description: Managing soil fertility and fertilizers to meet plant nutrient requirements in an environmentally sound manner with emphasis on nutrient cycling.
Prerequisite: (CHEM 107 and CHEM 108 or CHEM 111 and CHEM 112) and (SOCR 240).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 351 Soil Fertility Laboratory Credit: 1 (0-2-0)
Course Description: Soil chemical analyses and development of fertilizer recommendations for crops.
Prerequisite: SOCR 350, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 370 Irrigation Principles Credits: 2 (2-0-0)
Course Description: Determination of irrigation water requirements based on the estimation of storage and movement of water in the soil-plant-atmospheric system.
Prerequisite: (HORT 100 or SOCR 100 or BZ 120) and (SOCR 240).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 371 Irrigation of Field Crops Credit: 1 (1-0-0)
Course Description: Management of irrigation systems for field crops with emphasis on irrigation methods, irrigation scheduling and strategies for water conservation.
Prerequisite: SOCR 370.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 377 Geographic Information Systems in Agriculture Credits: 3 (2-2-0)
Course Description: Introduction to geographic information systems and global positioning systems with applications to agriculture.
Prerequisite: SOCR 100 to 499 - at least 3 credits or CS 100 to 499 - at least 3 credits.
Registration Information: Credit not allowed for both SOCR 377 and SOCR 577. Required field trips.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

SOCR 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 400 Soils and Global Change: Science and Impacts Credits: 3 (2-2-0)
Course Description: Foundations on the science of global change and its impact on soil processes and biota.
Prerequisite: (SOCR 240) and (LIFE 220 or LIFE 320).
Registration Information: Required field trips. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 401 Greenhouse Gas Mitigation, Land Use, and Mgmt Credits: 3 (2-3-0)
Course Description: Introduction to greenhouse gas estimation methods and mitigation project development in the land use sector.
Prerequisite: SOCR 240.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 410 Seed Processes: Storage and Deterioration Credit: 1 (0-0-1)
Course Description: Environmental conditions and management factors influencing storage and deterioration of seeds, including physiological and biochemical changes.
Prerequisite: BZ 104 or BZ 105 or BZ 120.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 412 Seed Processes: Separation and Conditioning Credit: 1 (1-0-0)
Course Description: Understanding the physical process required to separate pure seed from contaminants and maintain viability.
Prerequisite: BZ 104 or BZ 105 or BZ 120.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 413 Seed Vigor Concepts and Testing Credits: 2 (2-0-0)
Course Description: Provide a basic understanding of the concept of seed vigor, methods for seed vigor testing, and the relationship of crop performance.
Prerequisite: SOCR 200 or SOCR 201.
Registration Information: Offered as an online course only. Credit not allowed for both SOCR 413 and SOCR 481A1.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 415 Pollinator Management in Agroecosystems Credits: 2 (2-0-0)
Also Offered As: BSPM 415.
Course Description: Fundamental concepts of pollinator biology and management, sustainable crop-pollinator interactions, regional and global issues on pollinator management and conservation, best management practices for commercially managed pollinators.
Prerequisite: HORT 100 or SOCR 100.
Registration Information: Junior standing. Credit not allowed for both SOCR 415 and BSPM 415. Required field trips.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 420 Crop and Soil Management Systems I Credits: 3 (3-0-0)
Course Description: Principles of crop, soil management emphasizing environmental factors influencing crop growth and development, interactions with soil organic matter.
Prerequisite: (HORT 100 or SOCR 100) and (SOCR 240).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 421 Crop and Soil Management Systems II Credits: 4 (3-2-0)
Course Description: Principles of crop and soil management with emphasis on soil erosion control, water conservation, and plant-water relationships.
Prerequisite: (HORT 100 or SOCR 100) and (SOCR 240).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 424 Topics in Organic Agriculture Credits: 3 (3-0-0)
Also Offered As: HORT 424.
Course Description: Examination of issues specific to organic food production systems and marketing.
Prerequisite: (AREC 202 or ECON 202) and (AREC 328 and SOCR 240) and (HORT 100 or SOCR 100) and (SOCR 171 or HORT 171).
Registration Information: Credit not allowed for both SOCR 424 and HORT 424.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 430 Applications of Plant Biotechnology Credits: 3 (3-0-0)
Course Description: Current and potential applications of DNA-based biotechnology in crop agriculture and other plant disciplines.
Prerequisite: SOCR 330.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 440 Pedology Credits: 4 (2-3-1)
Course Description: Process of soil formation, characterization, classification of soils; soil survey methods.
Prerequisite: None.
Registration Information: Must register for lecture, laboratory and recitation.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

SOCR 441 Soil Ecology Credits: 3 (2-3-0)
Course Description: An integrative, hands-on experience in the theory and application of ecology principles to the soil environment.
Prerequisite: SOCR 455.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 442 Forest and Range Soils Credits: 3 (3-0-0)
Course Description: Soil and water relationships in forest and rangeland ecosystems; significant properties in their management.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 455 Soil Microbiology Credits: 3 (3-0-0)
Course Description: Microbial activities in agricultural, forest, and grassland soils; in soil-plant relationships; and in maintenance of environmental quality.
Prerequisite: MIP 300 or SOCR 240.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 456 Soil Microbiology Laboratory Credit: 1 (0-3-0)
Course Description: Techniques used in study of ecology and activities of soil microorganisms.
Prerequisite: SOCR 455, may be taken concurrently.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 460 Plant Breeding Credits: 3 (2-0-1)
Also Offered As: HORT 460.
Course Description: Theory and practice of plant breeding using principles of genetics and related sciences.
Prerequisite: BZ 350, may be taken concurrently or LIFE 201A, may be taken concurrently or SOCR 330, may be taken concurrently.
Registration Information: Must register for lecture and recitation. Credit not allowed for both SOCR 460 and HORT 460.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 461 Plant Breeding Laboratory Credit: 1 (0-2-0)
Also Offered As: HORT 461.
Course Description: Techniques and procedures used in public and commercial plant breeding programs.
Prerequisite: SOCR 460, may be taken concurrently or HORT 460, may be taken concurrently.
Registration Information: Credit not allowed for both SOCR 461 and HORT 461.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 467 Soil and Environmental Chemistry Credits: 3 (3-0-0)
Course Description: Fundamental principles of soil chemistry with respect to environmental reactions between soils and other natural materials and priority pollutants.
Prerequisite: CHEM 335.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 470 Soil Physics Credits: 3 (3-0-0)
Course Description: Physical properties of soils emphasizing mechanical composition, moisture, aeration, temperature, and structure related to management, plant growth.
Prerequisite: SOCR 240 or GEOL 232.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 471 Soil Physics Laboratory Credit: 1 (0-3-0)
Course Description: Familiarization of techniques and equipment used in evaluation of soil physical properties.
Prerequisite: SOCR 470, may be taken concurrently.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

SOCR 475 Global Challenges in Plant and Soil Science Credits: 3 (3-0-0)
Course Description: Evaluation of case studies to define problems and develop solutions to address global challenges in plant and soil science.
Prerequisite: (SOCR 240 or GEOL 122) and (LIFE 102 or BZ 120).
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 486 Practicum Credits: Var[1-4] (0-0-0)
Course Description: Directed experiences in the application of soil and crop science principles.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 487 Internship Credits: Var[1-12] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 490 Hydrus-1D Workshop Credit: 1 (0-0-1)
Course Description: Using Hydrus-1D software for flow and transport of water, heat, and chemicals in soil.
Prerequisite: SOCR 470.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 492 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 498 Undergraduate Research Credits: Var[1-6] (0-0-0)
Course Description: Research in soil and crop sciences.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 500 Environmental Measurement Laboratory Credit: 1 (0-2-0)
Course Description: A hands-on instrumentation lab for making environmental, weather, and soil measurements using low-cost microcontroller boards and sensors.
Prerequisite: PH 110.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 522 Micrometeorology Credits: 3 (3-0-0)
Course Description: Microenvironments; physics of environmental variables; plant canopy microclimate; evapotranspiration; surface-atmosphere exchange; instrumentation.
Prerequisite: PH 100 to 499 - at least 3 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 530 Scientific Writing Credit: 1 (1-0-0)
Also Offered As: BSPM 530.
Course Description: Skills necessary to prepare complete scientific journal articles including writing, editing, and literature searching and assessment.
Prerequisite: None.
Registration Information: Credit not allowed for both SOCR 530 and BSPM 530.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 535 Origin and Evolution of Cultivated Plants Credits: 3 (3-0-0)
Course Description: Origin of crops from viewpoints of archaeology, history, botany, and taxonomy, and continued evolution of plants under cultivation.
Prerequisite: SOCR 330.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 540 Soil-Plant-Nutrient Relationships Credits: 3 (3-0-0)
Course Description: Soil and plant factors affecting nutrient uptake, mechanistic models of uptake, availability and functions of essential elements, diagnostic techniques.
Prerequisite: SOCR 350.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 550 Advanced Soil Genesis Credits: 3 (3-0-0)
Course Description: Modern concepts of specific mechanisms involved in formation of genetic soil groups and their relationship to environmental factors.
Prerequisite: SOCR 440.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 567 Environmental Soil Chemistry Credits: 4 (3-0-1)
Course Description: The chemistry of terrestrial environments and the interactions of soil constituents with bacteria, nutrients, and pollutants.
Prerequisite: CHEM 335.
Registration Information: Credit not allowed for SOCR 467 and SOCR 567.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 570 Plant Breeding for Drought Tolerance Credit: 1 (1-0-0)
Course Description: Principles and practices of evaluation, selection and cultivar development for crops in drought-stress environments with an emphasis on agronomic crops.
Prerequisite: SOCR 330 and SOCR 460.
Registration Information: Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 571 Foundations of Soil Science Credits: 2 (2-0-0)
Course Description: Importance of soils in ecology and earth system science with regard to the study and management of the soil resource.
Prerequisite: SOCR 240.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 577 Principles/Components: Precision Agriculture Credits: 3 (2-2-0)
Course Description: Principles and components of precision agriculture, including GPS, GIS, remote sensing, and their applications in soil and crop management.
Prerequisite: SOCR 100 to 499 - at least 3 credits or CS 100 to 499 - at least 3 credits.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both SOCR 577 and SOCR 377. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 620 Modeling Ecosystem Biogeochemistry Credits: 3 (2-3-0)
Course Description: Design and build biogeochemical process and ecosystem models with GUI-based software. Analyze and test models and interpret experimental data.
Prerequisite: (ECOL 505 or LAND 220 or LIFE 220 or SOCR 240) and (MATH 155 or MATH 160).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 640 Crop Physiology Credit: 1 (1-0-0)
Course Description: Developmental, physiological, and biochemical determinants of crop yields as controlled by genetic and environmental effects.
Prerequisite: BZ 440.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 650 Research Proposal Development Credit: 1 (1-0-0)
Course Description: Skills to develop and write an effective scientific research proposal.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 670 Terrestrial Ecosystems Isotope Ecology Credits: 3 (2-2-0)
Course Description: Isotope distribution in biogeochemical cycles, research topics in biosphere-atmosphere interactions; lab experience with isotope techniques.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 675 Presentations for Scientific Audiences Credit: 1 (1-0-0)
Course Description: Organization and presentation of scientific information to audiences in oral and poster format.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 720 Advanced Plant Breeding Credits: 4 (4-0-0)
Course Description: Systems of mating and selection in plants to maximize genetic gain. Evaluation of heterosis, germplasm diversity, strategies, and new technologies.
Prerequisite: (SOCR 460 or HORT 460) and (STAT 100 to 499 - at least 3 credits).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 720A Advanced Plant Breeding: Methods Credits: 2 (2-0-0)
Course Description: Historical perspectives in plant breeding, plant reproduction, genetic gain, breeding and selection systems in self- and cross-pollinated plants.
Prerequisite: (SOCR 460 or HORT 460) and (STAT 100 to 799 - at least 3 credits).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 720B Advanced Plant Breeding: Tools Credits: 2 (2-0-0)
Course Description: Plant breeding strategies, genotype x environment interaction, field plot and genomic tools, breeding for pest resistance, stress tolerance, quality.
Prerequisite: (SOCR 460 or HORT 460) and (STAT 100 to 799 - at least 3 credits).
Restriction: Must not be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 725 Quantitative Inheritance in Plant Breeding Credits: 3 (2-2-0)
Course Description: Quantitative genetic structure of populations, recognition of genetic, environmental variance. Methods of dealing with quantitatively inherited traits.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 730 Topics in Plant Breeding and Genetics Credit: 1 (1-0-0)
Course Description: Current literature regarding mechanisms used for plant improvement.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 731 Plant Breeding Data Management Credit: 1 (1-0-0)
Course Description: Principles and best practices for optimal data management for plant breeding and other data-intensive research programs.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken three credits in computer science.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 740 Plant Molecular Genetics Credits: 3 (3-0-0)
Also Offered As: BSPM 740.
Course Description: Advances in study of organization and function of nuclear and organellar genomes, gene expression in higher plants, and plant-microbe interactions.
Prerequisite: BC 351 and SOCR 330.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both SOCR 740 and BSPM 740.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 755 Advanced Soil Microbiology Credits: 3 (3-0-0)
Course Description: Ecology of soil microorganisms emphasizing population and activity relationships, nitrogen fixation, and microbe-pesticide interactions.
Prerequisite: MIP 624 or SOCR 455.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 760 Advanced Soil Chemistry Credits: 3 (3-0-0)
Course Description: Surface chemistry of soils, electrical double layer models of surface charge and potential, colloid stability, computer modeling of adsorption.
Prerequisite: (CHEM 100 to 481 - at least 4 courses and CS 100 to 481 - at least 1 course) and (MATH 141 or MATH 155 or MATH 160).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 770 Advanced Soil Physics Credits: 4 (3-2-0)
Course Description: Description and analysis of principles of storage and movement of water, solutes, heat, and gases in soils.
Prerequisite: MATH 261 or SOCR 470.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 792 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 796 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Sport Management-SPMT (SPMT)

SPMT 511 Foundations and Theory of Sport Management Credits: 2 (2-0-0)
Course Description: Combines theory and practical application to provide an overview of all facets of sports management and administration. Topics include the foundations of sports administration, the amateur sports industry, the professional sport industry, the lifestyle sports industry, secondary and tertiary support functions of athletic departments, and strategies for career success.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

SPMT 523 Communications and Media in Sport Credits: 2 (2-0-0)
Course Description: Examination of the relationship between media and the sport industry; focus on media relations, sport media management, broadcasting, public relations, social media, media platforms and channels within the sport industry.
Prerequisite: SPMT 511, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

SPMT 533 Economics and Data Analytics in Sport Credits: 2 (2-0-0)
Course Description: Focus on decision-making with respect to financial, economic considerations, with real-world and hypothetical problems based within the sports industry. Acquired skills help make decisions in any sport industry business platform. Equips aspiring sport managers with the skills to enhance financial decision-making in a management role, applying concepts to the continually evolving sport industry landscape.
Prerequisite: SPMT 511, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

SPMT 545 Sport Governance and Policy Credits: 2 (2-0-0)
Course Description: Examines the governance of sport and policy development at the amateur, collegiate, professional, and international levels.
Prerequisite: SPMT 511, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

SPMT 547 Contemporary Sport, Society and Globalization Credits: 2 (2-0-0)
Course Description: Explores the relationship between sport and society with regard for how sport is linked to the socially constructed ideas, structural dynamics of social life, and the impacts of sport globalization on communities and society, more broadly.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

SPMT 560 Sport Law Credits: 2 (2-0-0)
Course Description: Legal principles affecting sponsors and users of sports programs; liability concepts in tort, contract, civil rights and property law in program planning, development, marketing, and management.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

SPMT 561 Sport Facility and Event Management Credits: 2 (2-0-0)
Course Description: Multifaceted aspects of sport facility and event management including the planning and designing a sports facility, staff management, facility and event marketing, developing revenue streams, scheduling and operations, and event coordination.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

SPMT 562 Sport and Ethics Credits: 2 (2-0-0)
Course Description: Investigate moral issues in sport, and judgments about right and wrong behavior among athletes, coaches, spectators, sport managers, and others.
Prerequisite: SPMT 560, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

SPMT 568 Sport Marketing Credits: 2 (2-0-0)
Course Description: Examines sport marketing information systems, pricing strategies, media relations, promotional methods, and endorsements as they relate to marketing theories. Practical applications and principles.
Prerequisite: SPMT 511, may be taken concurrently and SPMT 533, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

SPMT 575 Risk Management in Sport Credits: 2 (2-0-0)
Course Description: Provides an in depth study of risk management specifically related to factors essential to the safe delivery of sport and recreational programs, sport activities and events.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. This is a partial semester course. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

SPMT 641 Sport Management Capstone Credits: 2 (2-0-0)
Course Description: Integrate and apply newly acquired knowledge and skills relevant to the field of sport management.
Prerequisite: SPMT 545 and SPMT 560 and SPMT 568.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. This is a partial semester course. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

Statistics-STAT (STAT)

Courses

STAT 100 Statistical Literacy (GT-MA1) Credits: 3 (2-0-1)
Course Description: Learn to be an intelligent consumer of statistical information. Concepts of randomness and probability, variation, types of measurement, errors in measurement, experiments versus observational studies, Simpson's paradox, biases in statistical studies, p-value.
Prerequisite: None.
Restriction: Must be a: Undergraduate.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Quantitative Reasoning 1B, Mathematics (GT-MA1).

STAT 158 Introduction to R Programming Credit: 1 (1-0-0)
Course Description: Programming using the R Project for the Statistical Computing. Data objects, for loops, if statements, using packages.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 192 First-Year Seminar in Statistics Credit: 1 (0-0-1)
Course Description: Explore careers in statistics and the variety of problems encountered by statisticians.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 201 General Statistics Credits: 3 (2-0-1)
Course Description: Graphs, descriptive statistics, confidence intervals, hypothesis tests, correlation and simple regression, tests of association.
Prerequisite: MATH 100 to 200 - at least 1 credit.
Registration Information: Mathematics placement exam or one credit of 100-level mathematics. Intended as a one-semester terminal course. Must register for lecture and recitation. Sections may be offered: Online. Credit not allowed for both STAT 201 and STAT 204.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 204 Statistics for Business Students Credits: 3 (2-2-0)
Course Description: Surveys, sampling, descriptive statistics, confidence intervals, contingency tables, control charts, regression, exponential smoothing, forecasting.
Prerequisite: MATH 100 to 200 - at least 1 credit.
Registration Information: Mathematics placement exam or one credit of 100-level mathematics. Must register for lecture and laboratory. Credit not allowed for both STAT 204 and STAT 201.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 301 Introduction to Statistical Methods Credits: 3 (3-0-0)
Course Description: Statistical methods in science; descriptive methods, simple probability, sampling distributions, confidence intervals, hypothesis testing, one-way ANOVA, chi-square tests, correlation, simple and multiple regression, practical concerns in inference (e.g. interpreting p-values, publication bias, replicability), reading and evaluating statistical results in published papers and popular media. Emphasis on using software rather than hand calculation to conduct analyses.
Prerequisite: MATH 117 or MATH 118 or MATH 124 or MATH 125 or MATH 126 or MATH 141 or MATH 155 or MATH 159 or MATH 160.
Registration Information: Sections may be offered: Online. Credit allowed for only one of the following: STAT 301, STAT 307, or STAT 311.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option, Traditional.
Special Course Fee: No.

STAT 303 Introduction to Communications Principles Credits: 3 (3-0-0)
Also Offered As: ECE 303.
Course Description: Basic concepts in design and analysis of communication systems.
Prerequisite: MATH 340, may be taken concurrently and MATH 261 with a minimum grade of C.
Registration Information: Sections may be offered: Online. Credit not allowed for both ECE 303 and STAT 303.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 305 Sampling Techniques Credits: 3 (3-0-0)
Course Description: Sample designs: simple random, stratified, systematic, cluster, unequal probability, two-phase; methods of estimation and sample size determination.
Prerequisite: STAT 301 or STAT 307 or ERHS 307 or STAT 311 or STAT 315.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 307 Introduction to Biostatistics Credits: 3 (3-0-0)
Course Description: Biostatistical methods; confidence intervals, hypothesis tests, simple correlation and regression, one-way analysis of variance.
Prerequisite: MATH 117 or MATH 118 or MATH 124 or MATH 125 or MATH 126 or MATH 141 or MATH 155 or MATH 160.
Registration Information: Credit allowed for only one of the following: STAT 301, STAT 307, or STAT 311.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 311 Statistics for Behavioral Sciences I Credits: 3 (3-0-0)
Course Description: Statistical literacy, quantitative reasoning, statistical methods in SPSS including ANOVA, regression, logistic regression, and categorical data.
Prerequisite: MATH 117 or MATH 118 or MATH 124 or MATH 125 or MATH 126 or MATH 141 or MATH 155 or MATH 159 or MATH 160.
Registration Information: Sections may be offered: Online. Credit allowed for only one of the following: ERHS 307, STAT 301, STAT 307, STAT 311 or STAT 315.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 312 Statistics for Behavioral Sciences II Credits: 3 (3-0-0)
Course Description: One-way analysis of variance, factorial designs, blocked designs, multiple comparisons of means, and multiple regression.
Prerequisite: STAT 311.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 315 Statistics for Engineers and Scientists Credits: 3 (3-0-0)
Course Description: Calculus-based probability and statistics: distribution theory, estimation, hypothesis testing, applications to engineering and the sciences.
Prerequisite: MATH 155 or MATH 159 or MATH 160.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 316 Games and Gambling Credit: 1 (1-0-0)
Course Description: Application of probability concepts to games of chance and gambling contests.
Prerequisite: STAT 315.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 340 Multiple Regression Analysis Credits: 3 (3-0-0)
Course Description: Estimation and testing for linear, polynomial, and multiple regression models; analysis of residuals; selection of variables; nonlinear regression.
Prerequisite: STAT 301 or STAT 307 or ERHS 307 or STAT 311 or STAT 315.
Terms Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 341 Statistical Data Analysis I Credits: 3 (3-0-0)
Course Description: Estimation and inference based upon Gaussian linear regression models; residual analysis; variable selection; non-linear regression.
Prerequisite: (STAT 158) and (STAT 301 or STAT 307 or STAT 311 or STAT 315).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 342 Statistical Data Analysis II Credits: 3 (3-0-0)
Course Description: Single-factor analysis of variance models; multi-factor analysis of variance models; randomized block design; Latin squares; split-plot design.
Prerequisite: STAT 340 or STAT 341.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 350 Design of Experiments Credits: 3 (3-0-0)
Course Description: Analysis of variance, covariance; randomization; completely randomized, randomized block, latin-square, split-plot, factorial and other designs.
Prerequisite: STAT 301 or STAT 307 or ERHS 307 or STAT 311 or STAT 315.
Terms Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 358 Introduction to Statistical Computing in SAS Credits: 2 (2-0-0)
Course Description: Statistical procedures and database operations using the SAS programming language.
Prerequisite: STAT 315 or STAT 341.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 384 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Participation as a statistics tutor.
Prerequisite: STAT 342.
Registration Information: Sophomore standing. Written consent of advisor. A maximum of 10 combined credits for all 384 and 484 courses are counted toward graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 400 Statistical Computing Credits: 3 (3-0-0)
Course Description: Computationally intensive statistical methods: optimization for statistical problems; simulation & Monte Carlo methods; resampling methods; smoothing.
Prerequisite: (CS 160 or CS 163 or CS 164 or MATH 151 and MATH 153) and (STAT 420, may be taken concurrently).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 420 Probability and Mathematical Statistics I Credits: 3 (3-0-0)
Course Description: Probability, random variables, distribution functions, and expectations; joint and conditional distributions and expectations; transformations.
Prerequisite: MATH 255 or MATH 261.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 421 Introduction to Stochastic Processes Credits: 3 (3-0-0)
Course Description: Modeling phenomena with stochastic processes and the simulation and analysis of stochastic process models.
Prerequisite: (MATH 229 or MATH 369) and (STAT 420).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 430 Probability and Mathematical Statistics II Credits: 3 (3-0-0)
Course Description: Theories and applications of estimation, testing, and confidence intervals, sampling distributions including normal, gamma, beta X-squared, t, and F.
Prerequisite: STAT 420.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 440 Bayesian Data Analysis Credits: 3 (3-0-0)
Course Description: Applied Bayesian data analysis, Bayesian inference and interpretation of results, computing methods including MCMC, model selection and evaluation.
Prerequisite: (STAT 315 or STAT 430) and (STAT 342).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 460 Applied Multivariate Analysis Credits: 3 (3-0-0)
Course Description: Principles for multivariate estimation and testing; multivariate analysis of variance, discriminant analysis; principal components, factor analysis.
Prerequisite: (STAT 340 or STAT 341) and (DSCI 369 or MATH 229 or MATH 340 or MATH 369).
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 472 Statistical Consulting Capstone Credits: 3 (0-0-3)
Course Description: Statistical consulting skills including data analysis, problem solving, report writing, oral communication, and planning experiments.
Prerequisite: STAT 342 and STAT 420, may be taken concurrently.
Restriction: Must be a: Undergraduate.
Registration Information: Senior standing. Statistics majors only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 498 Undergraduate Research in Statistics Credits: Var[1-3] (0-0-0)
Course Description: Research skills and techniques; includes both oral and written communication of results.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 500 Statistical Computer Packages Credit: 1 (0-2-0)
Course Description: Comparison, evaluation, and use of computer packages for univariate and multivariate statistical analyses.
Prerequisite: STAT 340 and STAT 350.
Registration Information: Admission to the Master of Applied Statistics program can substitute for STAT 350. Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 501 Statistical Science Credit: 1 (1-0-0)
Course Description: Overview of statistics theory; use in agriculture, business, environment, engineering; modeling; computing; statisticians as researchers/consultants.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

STAT 511A Design and Data Analysis for Researchers I: R Software Credits: 4 (3-0-1)
Course Description: Statistical methods for experimenters/researchers emphasizing design and analysis of experiments using R software.
Prerequisite: STAT 301 or STAT 307 or STAT 311 or STAT 315.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 511B Design and Data Analysis for Researchers I: SAS Software Credits: 4 (3-0-1)
Course Description: Statistical methods for experimenters/researchers emphasizing design and analysis of experiments using SAS software.
Prerequisite: STAT 301 or STAT 307 or STAT 311 or STAT 315.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 512 Design and Data Analysis for Researchers II Credits: 4 (3-0-1)
Course Description: Statistical methods for experimenters and researchers emphasizing design and analysis of experiments.
Prerequisite: STAT 511A or STAT 511B.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 520 Introduction to Probability Theory Credits: 4 (4-0-0)
Course Description: Probability, random variables, distributions, expectations, generating functions, limit theorems, convergence, random processes.
Prerequisite: MATH 369 and MATH 261 and MATH 317.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 521 Stochastic Processes I Credits: 3 (3-0-0)
Course Description: Characterization of stochastic processes. Markov chains in discrete and continuous time, branching processes, renewal theory, Brownian motion.
Prerequisite: STAT 520.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 523 Quantitative Spatial Analysis Credits: 3 (3-0-0)
Also Offered As: NR 523.
Course Description: Techniques in spatial analysis: point pattern analysis, spatial autocorrelation, trend surface and spectral analysis.
Prerequisite: ERHS 307 or STAT 301 or STAT 307.
Registration Information: Credit not allowed for both STAT 523 and NR 523.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 524 Financial Statistics Credits: 3 (3-0-0)
Also Offered As: FIN 524.
Course Description: Probability and statistical concepts and quantitative tools used in financial modeling and decision-making.
Prerequisite: MATH 345 and STAT 420.
Registration Information: Admission to MSBA program with Financial Risk Management specialization can substitute for MATH 345. Credit not allowed for both STAT 524 and FIN 524. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 525 Analysis of Time Series I Credits: 3 (3-0-0)
Course Description: Trend and seasonality, stationary processes, Hilbert space techniques, spectral distribution function, fitting ARIMA models, linear prediction.
Prerequisite: STAT 430.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 530 Mathematical Statistics Credits: 3 (3-0-0)
Course Description: Sampling distributions, estimates, testing, confidence intervals, exact and asymptotic theories of maximum likelihood and distribution-free methods.
Prerequisite: STAT 520.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 540 Data Analysis and Regression Credits: 3 (3-0-0)
Course Description: Introduction to multiple regression and data analysis with emphasis on graphics and computing.
Prerequisite: STAT 300 to 481 - at least 6 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 544 Biostatistical Methods for Quantitative Data Credits: 3 (3-0-0)
Also Offered As: ERHS 544.
Course Description: Regression and analysis of variance methods applied to both observational studies and designed experiments in the biological sciences.
Prerequisite: STAT 301 or STAT 307 or ERHS 307.
Registration Information: Credit not allowed for both STAT 544 and ERHS 544.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 547 Statistics for Environmental Monitoring Credits: 3 (3-0-0)
Also Offered As: CIVE 547.
Course Description: Applications of statistics in environmental pollution studies involving air, water, or soil monitoring; sampling designs; trend analysis; censored data.
Prerequisite: STAT 301.
Registration Information: Credit not allowed for both STAT 547 and CIVE 547. Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 548 Bioinformatics Algorithms Credits: 4 (3-2-0)
Also Offered As: CS 548.
Course Description: Computational methods for analysis of DNA/protein sequences and other biological data.
Prerequisite: STAT 301 or STAT 307 or STAT 315.
Registration Information: Student should have preexisting knowledge of a contemporary programming language. Credit not allowed for both STAT 548 and CS 548.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 555 Statistical Consulting Skills Credit: 1 (1-0-0)
Also Offered As: STAA 555.
Course Description: Skills necessary to collaborate with non-statisticians. Communicate both verbally and in writing with collaborators while honing in on study objectives and identifying measures and factors. Readings of selected papers and texts and mock client sessions and shadowing. Common statistical tools necessary for statistical consulting will be reviewed.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered online. Credit not allowed for both STAA 555 and STAT 555.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 556 Directed Statistical Consulting Credits: 2 (1-2-0)
Course Description: Skills necessary to collaborate with non-statisticians, including project management, presentation, and technical writing. Serve in the walk-in consulting lab. Collaborate on a semester-long active CSU project identified by the instructor. Engage in all phases of the long-term project.
Prerequisite: STAA 555 or STAT 555.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 560 Applied Multivariate Analysis Credits: 3 (3-0-0)
Course Description: Multivariate analysis of variance; principal components; factor analysis; discriminant analysis; cluster analysis.
Prerequisite: STAT 520 and STAT 540.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 570 Nonparametric Statistics Credits: 3 (3-0-0)
Course Description: Distribution and uses of order statistics; nonparametric inferential techniques, their uses and mathematical properties.
Prerequisite: STAT 430.
Terms Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 586 Practicum in Consulting Techniques Credit: 1 (0-0-1)
Course Description: Instruction on planning studies, writing reports, and interacting with clients. Attend and critique consulting sessions.
Prerequisite: STAT 540.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 592 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 600 Statistical Computing Credits: 3 (3-0-0)
Course Description: Optimization and integration in statistics; Monte Carlo methods; simulation; bootstrapping; density estimation; smoothing.
Prerequisite: STAT 520 and STAT 540.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 604 Managerial Statistics Credits: 2 (2-0-0)
Also Offered As: BUS 604.
Course Description: Introduction to statistical thinking and methods used to support managerial decision making.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the MBA program. Credit not allowed for both STAT 604 and BUS 604.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 605 Theory of Sampling Techniques Credits: 3 (3-0-0)
Course Description: Survey designs; simple random, stratified, cluster samples; theory of estimation; optimization techniques for minimum variance or costs.
Prerequisite: (STAT 301 or STAT 307 or ERHS 307 or STAT 311 or STAT 315) and (STAT 430).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 620 Introduction to Measure Theoretic Probability Credits: 3 (3-0-0)
Course Description: Introduction to rigorous probability theory in real Euclidean spaces based on a foundation of measure theory.
Prerequisite: STAT 520.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 623 Spatial Statistics Credits: 3 (3-0-0)
Course Description: Spatial autocorrelation, geostatistical models and kriging, analysis/modeling of point patterns, discretely-indexed spatial models.
Prerequisite: STAT 430.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 630 Advanced Statistical Data Analysis Credits: 3 (3-0-0)
Course Description: Advanced statistical modeling techniques and data analysis methods, including likelihood-based methods, M-estimation, bootstrap and EM algorithm, and other advanced topics. For example, Jackknife, permutation tests, and nonparametric statistics.
Prerequisite: STAT 530 and STAT 620 and STAT 640.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both STAT 630 and STAT 680A2.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 640 Design and Linear Modeling I Credits: 4 (4-0-0)
Course Description: Introduction to linear models; experimental design; fixed, random, and mixed models.
Prerequisite: MATH 369 and STAT 540.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 645 Categorical Data Analysis and GLIM Credits: 3 (3-0-0)
Course Description: Generalized linear models, binary and polytomous data, log linear models, quasilikelihood, survival data models.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in STAT 640.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 650 Design and Linear Modeling II Credits: 3 (3-0-0)
Course Description: Mixed factorials; response surface methodology; Taguchi methods; variance components.
Prerequisite: STAT 640.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 670 Bayesian Statistics Credits: 3 (3-0-0)
Course Description: Bayesian statistical theory and applications, including Markov chain Monte Carlo methods which are used to facilitate inference for more complex statistical models.
Prerequisite: STAT 530, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 673 Hierarchical Modeling in Ecology Credits: 3 (3-0-0)
Also Offered As: FW 673.
Course Description: Hierarchical ecological modeling using common forms of data in fish and wildlife studies and emphasizing spatial and temporal aspects of analysis.
Prerequisite: ESS 575 or STAT 420.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both STAT 673 and FW 673.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

STAT 675A Topics in Statistical Methods: Sampling Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: STAT 430.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 684 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Guidance and instruction in effective teaching of college courses in statistics.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in M.S. or Ph.D. program in statistics.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

STAT 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 720 Probability Theory Credits: 3 (3-0-0)
Course Description: Measure theoretic probability, characteristic functions; convergence; laws of large numbers; central limit, extreme value, asymptotic theory.
Prerequisite: STAT 620.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 730 Advanced Theory of Statistics I Credits: 4 (4-0-0)
Course Description: Minimal sufficiency, maximal invariance; Neyman-Pearson theory; Fisher, Kullback-Leibler information; asymptotic properties of maximum-likelihood methods.
Prerequisite: STAT 530 and STAT 720.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 740 Advanced Statistical Methods Credits: 3 (3-0-0)
Course Description: Generalized additive models; recursive partitioning regression and classification; graphical models and belief networks; spatial statistics.
Prerequisite: STAT 640.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in STAT 730.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 792 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 793 Seminar on Advanced Statistical Methods Credits: 3 (0-0-3)
Course Description:
Prerequisite: STAT 640.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in STAT 730. May be taken up to two times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 796 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Study Abroad-SA (SA)

Courses

SA 482 Study Abroad Credits: Var[1-18] (0-0-0)
Course Description: Students participating in a semester study abroad program register for SA 482.
Prerequisite: None.
Registration Information: This is not a course for credit.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.
Additional Information: Diversity & Global Awareness 3E.

SA 682 Graduate Study Abroad Credits: Var[1-18] (0-0-0)
Course Description: Vehicle to allow graduate students to enroll in a study program abroad as part of their approved program.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is not a course for credit. Approval of graduate committee, Graduate School, and International Programs.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

Systems Engineering-SYSE (SYSE)

Please see the Spring 2020 Class Schedule for approved Systems Engineering courses.

Theatre-TH (TH)

Courses

TH 141 Introduction to Theatre (GT-AH1) Credits: 3 (3-0-0)
Course Description: Theatre as an art and one of the humanities, its impact upon society, and its relationship to other art forms.
Prerequisite: None.
Registration Information: Required field trips. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Arts & Humanities 3B, Arts & Expression (GT-AH1).

TH 149 Movement for Actors I Credits: 2 (0-4-0)
Course Description: A broad survey of different movement theories from Asia, Africa, and Europe.
Prerequisite: TH 141 and TH 150, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 150 Introduction to Performance Credits: 3 (1-0-2)
Course Description: Imagination as the actor's primary resource: acting exercises, compositions, improvisations to acquire the basic approach to text through action.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 151 Acting I Credits: 3 (2-2-0)
Course Description: Imagination as an actor's resource. Finding action, objective, the art of memory, improvisation, scene study, from simple scenes in realistic plays.
Prerequisite: TH 150.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 153 Singing for Actors I Credits: 2 (0-0-2)
Course Description: Fusion of acting technique and singing technique for credible performance in the musical genre.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 160 Drawing for the Theatre Credits: 3 (1-4-0)
Course Description: Introduction to drawing, drafting, watercolor, and other graphic techniques used by set, costume, lighting, and media designers.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 161 Technical Theatre: Stagecraft Credits: 3 (2-2-0)
Course Description: Skills and craft of technical theatre. Knowledge of tools, materials, and techniques essential to production realization.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 163 Costume Construction for the Theatre Credits: 3 (1-4-0)
Course Description: Technical side of costuming for live stage performances with an emphasis on all aspects of construction.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 175 Storytelling Credits: 3 (2-0-2)
Course Description: Study and practice of storytelling.
Prerequisite: TH 141, may be taken concurrently.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 186 Theatre Practicum I Credit: 1 (0-2-0)
Course Description: Practical experience in mounting theatrical productions.
Prerequisite: None.
Registration Information: This is a partial-semester course.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

TH 192 Theatre Freshman Seminar Credits: 3 (0-0-3)
Course Description: Collaborative creative processes required to transfer storytelling and self-scripting literature to theatrical performance with faculty artists/scholars.
Prerequisite: None.
Registration Information: Theatre majors only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 240 Reading Shakespeare for the Theatre Credits: 3 (3-0-0)
Course Description: Reading, speaking Shakespeare texts: comedies, sonnets, romances, to develop various approaches to understand and perform his work to modern audiences.
Prerequisite: TH 241, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 241 Text Analysis for the Theatre Credits: 3 (3-0-0)
Course Description: Analyzing plays with an aim toward being better prepared, as theatre artists, to understand the dramatic text, the basis of theatre art and craft.
Prerequisite: TH 150 or TH 160.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 242 Theatre History I Credits: 3 (3-0-0)
Course Description: Theatre from its origins through the Renaissance.
Prerequisite: TH 241, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 243 Theatre History II Credits: 3 (3-0-0)
Course Description: Theatre history from the English Restoration of 1660 through the postwar developments in Europe and the Americas from 1945 to 1960.
Prerequisite: TH 242.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 246 Movement for Actors II Credits: 2 (0-4-0)
Course Description: Intermediate actor movement.
Prerequisite: TH 149 and TH 251, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 250 Voice and Movement for the Stage Credits: 3 (2-2-0)
Course Description: A broad survey of traditional and topical approaches to voice and movement for the theatre actor.
Prerequisite: TH 150.
Restriction: .
Registration Information: Theatre Majors only. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 251 Acting II Credits: 3 (2-2-0)
Course Description: Application of the given circumstances to a text and development of characterization. Selection and preparation of audition material.
Prerequisite: TH 151.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 253 Singing for Actors II Credits: 2 (0-0-2)
Course Description: Advanced singing techniques, sight singing, using more difficult and challenging music. Preparing for a performance in musical theatre.
Prerequisite: TH 153.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 255 Directing Workshop Credits: 3 (2-2-0)
Course Description: Practical directing workshop, short directing exercises, short scenes, techniques, theories, readings, staging prompts.
Prerequisite: TH 151, may be taken concurrently and TH 241, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 260 Computer Assisted Drafting for Theatre Credits: 3 (2-2-0)
Course Description: Computer-aided drafting and conceptual articulation for theatrical design and production using entertainment industry standard: Vectorworks.
Prerequisite: TH 161 and TH 160.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 261 Drawing and Drafting for the Theatre Credits: 3 (1-4-0)
Course Description: Fundamental drawing, drafting, and rendering techniques needed by theatrical designers to effectively communicate their visual ideas.
Prerequisite: TH 160.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 262 Stage Management I Credits: 3 (3-0-0)
Course Description: Duties and responsibilities of stage managers. Communication, rehearsal, performance techniques. Conceptual approaches to theatre.
Prerequisite: TH 150, may be taken concurrently and TH 160, may be taken concurrently and TH 175, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 263 Costume Design I Credits: 3 (1-4-0)
Course Description: Basic theory and technique for visualization of theatrical characters through costume.
Prerequisite: TH 163.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 264 Lighting Design for the Theatre I Credits: 3 (2-2-0)
Course Description: Essential principles and theory for stage lighting including design process, control, equipment, and lighting aesthetics.
Prerequisite: TH 160 and TH 161.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 265 Set Design I Credits: 3 (3-0-0)
Course Description: Theory and techniques for designing scenery for the stage.
Prerequisite: TH 160 and TH 161.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 266 Digital Media Design for Live Performance I Credits: 3 (2-2-0)
Course Description: Sound and projection design fundamentals: control, design and content creation for live performance settings.
Prerequisite: TH 160 and TH 161.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 267 Scenic Painting Credits: 3 (1-6-0)
Course Description: Basic techniques and practical applications in scenic painting for the theatre.
Prerequisite: TH 265, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 269 Theatrical Makeup Credits: 3 (2-3-0)
Course Description: Stage makeup. Individual skill in character analysis, application in pigment, plastic, hair, makeup, and selection and use of theatrical makeup.
Prerequisite: TH 160 or TH 263.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 275 Self-Scripting and Performance Workshop Credits: 3 (1-0-2)
Course Description: Study and practice of the processes of self-scripting (theatrical storytelling from personal experience) as a tool for performers and writers.
Prerequisite: TH 175.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 286 Theatre Practicum II Credit: 1 (0-2-0)
Course Description: Practical experience in mounting theatrical productions.
Prerequisite: TH 186.
Registration Information: This is a partial-semester course.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

TH 292 Design and Technology Seminar Credit: 1 (0-0-1)
Course Description: Weekly examination of the ongoing production processes and strategies for stage managers and designers assigned productions in the mainstage season.
Prerequisite: TH 141, may be taken concurrently or TH 160, may be taken concurrently.
Registration Information: May be taken up to six times for a maximum of 6 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 301 Theatre Design and Production Special Topics Credits: 3 (3-0-0)
Course Description: In-depth study of general interest in design and production. Possible topics may include history of decor, storyboarding, etc.
Prerequisite: TH 260.
Registration Information: Choose any two of the following: TH 262, TH 263, TH 264, TH 265, or TH 266.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 324 Teaching Creative Drama for Children Credits: 3 (1-6-0)
Course Description: Theoretical and practical experience in teaching creative drama.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Required field trips
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 343 Contemporary Plays and Alternative Theatre Credits: 3 (3-0-0)
Course Description: The study of revolutionary movements and alternative staging practices in theatre prompted by plays written from 1960 to the present.
Prerequisite: TH 243.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 344 Dramaturgy Protocol Seminar Credits: 3 (0-0-3)
Course Description: Training in the application of dramaturgical techniques to facilitate the collaborative creative process in contemporary performance practice.
Prerequisite: TH 343.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 350 Classical Text Credits: 3 (3-0-0)
Course Description: The Cicely Berry approach to voice and speech for speaking classical text.
Prerequisite: TH 251, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 351 Acting III Credits: 3 (1-2-1)
Course Description: Acting Methods for challenges presented in plays by Brecht, Moliere, Chekov, Ibsen, Pirandello, O'Neill, and contemporary re-workings of the Greeks.
Prerequisite: TH 251.
Registration Information: Must register for lecture, laboratory, and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 352 Acting for Singers Credits: 2 (1-0-1)
Course Description: Acting class specifically for singers: improv, beginning scene work, harnessing given circumstance and augmenting physical character life onstage.
Prerequisite: MU 401, may be taken concurrently.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 353 Experimental Performance Credits: 3 (2-2-0)
Course Description: Artistic exploration of experimental performance via radical innovations in dance, theatre, music, literature, film, art, and performance art.
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

TH 355 Directing Seminar Credits: 3 (0-0-3)
Course Description: Theatrical, practical, and creative approaches to directing a play: research, analysis, semiotics, identifying visual metaphor, point of view.
Prerequisite: TH 255 and TH 265, may be taken concurrently.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 361 Technical Theatre: Technical Direction Credits: 3 (1-4-0)
Course Description: Advanced training and techniques in construction management and technical production for the theatre.
Prerequisite: TH 161.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

TH 362 Stage Management II Credits: 3 (3-0-0)
Course Description: Problem-solving in the stage manager leadership role: advanced study in production realization, stage management concepts and techniques in practice.
Prerequisite: TH 262.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 363 Costume Design II Credits: 3 (1-4-0)
Course Description: Theory and practice of advanced costume design techniques.
Prerequisite: TH 263.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 364 Lighting Design for the Theatre II Credits: 3 (2-2-0)
Course Description: Principles and theory for stage lighting including advanced programming, tour preparation, and presentation techniques.
Prerequisite: TH 264.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 365 Advanced Scenic Design Credits: 3 (2-2-0)
Course Description: The practice of scenic design from text to idea to realized work. Advanced scenic design techniques in divergent and increasingly complex situations.
Prerequisite: TH 267, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 366 Digital Media Design for Live Performance II Credits: 3 (2-2-0)
Course Description: Advanced sound and projection design techniques (including sound control, microphone arrays, animation and mapping) in live performance settings.
Prerequisite: TH 264 and TH 266.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 369 Advanced Makeup and Hair Design Credits: 3 (1-4-0)
Course Description: Advanced techniques in makeup, hair, and wig design for theatre.
Prerequisite: TH 269.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 370A Theatre Assistant: Design Credits: Var[1-18] (0-0-0)
Course Description: Assist a guest professional or faculty designer in full production locally or offsite.
Prerequisite: TH 365.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

TH 370B Theatre Assistant: Directing Credits: Var[1-18] (0-0-0)
Course Description: Assist a guest professional or faculty director in full production locally or off-site.
Prerequisite: TH 355.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

TH 375 Playwright's Workshop Credits: 3 (1-0-2)
Course Description: Character, conflict, structure, setting, dialogue, and the process of rewriting, resulting in a finished 10-minute play.
Prerequisite: TH 241 and TH 343.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 384 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Junior standing; written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted toward graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 386 Theatre Practicum III Credit: 1 (0-2-0)
Course Description: Practical experience in mounting theatrical productions.
Prerequisite: TH 286.
Registration Information: This is a partial-semester course.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

TH 392 Theatre Seminar Credits: 3 (0-0-3)
Course Description: Various current theatre topics taught by visiting professionals, for example, "The League of Regional Theatres is our National Theatre."
Prerequisite: TH 243, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 400 Theatre Production Workshop Credits: Var[1-3] (0-0-0)
Course Description: Explores both the practical and dramaturgical essences of the production of a play.
Prerequisite: None.
Registration Information: Written consent of instructor. Maximum of 6 credits of TH 400 allowed to be counted toward the major. May not be taken concurrently with TH 471. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 401 Theatrical Design and Prod Advanced Topics Credits: 3 (2-2-0)
Course Description: Intensive study for advanced TD&P students, e.g., property design, advanced costume technology, wigmaking, company management, rigging, pyro, etc.
Prerequisite: (TH 160) and (TH 362, may be taken concurrently or TH 363, may be taken concurrently or TH 364, may be taken concurrently or TH 365, may be taken concurrently or TH 366, may be taken concurrently).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 449 Commedia and Masks Credits: 3 (0-0-3)
Course Description: Playing comedy, including commedia del'arte techniques, clown work, masks, circus techniques, mime, and scene work from comic scripts.
Prerequisite: TH 351, may be taken concurrently or TH 355, may be taken concurrently or TH 375, may be taken concurrently.
Restriction: .
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 450 Professional Actor Preparation Credits: 3 (2-2-0)
Course Description: Portfolios, casting, breakdowns, reels, agents, managers, interviews, cold reading techniques, on-camera work, marketing.
Prerequisite: TH 351.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 451 Advanced Topics in Acting Credits: 3 (2-2-0)
Course Description: Author-specific actor challenges (e.g. Brecht, Beckett, Shakespeare, Chekhov, Moliere, and contemporary writers).
Prerequisite: TH 351.
Registration Information: Must register for lecture and laboratory. May be taken three times for credit.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 455 Advanced Directing Credits: 4 (2-0-2)
Course Description: Intensive practical experience in stage direction, focusing on specific directional challenges posed by various types of texts and multiple collaborative projects.
Prerequisite: TH 344, may be taken concurrently and TH 350, may be taken concurrently and TH 355.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 460 Design Portfolio and Professional Preparation Credits: 3 (2-2-0)
Course Description: Creating effective portfolio and design presentation; digital portfolios, storyboarding, articulating concepts, professional preparation for career.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 471 Capstone in Theatre Practice Credits: 3 (0-0-3)
Course Description: Major production assignment in acting, design, production, or dramatic literature.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 475 Advanced Playwriting Credits: 3 (2-0-1)
Course Description: Development of imaginative capabilities and insights, to articulate an individual voice as a writer of longer and more complex plays for theatre.
Prerequisite: TH 344 and TH 375.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

TH 478 Theatre in London Seminar Credits: 3 (0-0-3)
Course Description: Seminar to prepare for study in London for theatre research as an evolving art form rich in historical and artistic traditions.
Prerequisite: TH 141.
Registration Information: Must have concurrent registration in TH 479.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

TH 479 Theatre in London: Travel Abroad Credits: 3 (0-0-3)
Course Description: To foster theatre research as an evolving art form rich in historical and artistic traditions. Students will attend 13-15 live theatre productions.
Prerequisite: TH 141.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

TH 482 Theatre in London--Travel Abroad Credits: 3 (0-0-3)
Course Description: Study abroad in and around London to foster research into theatre as an evolving art form with rich historical and artistic traditions.
Prerequisite: None.
Registration Information: Must be in good academic and disciplinary standing.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

TH 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: TH 384.
Registration Information: Written consent of instructor; students must have taken the course with which they will be assisting. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

TH 486 Theatre Practicum IV Credits: 2 (0-10-0)
Course Description: Advanced topics in applied theatre production. Challenges in developing and mounting a theatrical performance.
Prerequisite: TH 386.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

TH 487 Theatre Internship Credits: Var[1-12] (0-0-0)
Course Description: Advisor-approved position at a professional regional theatre, a professional training program, or professional summer theatre.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

TH 491 Repertory Theatre Workshop Credits: Var[1-18] (0-0-0)
Course Description: Principles and practice of repertory theatre operation; practical experience offered.
Prerequisite: None.
Registration Information: Audition only.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

TH 492 Theatre Seminar Credits: 3 (0-0-3)
Course Description: Contemporary theatre practice, trends, in-depth study of genres, authors, current theatre research, e.g., "Theatre of Revolt", "Beckett's Theatre".
Prerequisite: TH 343.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

TH 498 Theatre Research Credits: Var[3-6] (0-0-0)
Course Description: Scholarly research paper in theatre. Topic approved by faculty advisor.
Prerequisite: None.
Registration Information: Theatre majors only. Written consent of faculty advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

TH 499 Theatre Thesis Credits: Var[3-6] (0-0-0)
Course Description: Written thesis in theatre. Topic approved by faculty advisor.
Prerequisite: None.
Registration Information: Written consent of faculty advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Veterinary Medicine-VM (VM)

Courses

VM 603 Veterinary Science: Research and Methods Credit: 1 (1-0-0)
Course Description: Conduct of responsible research, contributions of research to the practice of veterinary medicine, and career opportunities.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 606 Veterinary Immunology Credits: 3 (3-0-0)
Course Description: Infectious agents, immune-mediated diseases, immune deficiencies, and principles of vaccination.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 610 Foundations of Veterinary Medicine I Credit: 1 (.5-1.5-0)
Course Description: Development of professional skills (ethics, communication, physical exam, surgical skills) necessary for the practice of veterinary medicine.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 611 Foundations of Veterinary Medicine II Credit: 1 (.5-1.5-0)
Course Description: Development of professional skills (ethics, communication, physical exam, surgical skills) necessary for the practice of veterinary medicine.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 612 The Healer's Art Credit: 1 (0-0-1)
Course Description: Exploration of student experiences, beliefs, and values related to their work as veterinary medical professionals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Modes: S/U Sat/Unsat Only, Traditional.
Special Course Fee: No.

VM 616 Functional Anatomy Credits: 9 (5-8-1)
Course Description: Intensive study of the gross anatomy of domestic animals. Anatomy studied comprises canine, feline, bovine, equine, small ruminant, and porcine species. Emphasis is on canine and equine anatomy. Comparative understanding of the anatomy of organ systems will support clinical instruction in the professional curriculum.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, lab, and recitation. Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 618 Veterinary Physiology and Histology Credits: 7 (6-2-0)
Course Description: Physiology and microscopic anatomy of endocrine, hemopoietic, lymphatic, cardiovascular, respiratory, gastrointestinal, and urinary systems in selected domestic animals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 619 Veterinary Neurobiology Credits: 4 (3-3-0)
Course Description: Structural and functional foundations of nervous system activity; introduction to clinical neurology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 621 Exotic Animal Anatomy and Husbandry Credits: 2 (1-2-0)
Course Description: Applied veterinary anatomy and husbandry of birds, reptiles, amphibians, and fish.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 623 Veterinary Nutrition and Metabolism Credits: 2 (2-0-0)
Course Description: Intermediary metabolism, nutrients, and animal nutrition.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 624 Veterinary Feeds and Feeding Credits: 3 (2-2-0)
Course Description: Description, advantages, and limitations of feedstuffs fed to domestic livestock; nutrient requirements and formulation of rations for various needs.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

VM 625 Principles of Diagnostic Imaging Credits: 2 (2-0-0)
Course Description: Diagnostic film and digital radiography, computed tomography, ultrasound, magnetic resonance, nuclear medicine, and radiographic and sonographic anatomy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 637 Veterinary Bacteriology and Mycology Credits: 2 (2-0-0)
Course Description: Biology of bacterial and fungal pathogens of animals with emphasis on common infectious diseases encountered in veterinary practice.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 638 Veterinary Parasitology Credits: 2 (2-0-0)
Course Description: Biology of helminth, arthropod, and protozoan pathogens of animals with emphasis on common infectious diseases encountered in veterinary practice.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 639 Veterinary Virology Credits: 2 (2-0-0)
Course Description: Biology of viral pathogens of animals with emphasis on common infectious diseases encountered in veterinary practice.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 640 Biology of Disease I Credits: 5 (4-0-1)
Course Description: Introduction to mechanisms of subcellular, cellular, tissue, and organ response to injury and associated pathological processes.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Must register for lecture and recitation. Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 648 Food Animal Production and Food Safety Credits: 2 (2-0-0)
Also Offered As: VS 648.
Course Description: Basic orientation to food animal production units, herd health concepts, and issues of food safety from preharvest through processing and distribution.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program. Credit not allowed for both VM 648 and VS 648.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 707 Emerging Issues in Animal Health Credit: 1 (1-0-0)
Course Description: Important topics in veterinary medicine and public health.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 710 Foundations of Veterinary Medicine III Credit: 1 (.5-1.5-0)
Course Description: Development of professional skills (ethics, communication, physical exam, surgical skills) necessary for the practice of veterinary medicine.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 711 Foundations of Veterinary Medicine IV Credit: 1 (.5-1.5-0)
Course Description: Development of professional skills (ethics, communication, physical exam, surgical skills) necessary for the practice of veterinary medicine.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 712 Veterinary Professional Development Credits: 3 (3-0-0)
Course Description: Veterinary professional development including personal and practice finance, legal issues, career development, practice management, client relations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 714 Veterinary Preventive Medicine Credits: 4 (4-0-0)
Course Description: Principles of health promotion and disease prevention in populations.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 716 Principles of Shelter Veterinary Medicine Credit: 1 (1-0-0)
Course Description: Introduces the principles of veterinary shelter medicine. Emphasis on management of small animals with herd health concepts.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 719 Evidence-Based Medical Herbology Credit: 1 (1-0-0)
Course Description: Critical evaluation, mechanisms of action, indications, contraindications, herb-drug interactions for botanical medicines used in veterinary medicine.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

VM 720 Alternative and Complementary Therapeutics Credit: 1 (1-0-0)
Course Description: Mechanisms and efficacy of alternative and complementary therapeutics used in veterinary medicine.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 721 Non-Mammalian Vertebrate Medicine Credits: 2 (2-0-0)
Course Description: Diagnosis and treatment of diseases of non-mammalian vertebrates.
Admission to professional curriculum in veterinary medicine.
Prerequisite: VM 621.
Restriction: Must be a: Graduate, Professional.
Registration Information: All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 722 Veterinary Pharmacology Credits: 4 (4-0-0)
Course Description: Basic and clinical pharmacology, therapeutic practice, and pharmacy management.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 724 Bioanalytical Pathology Credits: 6 (4-0-2)
Course Description: Mechanisms, interpretation, and applications of laboratory analyses for solving diagnostic problems.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 726 Principles of Imaging Interpretation I Credits: 2 (1-0-1)
Course Description: Clinical indications and interpretation for imaging modalities in examination of body systems.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 728 Principles of Imaging Interpretation II Credits: 2 (2-0-0)
Course Description: Interpretation of clinical imaging techniques used in diagnosis of specific diseases of organ systems.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 730 Applied Animal Behavior Credits: 2 (2-0-0)
Course Description: Identification, characterization, and treatment of common disorders of animal behavior encountered by practicing veterinarians.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 731 Biology and Diseases of Small Mammals Credits: 2 (2-0-0)
Course Description: Diagnosis and treatment of diseases of small mammals.
Prerequisite: None.
Restriction: Must not be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 732 Veterinary Sports Medicine and Rehabilitation Credit: 1 (1-0-0)
Also Offered As: VS 732.
Course Description: An introduction to the principles and practice of sports medicine and rehabilitation in veterinary medicine.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: VM 732: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program. VS 732: DVM or equivalent professional degree or consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 733 Principles of Surgery Credits: 2 (2-0-0)
Course Description: Principles and concepts of general and orthopedic surgery.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 735 Animal Welfare Credits: 2 (2-0-0)
Course Description: Animal welfare key concepts, including both science and ethics; sociological/cultural influence on animal welfare; animal welfare assessment; role of veterinarians in animal welfare; contemporary challenges in animal welfare.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the DVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 737 Principles of Anesthesia Credits: 3 (2-0-1)
Course Description: Integration of physiological and pharmacological principles in clinical anesthesia.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 741 Biology of Disease II Credits: 4 (3-0-1)
Course Description: Pathogenesis of organ system diseases and integrated systemic pathology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 742 Biology of Disease III Credits: 3 (2-0-1)
Course Description: Pathogenesis of disease in organ systems, systemic pathology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 744 Theriogenology Credits: 3 (2-2-0)
Course Description: Reproductive function and disease, including mammary gland and endocrine regulation of reproduction and lactation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 745 Clinical Sciences I Credits: 5 (5-0-0)
Course Description: Diagnostic approaches to common medical problems of the gastrointestinal tract (including dentistry), liver / pancreas, and endocrine systems in small animal, food animal, and equine species are covered. A clinical reasoning process for approaching clinical problems is reviewed and reinforced.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. All courses must be taken in prescribed sequence in the DVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 747 Clinical Sciences II Credits: 5 (5-0-0)
Course Description: Diagnostic approaches to common medical problems of organ systems.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 749 Clinical Sciences III Credits: 5 (5-0-0)
Course Description: Diagnostic approaches to common medical problems of organ systems.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 751 Veterinary Clinical Toxicology Credits: 2 (2-0-0)
Course Description: Common toxicants and poisonous plants encountered by companion and farm animal species, their pathophysiological effects, and clinical treatments.
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 753 Clinical Sciences IV Credits: 5 (5-0-0)
Course Description: Diagnostic approaches to common medical problems of organ systems.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 757 Bovine Herd Medicine Credits: 3 (3-0-0)
Course Description: Health management, and diagnosis and treatment of diseases of food animals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 763 Equine Medicine and Surgery Credits: 5 (5-0-0)
Course Description: Health management, and diagnosis and treatment of diseases of horses.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 773 Small Animal Medicine and Surgery I Credits: 4 (4-0-0)
Course Description: Health management, and diagnosis and treatment of diseases of dogs and cats.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

VM 774 Small Animal Medicine and Surgery II Credits: 4 (4-0-0)
Course Description: Health management, and diagnosis and treatment of diseases of dogs and cats.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

VM 777 Feline Medicine Credit: 1 (1-0-0)
Course Description: Emphasizes the historical and examination findings, diagnostic evaluation, therapeutic approach, and prognosis relevant to common diseases of cats.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This course is for DVM students in their 3rd (junior) year. All courses must be taken in prescribed sequence in the DVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 786A Junior Practicum Credits: Var[6-8] (0-0-0)
Course Description: Training in clinical procedures for the diagnosis and treatment of animal diseases.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

VM 786B Senior Practicum Credits: Var[1-22] (0-0-0)
Course Description: Training in clinical procedures for the diagnosis and treatment of animal diseases.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

VM 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VM 796J Group Study: Swine Medicine Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 796R Group Study: Food Animal Clinical Problems Credits: 3 (0-0-3)
Course Description: Diagnostic, therapeutic, management, and monitoring tools used to deal with food animal health problems.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Vet Med + Biomed Sciences-VMBS (VMBS)

VMBS 100 Introduction to Biomedical Sciences Major Credits: 2 (1-0-1)
Course Description: Introduction to biomedical sciences major and faculty; academic and career planning; information sources in biomedical sciences.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

Watershed Science-WR (WR)

Courses

WR 304 Sustainable Watersheds Credits: 3 (3-0-0)
Also Offered As: GR 304.
Course Description: Effects of climate, land use, and water use on the sustainability of water quantity and quality.
Prerequisite: None.
Registration Information: Completion of the AUCC 1B Quantitative Reasoning requirement. Credit not allowed for both WR 304 and GR 304.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A.

WR 406 Seasonal Snow Environments Credits: 3 (2-3-0)
Course Description: Evaluation of the physical environment; characteristics of snow; methods of studying snow; snow safety.
Prerequisite: None.
Restriction: Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Junior or senior standing. Must register for lecture and laboratory. Required field trips.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

WR 416 Land Use Hydrology Credits: 3 (3-0-0)
Course Description: Fundamental concepts in hydrology and effects of land use on hydrologic processes.
Prerequisite: (GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150 or SOCR 240) and (CIVE 202 or STAT 201 or STAT 301 or STAT 307 or STAT 315) and (PH 110 or PH 121 or PH 141).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

WR 417 Watershed Measurements Credits: 3 (2-3-0)
Course Description: Instrument and field techniques in watershed science. Project design and data analysis.
Prerequisite: None.
Registration Information: Must have concurrent registration in WR 416. Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

WR 418 Land Use and Water Quality Credits: 3 (3-0-0)
Course Description: Physical, chemical, biological water quality parameters affecting land use; land management to maintain water quality; water quality standards, legislation.
Prerequisite: CHEM 103 and CHEM 104 or CHEM 107 and CHEM 108 or CHEM 111 and CHEM 112.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

WR 419 Water Quality Laboratory for Wildland Managers Credits: 2 (0-4-0)
Course Description: Sampling and determination of water quality parameters.
Prerequisite: None.
Registration Information: Must have concurrent registration in WR 418.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

WR 440 Watershed Problem Analysis Credits: 3 (2-2-0)
Course Description: Capstone integration of spatial watershed issues, focused on problem solving in watershed science.
Prerequisite: (NR 322 or NR 319) and (WR 416 and WR 418).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

WR 474 Snow Hydrology Credits: 3 (3-0-0)
Course Description: Snowfall, accumulation, distribution, physical processes in the snowpack, energy balance, ablation and runoff, measurement methods, runoff forecasting.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

WR 486 Watershed Field Practicum Credits: 2 (0-6-0)
Course Description: Field visits to watershed management projects and sites of significant field studies.
Prerequisite: None.
Restriction: Must be a: Junior.
Registration Information: Junior standing. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

WR 487 Internship Credits: Var[1-6] (0-0-0)
Course Description: Supervised work experience in professional settings related to Watershed Science.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

WR 492 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

WR 495 Independent Study-Watershed Resources Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

WR 510 Watershed Management in Developing Countries Credits: 2 (2-0-0)
Course Description: Watershed management problems, approaches, and solutions in developing countries.
Prerequisite: CIVE 322 or WR 416.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

WR 511 Water Resource Development Credits: 3 (3-0-0)
Course Description: Basic principles of water resource management including surface and subsurface flows.
Prerequisite: None.
Registration Information: Graduate standing. Offered as an online course only. Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WR 512 Water Law for Non-Lawyers Credits: 3 (0-0-3)
Course Description: Basics of water law and policy for Colorado, western states, and the U.S.
Prerequisite: None.
Registration Information: Graduate standing. Written consent of instructor. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WR 514 GIS and Data Analysis in Water Resources Credits: 3 (1-4-0)
Course Description: Exposure to multiple data analysis and GIS tools used to study water resources. Assess online data sources, download and pre-process digital data, and analyze water information.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Must register for lecture and laboratory. Offered as an online course only. Credit not allowed for both WR 514 and WR 581A1.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WR 516 Cumulative Effects and Watershed Analysis Credits: 3 (2-0-1)
Course Description: Definition, causal processes, and modeling of cumulative watershed effects; comparison and evaluation of current watershed analysis procedures.
Prerequisite: WR 416 and WR 417.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

WR 520 Evapotranspiration Credits: 2 (2-0-0)
Course Description: Theory, estimation, measurement, simulation, and application of evapotranspiration processes in hydrology.
Prerequisite: PH 122.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

WR 524 Modeling Watershed Hydrology Credits: 3 (2-2-0)
Also Offered As: CIVE 524.
Course Description: Development and application of watershed models: structure, calibration, evaluation, sensitivity analysis, simulation.
Prerequisite: (CIVE 322 or WR 416) and (CIVE 202 or STAT 301 or STAT 315).
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CIVE 524 and WR 524.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WR 574 Advanced Snow Hydrology Credits: 4 (3-0-1)
Course Description: Snow processes in hydrologic cycle; physical and conceptual methods of modeling; techniques for measuring different states and change rates.
Prerequisite: CIVE 322 or ENVE 322 or WR 416.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

WR 575 Snow Hydrology Field Methods Credit: 1 (0-2-0)
Course Description: Field course offering hands-on experience in snow hydrology.
Prerequisite: None.
Registration Information: Enrollment in a graduate program. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WR 616 Hillslope Hydrology and Runoff Processes Credits: 3 (1-0-2)
Course Description: Hillslope hydrology and runoff processes in different environments; implications for management and modeling.
Prerequisite: CIVE 322 or WR 416.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

WR 671 Advanced Topics in Watershed Science Credits: Var[1-6] (0-0-0)
Course Description: Explores advanced topics in watershed hydrology, biogeochemistry, and ecology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: May be repeated for a maximum of 9 credits.
Grade Mode: Traditional.
Special Course Fee: No.

WR 674 Data Issues in Hydrology Credits: 3 (3-0-0)
Course Description: Types of data, data sources, data quality, missing data, spatial data, data usage, sensitivity in models, error, presentation of data and results.
Prerequisite: WR 574.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

WR 692 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

WR 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

WR 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

WR 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

WR 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

WR 712 Watershed Systems Credits: 3 (2-2-0)
Course Description: Dynamic simulation of watershed behavior; application and evaluation of current hydrologic models.
Prerequisite: (CIVE 322 or WR 416) and (STAT 340).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

WR 714 Water Quality for Wildland Managers Credits: 3 (3-0-0)
Course Description: Sampling, statistics of sampling, concepts of ionic equilibrium, water quality modeling, instream flow requirements.
Prerequisite: WR 418.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

WR 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

WR 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Women's Studies-WS (WS)

Courses

WS 182B Study Abroad: Ghana Credit: 1 (0-0-1)
Also Offered As: ETST 182B.
Course Description: Winter intersession travel to Ghana, West Africa. Lectures and guided tours by Ghanaian experts. Variable topics dealing with intersectionalities between gender, race, economic development, history, and youth in Ghanaian society.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 182B and WS 182B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WS 200 Introduction to Women's Studies Credits: 3 (3-0-0)
Course Description: Examination of gender roles in work, education, spirituality, relationships, health, institutions and organizations.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C.

WS 269 Women of Color in the United States Credits: 3 (3-0-0)
Course Description: Surveying the contemporary experiences of women of various racialized ethnicities in the United States.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WS 270 Feminist Theory Credits: 3 (3-0-0)
Course Description: Contemporary feminist theories from multiple perspectives, including topics such as gender, race, sexuality, and oppression.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

WS 370 Feminist Friendship Credits: 3 (3-0-0)
Course Description:
Prerequisite: WS 100 to 499.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WS 382A Study Abroad: LGBTQ Advocacy and Policy in Spain Credits: 3 (0-0-3)
Course Description: Summer travel to Barcelona, Spain. Lectures and guided tours by Spanish experts on topics dealing with policy and advocacy among LGBTQ communities.
Prerequisite: None.
Registration Information: Sophomore standing.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

WS 382B Study Abroad--Ghana: Youth Development, Transnational Perspectives Credits: 3 (0-0-3)
Course Description: Exploration of connections and disconnections of youth globally, and how gender and culture intersect in a transnational context.
Prerequisite: None.
Registration Information: Sophomore standing. ETST or WS – at least 6 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WS 397 Group Study Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

WS 472 Seminar in Multiracial & Decolonial Feminisms Credits: 3 (0-0-3)
Course Description: Through an interdisciplinary and comparative approach, this course explores multiracial and decolonial feminist social theory and scholarly practices.
Prerequisite: ETST 405 and WS 200.
Registration Information: Junior standing. Enrolled in Women's and Gender Studies major or Women's Interdisciplinary Studies minor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WS 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Assist the instructor in women's and gender studies courses.
Prerequisite: None.
Registration Information: Enrolled in Ethnic Studies major, Women's Studies concentration or Women's Studies minor; junior standing; written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

WS 487 Internship Credits: Var[1-12] (0-0-0)
Course Description: Internship placement in women's/gender organization, institution, or program.
Prerequisite: None.
Registration Information: Enrolled in Ethnic Studies major, Women's Studies concentration or Women's Studies minor; junior standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

WS 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Approval of Women's Studies Director and relevant department chair (s).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

WS 510 Women and Sustainability Credits: 3 (3-0-0)
Course Description: Examination of sustainability issues with a focus on development policies and impacts on communities from an international feminist perspective.
Prerequisite: None.
Registration Information: Senior or graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WS 601 Foundations of Feminist Research Credits: 3 (3-0-0)
Course Description: Feminist perspectives on epistemology and methodologies for conducting and interpreting research.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WS 692 Seminar in Women's Studies Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have completed one semester of enrollment in Women's Interdisciplinary Graduate Studies Program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WS 695 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Approval of Women's Studies Director and relevant department chair (s).
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

WS 699 Thesis Credits: Var[3-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Approval of Women's Studies Program Board.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

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PDF	HTML
2017-2018 General Catalog (http://catalog.colostate.edu/pdf/2017-2018.pdf)	2017-2018 General Catalog (http://catalog.colostate.edu/general-catalog/previous-catalogs/2017-2018/general-catalog)
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2015-2016 General Catalog (https://webcms.colostate.edu/registrar/media/sites/29/2016/07/Optimized-2015-2016-CSU-Catalog.pdf)	(http://catalog.colostate.edu/general-catalog/previous-catalogs/2015-2016/general-catalog)2015-2016 General Catalog (http://catalog.colostate.edu/general-catalog/previous-catalogs/2015-2016/general-catalog)
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2010-2011 General Catalog (https://webcms.colostate.edu/registrar/media/sites/29/2015/03/2010_2011_CSU_Catalog.pdf)	
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